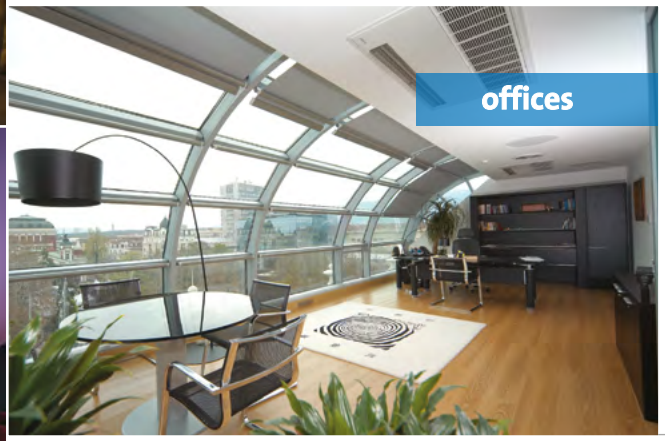

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SAINT-GOBAIN Soundproofing Systems for Hotels, Offices and Cinema Halls

Design Solutions Book

ACOUSTIC GROUP
VERIFIED BY ENGINEERS
PROVEN BY TIME

ISOVER SAINT-GOBAIN

Gyproc SAINT-GOBAIN

SAINT-GOBAIN SOUNDPROOFING SYSTEMS

for hotels, offices and Cinema halls (SAP-202-0117)

DESIGN SOLUTIONS BOOK **(SAP-202-0117)**

Saint-Gobain Construction Products Rus LLC in cooperation with **Acoustic Group LLC** presents new version of specialized design solutions book **"SAINT-GOBAIN soundproofing systems for hotels, offices and Cinema halls".**

Design solutions proposed in section «Hotels. Sound proofing of walls and ceilings, are based on the regulatory framework and agreed by the leading operator of the hotel business - ACCOR (brands Ibis, All Seasons, Mercure, Novotel, Pullman, M Gallery).

Solutions and regulations proposed in the section «Offices. Sound proofing of walls and ceilings» are agreed by the consulting company Mott MacDonald R, leading expert in the design, construction and arrangement of office real estate.

Design solutions proposed in the section «Cinema halls. Sound proofing of walls and ceilings» are coordinated by the leading designer and installer of commercial Cinema halls in the Russian Federation and the CIS countries - the company «NevaFilm».

Design Solutions Book is approved by the R**esearch Department of Construction Physics, Russian Academy of Architecture & Construction Sciences** and recommended for use in the construction, reconstruction and restoration of buildings and structures of these types.

The book presents typical engineering solutions used in construction to achieve the required sound proofing using Gyproc, ISOVER and Acoustic Group branded materials. The proposed constructions were successfully tested in practice and confirmed their high acoustic and performance characteristics.

федеральное государственное бюджетное учреждение
«Научно-исследовательский институт строительной физики
Российской академии архитектуры и строительных наук»
(НИИСФ РААСН)
Research Institute of Building Physics
Russian Academy of Architecture and Construction Sciences
(NIISF RAACS)

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Генеральному директору ООО «Акустик Групп»
Боганику А.Г.

В соответствии с Вашим запросом лабораторией архитектурной акустики и акустических материалов НИИСФ РААСН выполнена техническая экспертиза типовых инженерных решений звукоизолирующих ограждающих конструкций, представленных в разработанном и выпущенном в 2013 году компаниями ООО «Сен-Гобен Строительная Продукция Рус» и ООО «Акустик Групп» специализированном пособии для инженеров и проектировщиков - альбоме инженерных решений «Звукоизолирующие системы Gyproc для гостиниц, офисов и кинотеатров».

В альбоме представлены инженерно-технические решения различных типов звукоизолирующих ограждающих конструкций, применяемых в строительстве, с указанием наименования их комплектующих, типоразмеров, а также акустической эффективности. Предлагаемые конструкции содержат в себе специализированные материалы, успешно прошедшие сертификационные испытания по системе «Виброакустика».

Таким образом, предложенные в альбоме типовые инженерно-технические решения могут быть рекомендованы для применения при строительстве, реконструкции и реставрации зданий и сооружений указанных выше типов с целью улучшения звукоизоляции ограждающих конструкций и повышения защиты от проникающих и внутренних шумов и вибраций.

Директор института И.Л. Шубин

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CONTENT

1. Hotels. Soundproofing of walls and ceilings

1.1. Introduction

The long-term design practice of soundproofing of walls and floors of hotels based on gipsum plasterboards showed that the actual values of sound insulation on objects (Rw, Dnta, nTA, Dntw) are significantly lower than laboratory indices of airborne noise insulation (R) of these structures. The reasons for this are indirect sound transmission paths from the room to the premises bypassing the designed structure, as well as the quality of execution of the structures themselves on real objects lower than in the laboratory conditions.

To improve the accuracy of design and ensure the required sound insulation of enclosing structures, leading operators of the hotel business - ACCOR and Hilton - have developed and have successfully applyed their own methods that link the results of laboratory and full-scale tests of sound insulation of light and combined wall and floor structures. Also, similar techniques were developed by Acoustic Group to establish compliance with the requirements of the current SP 51.13330.2011 (updated version of SNiP 23-03-2003 «Protection against noise») and laboratory-derived indices of building structures.

Tables 1.1, 1.2 and 1.3 show the required laboratory values for airborne noise isolation indices, under which corporate standards for operators and SPs (SNiP) will be guaranteed. It can be seen from the tables that, depending on the technique and type of the enclosing structure, the required value obtained in laboratory conditions is always higher, and the «margin of safety» can be from 4 to 11 dB. The required values of the indices of the actual sound insulation (in accordance with the standards) are cited in detail in parentheses.

The exception is Table 1.4, where the required values of the indices of the reduced level of impact noise are given. Practice shows that laboratory-measured values for the structures of interfloor overlappings are in good agreement with field measurements of correctly executed structures. In this case, the measurement procedure in accordance with ISO 717-2: 2013 has a small but necessary «safety margin» of the results, which allows the use of laboratory values for practical design.

Therefore, the following procedure is recommended when designing protecting structures of hotels in part of walls and ceilings:

– in accordance with the technical specification, the design standard is chosen: Hilton, ACCOR, SP (SNiP) (Engl. Set of rules and procedures);

– according to Tables 1.1 - 1.4, the required laboratory values of sound insulation indexes for building structures are selected;

The table includes a list, of references to schemes of designs of various types for each laboratory index. All of them either accurately or with a small margin satisfy the acoustic requirements or can be chosen at the discretion of the designer;

– maximum heights of partition walls and linings are indicated on the sheets of schemes 1.02-1.40 and 2.02-2.10. Reference is also given to the values of the mass of one square meter of the construction of partition walls, linings or false ceilings;

– in the case when the room requires the decoration of non-combustible materials, the constructions having the end of the cipher of the letters «NC» and containing in their design non-combustible sheets - boards Glasroc F;

– standards for the consumption of materials for each type of construction are given in Section 6.

Choice of designs for soundproofing device is also possible with the help of summary tables: L1.01 on sheets 1.01.1 and 1.01.2, L2.01 on sheet 2.01, L3.01 on sheet 3.01 and L4.01 on sheet 4.01. These tables show the insulation values of airborn for different types of Gyproc partition walls, linings, suspended ceilings and «floating» floors.

Table L4.01 on sheet 4.01 shows the values of the indices of the reduced level of impact noise for various types of structures of «floating» floors.

1.2. 1.2. Hotels. Tables with specifications and numbers of schemes of sound-proofing structures

Table 1.1. Hotels. Plasterboards partition walls. Required indexes of air-born noise insulation and numbers of structures

Types of enclosing structures: **Light plasterboard partition walls**	**Laboratory** values of weighted sound reduction index Rw, dB, and t**he number of schemes** of constructions, in which the required values of the actual sound insulation (figures in parentheses) are met according to the standards:				
	Hilton Hotels Network	**ACCOR Hotel Operator**	**Construction rules and regulations 4,5-star hotels**	**Construction rules and regulations 3-star hotels**	**Construction rules and regulations Hotels below 3 stars**
1. Walls between rooms, between rooms and adjoining bathrooms	**62** (55[1]) **AW 21.24** sheet 1.11 **AW 21.25HT** sheet 1.14	**62** (51[2]) **AW 21.24** sheet 1.11 **AW 21.25HT** sheet 1.14	**60** (53[3]) **AW 21.24** sheet 1.11 AW **21.25HT** sheet 1.14 AW **15.26** sheet 1.29	**58** (51[3]) **AW 12.26** sheet 1.09 **AW 12.25HT** sheet 1.10 **AW 15.25** sheet 1.28 **AW 15.25HT** sheet 1.30	**57** (50[3]) **AW 12.26** sheet 1.09 **AW 12.25HT** sheet 1.10 **AW 15.25** sheet 1.28 **AW 15.25HT** sheet 1.30
2. Walls between rooms and restaurants, fitness areas, conference halls	**67** (60[1]) **AW 23.36** sheet 1.17 **AW 22.46** sheet 1.21 **AW 32.44** sheet 1.23 **AW 32.47HT** sheet 1.25 **AW 25.46** sheet 1.33	**65** (56[2]) **AW 21.26** sheet 1.13 **AW 22.44** sheet 1.19 **AW 23.35HT** sheet 1.18 **AW 25.44** sheet 1.31	**67** (60[3]) **AW 23.36** sheet 1.17 **AW 22.46** sheet 1.21 **AW 32.44** sheet 1.23 AW **32.47HT** sheet 1.25 AW **25.46** sheet 1.33	**64** (57[3]) **AW 21.25** sheet 1.12 **AW 23.34** sheet 1.15 **AW 23.35HT** sheet 1.18 **AW 25.44** sheet 1.31	**64** (57[3]) **AW 21.25** sheet 1.12 **AW 23.34** sheet 1.15 **AW 23.35HT** sheet 1.18 **AW 25.44** sheet 1.31
3. Walls between rooms and technical rooms (ventilation cameras, server rooms, fire escape ladders)	**72** (65[1]) **AW 45.48** sheet 1.40	**65** (56[2]) **AW 21.26** sheet 1.13 **AW 22.44** sheet 1.19 **AW 23.35HT** sheet 1.18 **AW 25.44** sheet 1.31	no data	no data	no data
4. Walls between bathrooms and corridors without a door	**52** (45[1]) **AW 11.15** sheet 1.03 **AW 12.14** sheet 1.06 **AW 11.15HT** sheet 1.05	**50** (45[2]) **AW 11.15** sheet 1.03 **AW 12.14** sheet 1.06 **AW 11.15HT** sheet 1.05	no data	no data	no data

[1] – sound-reduction index R'_w
[2] – sound-reduction index D_{nTa}
[3] – sound-reduction index R_w

NOTE: Choice of the design of the partition walls for the required value of sound insulation is determined by the maximum height of the structure, the type of the base and the upper abutment, as well as the need for non-combustible lining.

Selection of required structures is also possible using the summary table **L1.01** on sheets **1.01.1** and **1.01.2**, which shows the sound insulation values for all types of **Gyproc** soundproof walls.

Table 1.1. CONTINUED. Hotels. Plasterboards partition walls. Required indexes of air-born noise insulation and numbers of structures					
Types of enclosing structures: **Light plasterboard partition walls**	**Laboratory** values of weighted sound reduction index Rw, dB, and t**he number of schemes** of constructions, in which the required values of the actual sound insulation (figures in parentheses) are met according to the standards:				
	Hilton Hotels Network	**ACCOR Hotel Operator**	**Construction rules and regulations 4,5-star hotels**	**Construction rules and regulations 3-star hotels**	**Construction rules and regulations Hotels below 3 stars**
5. Walls between the room and the corridor (without the door), hall, restaurant	**67** (60[1]) **AW 23.36** sheet 1.17 **AW 22.46** sheet 1.21 **AW 32.44** sheet 1.23 **AW 32.47HT** sheet 1.25 **AW 25.46** sheet 1.33 **AW 35.44** sheet 1.35	**65** (56[2]) **AW 21.26** sheet 1.13 **AW 22.44** sheet 1.19 **AW 23.35HT** sheet 1.18 **AW 25.44** sheet 1.3**1**	**60** (53[3]) **AW 15.26** sheet 1.29 **AW 21.24** sheet 1.11 **AW 21.25HT** sheet 1.14	**58** (51[3]) **AW 15.25** sheet 1.28 **AW 15.25 HT** sheet 1.30 **AW 12.26** sheet 1.09	**58** (51[3]) **AW 15.25** sheet 1.28 **AW 15.25 HT** sheet 1.30 **AW 12.26** sheet 1.09
6. Walls between the room and the corridor (with the door)	**52** (45[1]) **AW 11.15** sheet 1.03 **AW 12.14** sheet 1.06 **AW 11.15HT** sheet 1.05	**50** (43[2]) **AW 11.15** sheet 1.03 **AW 12.14** sheet 1.06 **AW 11.15HT** sheet 1.05	no data	no data	no data
7. Walls between conference rooms	**57** (50[1]) **AW 15.25** sheet 1.28 **AW 15.25 HT** sheet 1.30 **AW 12.26** sheet 1.09 **AW 12.25HT** sheet 1.1**0**	**62** (51[2]) **AW 21.24** sheet 1.11 **AW 21.25HT** sheet 1.14	no data	no data	no data

[1] – sound-reduction index R'_w
[2] – sound-reduction index D_{nTa}
[3] – sound-reduction index R_w

NOTE: Choice of the design of the partition walls for the required value of sound insulation is determined by the maximum height of the structure, the type of the base and the upper abutment, as well as the need for non-combustible lining.

Selection of required structures is also possible using the summary table **L1.01** on sheets **1.01.1** and **1.01.2**, which shows the sound insulation values for all types of **Gyproc** soundproof walls.

Table 1.2. Hotels. Walls with plasterboard lining. Required indexes of air-born noise insulation and numbers of structures

Types of enclosing structures: **Combined walls and partition walls of massive plasterboard walls and partition walls**	**Laboratory** values of weighted sound reduction index Rw, dB, and the number of schemes of constructions, in which **the required** values of the actual sound insulation are met according to the standards:				
	Hilton Hotels Network	**ACCOR Hotel Operator**	**Construction rules and regulations 4,5-star hotels**	**Construction rules and regulations 3-star hotels**	**Construction rules and regulations Hotels below 3 stars**
1. Walls between rooms and rooms of restaurants, fitness areas, conference halls	**64** (60[1]) **ALA 11.12** sheet 2.02 **ALB 72.23** sheet 2.09 **ALA 11.13HT** sheet 2.04	**62** (56[2]) **ALB 11.13** sheet 2.03 **ALB 54.12** sheet 2.05 **ALB 11.13HT** sheet 2.04	**64** (60[3]) **ALA 11.12** sheet 2.02 **ALB 72.23** sheet 2.09 **ALA 11.13HT** sheet 2.04	**61** (57[3]) **ALB 11.12** sheet 2.02 **ALB 11.13HT** sheet 2.04	**61** (57[3]) **ALB 11.12** sheet 2.02 **ALB 11.13HT** sheet 2.04
2. Walls between rooms and technical rooms (ventilation chambers, server, fire stairs)	**69** (65[1]) **ALA 11.12 + ALA 11.12** sheet 5.01; **ALB 11.12 + ALB 11.13HT** sheet 5.02; **ALC 54.12 + ALC 54.12** sheet 5.03	**62** (56[2]) **ALB 11.13** sheet 2.03 **ALB 54.12** sheet 2.05 **ALB 11.13HT** sheet 2.04	no data	no data	no data
3. Walls between conference rooms	**54** (50[1]) **ALC 11.12** sheet 2.02 **ALC 11.13HT** sheet 2.04	**57** (51[2]) **ALC 11.12** sheet 2.02 **ALC 11.13HT** sheet 2.04	no data	no data	no data

[1] – sound-reduction index R'_w
[2] – sound-reduction index D_{nTa}
[3] – sound-reduction index R_w

NOTE: Choice of the design of the partition walls for the required value of sound insulation is determined by the maximum height of the structure, the type of the base and the upper abutment, as well as the need for non-combustible lining.

Selection of required structures is also possible using the summary table **L1.01** on sheets **1.01.1** and **1.01.2**, which shows the sound insulation values for all types of **Gyproc** soundproof walls.

Table 1.3. Hotels. Floors. Required indexes of air-born noise insulation and numbers of structures

Types of enclosing structures: **Combined reinforced concrete floating floors and plasterboard ceilings**	Laboratory values of weighted sound reduction index Rw, dB, and the number of schemes of constructions, in which **the required** values of the actual sound insulation are met according to the standards:				
	Hilton Hotels Network	**ACCOR Hotel Operator**	**Construction rules and regulations 4,5-star hotels**	**Construction rules and regulations 3-star hotels**	**Construction rules and regulations Hotels below 3 stars**
1. Floors between rooms	**59** (55[1]) **AFA 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	**57** (51[2]) **AFA, AFB 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	**57** (53[3]) **AFA, AFB 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	**55** (51[3]) **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.12	**54** (50[3]) **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.12
2. Floors between rooms and rooms of restaurants, fitness areas, conference halls	**64** (60[1]) **AFA 222** sheet 4.07 **AFA 227** sheet 4.12 **AC 64.12** sheet 3.02	**62** (56[2]) **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFA 227** sheet 4.12 **AC 64.12** sheet 3.02	**64** (60[3]) **AFA 222** sheet 4.07 **AFA 227** sheet 4.12 **AC 64.12** sheet 3.02	**61** (57[3]) **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFA 227** sheet 4.12 **AC 64.12** sheet 3.02	**61** (57[3]) **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFA 227** sheet 4.12 **AC 64.12** sheet 3.02
3. Floors between rooms and common areas (halls, vestibules, restaurants)	no data	no data	**57** (53[3]) **AFA, AFB 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	**55** (51[3]) **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.1**2**	**55** (51[3]) **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.1**2**
4. Floors between rooms and technical rooms (ventilation cameras, server rooms)	**69** (65[1]) **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/AFB 227 + AC 64.12** sheet 5.11 **AC 64.22** sheet 3.03	**62** (56[2]) **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFA 227** sheet 4.12 **AC 64.12** sheet 3.02	no data	no data	no data
5. Floors between conference rooms	**54** (50[1]) **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.12	**57** (51[2]) **AFA, AFB 221** sheet 4.0**6** **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	no data	no data	no data

[1] – sound-reduction index R'_w
[2] – sound-reduction index D_{nTa}
[3] – sound-reduction index R_w

NOTE: Selection of required floors' structures is also possible using the summary table **L3.01** on sheet **3.01** and tables **L4.01** on sheet **4.01** where values of airborne sound insulation for different types of **Gyproc** soundproofing floors and ceilings.

Table 1.4. Hotels. Floors. Required indexes of impact sound and numbers of structure diagrams

Types of enclosing structures:	**Laboratory** values of weighted normalized impact sound pressure level Ln,w, dB, and the number of schemes of constructions, in which **the required** values of the actual sound insulation are met according to the standards:				
	Hilton Hotels Network	**ACCOR Hotel Operator**	**Construction rules and regulations 4,5-star hotels**	**Construction rules and regulations 3-star hotels**	**Construction rules and regulations Hotels below 3 stars**
1. Floors between rooms	**50** **AFA, AFB 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	**Rigid floor coatings** **48** **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFA 227** sheet 4.12 **Carpet floor coatings** **50** **AFA, AFB 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	**55** **AFA, AFB 211** sheet 4.05 **AFA 121** sheet 4.04 **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.12	**58** **AFB 121** sheet 4.04 **AFA 112** sheet 4.03 **AFB 211** sheet 4.05	**60** **AFA 111** sheet 4.02 **AFB 121** sheet 4.04
2. Floors separating rooms from common areas (halls, restaurants)	no data	no data	**55** **AFA, AFB 211** sheet 4.05 **AFA 121** sheet 4.04 **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.12	**58** **AFB 121** sheet 4.04 **AFA 112** sheet 4.03 **AFB 211** sheet 4.05	**58** **AFB 121** sheet 4.04 **AFA 112** sheet 4.03 **AFB 211** sheet 4.05
3. Floors between the rooms and rooms of restaurants, fitness areas, conference rooms located above them	**45** **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFB 223** sheet 4.08 **AFB 224** sheet 4.09 **AFA, AFB 227** sheet 4.12	**35** **AFA 225** sheet 4.10	**58** **AFB 121** sheet 4.04 **AFA 112** sheet 4.03 **AFB 211** sheet 4.05	**60** **AFA 111** sheet 4.02 **AFB 121** sheet 4.04	**660** **AFA 111** sheet 4.02 **AFB 121** sheet 4.04

NOTE: Selection of required airborne impact insulation structures is also possible using the summary table **L4.01** on sheet **4.01** and tables **L4.01** on sheet **4.01** where values of airborne sound insulation for different types of **Gyproc** soundproof floors and ceilings are specified.

Table 1.4. CONTINUED. Hotels. Floors. Required indexes of airborne impact insulation and numbers of structure diagrams					
Types of enclosing structures:	**Laboratory** values of weighted normalized impact sound pressure level Ln,w, dB, and the number of schemes of constructions, in which **the required** values of the actual sound insulation are met according to the standards:				
	Hilton Hotels Network	**ACCOR Hotel Operator**	**Construction rules and regulations 4,5-star hotels**	**Construction rules and regulations 3-star hotels**	**Construction rules and regulations Hotels below 3 stars**
4. Floors between rooms and technical rooms (ventilation cameras, server rooms)	**40** **AFA 223** sheet 4.08 **AFA 224** sheet 4.09 **AFB 225** sheet 4.10 **AFA 227** sheet 4.12	**32** **AFA 226** sheet 4.11	no data	no data	no data
Standard indexes of impact noise level at sound transfer from the down to top					
5. Floors of premises of restaurants, fitness areas, conference halls with the arrangement of rooms over them	no data	no data	**45** (38[4]) **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFB 223** sheet 4.08 **AFA, AFB 227** sheet 4.12	**48** (41[4]) **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFB 223** sheet 4.08 **AFA, AFB 227** sheet 4.12	**48** (41[4]) **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFB 223** sheet 4.08 **AFA, AFB 227** sheet 4.12
6. Floors of common areas (halls, restaurants) with the arrangement of rooms above them	no data	no data	**50** (43[4]) **AFA, AFB 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	**52** (45[4]) **AFA 121** sheet 4.04 **AFA 211** sheet 4.05 **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.12	**52** (45[4]) **AFA 121** sheet 4.04 **AFA 211** sheet 4.05 **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.12

[4] – According to SP procedure, these requirements are applicable for the case of impact on the floor of the lower located room and the measurement of the level of impact noise in the upper room («bottom-up»). The value indicated in parentheses, with a correction of +7 dB, corresponds to the values of the impact noise level measured in standard «top-down» laboratory conditions (boldface figure). The difference of +7 dB is due to attenuation of structural-born noise during propagation along the building structure elements.

NOTE: Selection of required airborne impact insulation structures is also possible using the summary table **L4.01** where values of airborne impact insulation for different types of **Gyproc** soundproof floors and ceilings are specified.

2. Offices. Soundproofing of walls and floors

2.1 Introduction

Long-term design practice of soundproofing of walls, partition walls and ceilings of office premises based on light frame partition walls, suspended ceilings and linings from plasterboard showed that actual values of sound-proofing at objects (R'w, Dnta, Dntw) are significantly lower than laboratory-derived airborne noise insulation (R) indices of these structures. The reasons for this are indirect ways of transferring noise from the room to the premises, bypassing the designed structure, as well as the quality of execution of the structures themselves on real objects lower than in the laboratory conditions.

To improve the accuracy of design and ensure the required sound insulation of enclosing structures, Acoustic Group has developed and successfully applied a technique that links the results of laboratory and full-scale tests of sound insulation of light and combined structures of walls and ceilings. This method is approved by the consulting company Mott MacDonald R, working in the market of design, construction and arrangement of office real estate. Also, Acoustic Group developed similar methods for establishing compliance with the requirements of the current set of rules 51.13330.2011 (updated version of Construction rules and regulations 23-03-2003 «Protection from noise») and laboratory-derived indices of building structures.

Tables 2.1 and 2.2 show the required laboratory values for airborne noise isolation indices, under which corporate standards and Construction rules and regulations will be guaranteed. It can be seen from the tables that, depending on the method and type of the enclosing structure, the required value obtained in laboratory conditions is always higher and the «safety margin» can be from 4 to 8 dB. The required values of the indices of the actual sound insulation (in accordance with the standards) are cited in detail in parentheses.

The only exception is Table 2.3, where the required values of the indices of the reduced noise level are given. Practice shows that laboratory-measured values for the structures of separate floors are in good agreement with field measurements of correctly executed structures. At the same time, the measurement procedure in accordance with ISO 717-2: 2006 has a small but necessary «margin of safety» for the results, which allows the use of laboratory values for practical design.

Therefore, the following procedure is recommended when designing protecting structures of hotels in part of walls and ceilings:

- in accordance with the technical specification, the design standard is chosen: Acoustic Group, Construction rules and regulations of Russia;
- according to tables 2.1 - 2.3, the required laboratory values of sound proofing indexes are chosen for the respective room types;
- the table includes a list of references to schemes of designs of various types for each value of the laboratory index. All of them either accurately or with a small margin satisfy the acoustic requirements and can be chosen at the discretion of the designer;
- maximum heights of the partition walls and linings are indicated on the diagram sheets 1.02-1.40 and 2.02-2.10. Reference is also given to the values of the mass of one square meter of the construction of partition walls, linings or false ceilings;
- in the case when the room requires facing of non-combustible materials, the constructions having the letters «NC» at the end of the code and containing in their design incombustible sheets of the paneling - boards Glasroc F;
- standards for the consumption of materials for each type of construction are given in Section 6.

Selection of designs for the soundproofing device is also possible using the summary tables: L1.01 on sheets 1.01.1 and 1.01.2, L2.01 on sheet 2.01, L3.01 on sheet 3.01 and L4.01 on sheet 4.01. These tables show the insulation values of air noise for different types of partition walls, linings, suspended ceilings and Gyproc floating floors.

Table L4.01 on sheet 4.01 shows the values of impact sound indexes for various types of structures of «floating» floors.

2.2. Offices. Tables with specifications and numbers of sound-proofing structure diagrams

Table 2.1. Offices. Plasterboard partition walls. Required airborne sound insulation indexes and numbers of structure diagrams

Types of enclosing structures: **Light plasterboard partition walls**	**Laboratory** values of weighted sound reduction index Rw, dB, and the number of schemes of constructions, in which **the required** values of the actual sound insulation are met according to the standards:			
	Acoustic Group standard values			**Construction rules and regulations**
	Executives	**Medium-level managers**	**Specialists, open-space premises**	
1. Walls between offices	**67** (59[1]) **AW 23.36** sheet 1.17 **AW 22.46** sheet 1.21 **AW 32.44** sheet 1.23 **AW 32.47HT** sheet 1.25 **AW 25.46** sheet 1.33 **AW 35.44** sheet 1.35	**62** (54[1]) **AW 21.24** sheet 1.11 **AW 21.25HT** sheet 1.14	**58** (50[1]) **AW 12.25HT** sheet 1.10 **AW 15.25** sheet 1.28 **AW 15.25HT** sheet 1.30	**52** (45[2]) **AW 11.15** sheet 1.03 **AW 12.14** sheet 1.06 **AW 11.15HT** sheet 1.05
2. Walls between offices of different firms	**67** (59[1]) **AW 23.36** sheet 1.17; **AW 22.46** sheet 1.21; **AW 32.44** sheet 1.23; **AW 32.47HT** sheet 1.25 **AW 25.46** sheet 1.33; **AW 35.44** sheet 1.35			**55** (48[2]) **AW 11.16** sheet 1.04 **AW 12.25** sheet 1.08 **AW 12.25HT** sheet 1.10 **AW 15.24** sheet 1.27
3. Walls between working rooms, offices and technical rooms	**68** (60[1]) **AW 32.46** sheet 1.24; **AW 32.47HT** sheet 1.25; **AW 35.45** sheet 1.36			no data

[1] – sound-reduction index R'_w
[2] – sound-reduction index R_w

NOTE: Choice of the design of the partition walls for the required value of sound insulation is determined by the maximum height of the structure, the type of the base and the upper abutment, as well as the need for non-combustible lining.

Selection of required structures is also possible using the summary table **L1.01** on sheets **1.01.1** and **1.01.2**, which shows the sound insulation values for all types of Gyproc soundproof walls.

Table 2.2. Offices. Partition walls with lining and suspended plasterboard ceilings. Required airborne sound insulation indexes and numbers of structure diagrams

Types of enclosing structures: **Combined walls and floors of massive plasterboard walls and lining**	**Laboratory** values of weighted sound reduction index Rw, dB, and **the number of structure** diagrams in which **the required** values of the actual sound insulation (figures in parentheses) are met according to the standards:			
	Acoustic Group standard values			**Construction rules and regulations**
	Executives	**Medium-level managers**	**Specialists, open-space premises**	
1. Walls between offices	**65** (59[1]) **ALA 54.12** sheet 2.05 **ALA 11.13HT** sheet 2.04	**60** (54[1]) **ALC 72.23** sheet 2.09 **ALB 11.12** sheet 2.02 **ALB 11.13HT** sheet 2.04	**56** (50[1]) **ALC 11.12** sheet 2.02 **ALC 11.13HT** sheet 2.04	**49** (45[2]) **ALC 11.12** sheet 2.02 **ALC 11.13HT** sheet 2.04
2. Walls between offices of different companies	**65** (59[1]) **ALA 54.12** sheet 2.05; **ALA 11.13HT** sheet 2.04			**52** (48[2]) **ALC 11.12** sheet 2.02 **ALC 11.13HT** sheet 2.04
3. Walls between working rooms, offices and technical rooms	**66** (60[1]) **ALA 72.22** sheet 2.08; **ALA 54.13** sheet 2.06; **ALA 54.13HT** sheet 2.07 **ALB 11.12** + **ALB 11.13HT** лист 5.02 **ALC 11.12 + ALC 54.12** sheet 5.08; **ALC 11.13HT + ALC 54.12** sheet 5.09			no data
Combined reinforced concrete floors, floating floors and plasterboard ceilings				
4. Floors between offices	**65** (59[1]) **AFA 225** sheet 4.10 **AC 64.12** sheet 3.02	**60** (54[1]) **AFB 225** лист 4.10 **AFA 221** лист 4.06	**56** (50[1]) **AFB 221** лист 4.06 **AFB 222** лист 4.07 **AFB 227** лист 4.12	**49** (45[2]) **AFB 221** лист 4.06 **AFB 222** лист 4.07 **AFB 227** лист 4.12
5. Floors between offices and restaurants, fitness areas, cafe	**68** (62[1]) **AC 64.22** sheet 3.03 **AFB 221 + AC 64.12** sheet 5.10; **AFB 222/AFB 227 + AC 64.12** sheet 5.11	**62** (56[1]) **AFA 221** sheet 4.06, **AFA 222** sheet 4.07 **AFA 227** sheet 4.12, **AC 64.12** sheet 3.02		no data
6. Floors between offices and technical rooms	**66** (60[1]) **AFA 225** sheet 4.10; **AC 64.12** sheet 3.02 **AFB 221 + AC 64.12** sheet 5.10; **AFB 222/ AFB 227 + AC 64.12** sheet 5.11			no data

[1] – sound-reduction index R'_w
[2] – sound-reduction index R_w

NOTE: Choice of the lining structure for the required value of sound insulation is determined by the maximum height of the structure, the type of the base and the upper abutment, as well as the need for non-combustible lining.
Selection of required structures is also possible using summary tables: **L2.01** on sheet **2.01**, **L3.01** on sheet **3.01** and **L4.01**, on sheet **4.01**, which show the insulation values of airborne sound for different types of Gyproc soundproofing linings, suspended ceilings and floating floors.

Table 2.3. Offices. Floors. Required impact sound indexes and numbers of structure diagrams

Types of enclosing structures:	**Laboratory** values of weighted normalized impact sound pressure level Ln,w, dB, and the number of structure diagrams in which the required values of the actual sound insulation are met according to the standards:			
	Acoustic Group standard values			**Construction rules and regulations**
	Executives	**Medium-level managers**	**Specialists, open-space premises**	
1. Floors between working rooms, offices	**50** **AFA, AFB 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFA, AFB 227** sheet 4.12	**54** **AFA 211** sheet 4.05 **AFA 121** sheet 4.04 **AFB 221** sheet 4.06 **AFB 222** sheet 4.07 **AFB 227** sheet 4.12	**58** **AFA 112** sheet 4.03 **AFB 121** sheet 4.04 **AFB 211** sheet 4.05 **AFB 221** sheet 4.06	**63** **AFA 111** sheet 4.02 **AFB 112** sheet 4.03 **AFB 211** sheet 4.05
2. Floors between offices and technical premises located above them	**48** **AFA 221** sheet 4.06 **AFA 222** sheet 4.07 **AFB 223** sheet 4.08 **AFB 224** sheet 4.09 **AFA, AFB 227** sheet 4.12	**54** **AFA 121** sheet 4.04 **AFB 221** sheet 4.06; **AFB 222** sheet 4.07 **AFB 227** sheet 4.12		no data
3. Floors between offices and restaurants, fitness areas, etc. located above them	**50** **AFA, AFB 221** sheet 4.06 **AFA, AFB 222** sheet 4.07 **AFB 224** sheet 4.09 **AFA, AFB 227** sheet 4.12	**54** **AFA 211** sheet 4.05; **AFA 121** sheet 4.04 **AFB 221** sheet 4.06; **AFB 222** sheet 4.07 **AFB 227** sheet 4.12		no data

NOTE: Selection of required airborne impact insulation is also possible with the help of the summary table **L4.01** on sheet **4.01**, which shows the values of reducing the level of impact noise for different types of **Gyproc** soundproof floors.

3. Cinema-halls. Soundproofing of walls and floors

3.1. Introduction

Long-term practice of designing sound insulation of walls, partition walls and ceilings of multi-room Cinema halls based on light frame partition walls, suspended ceilings and plasterboard linings has shown that actual values of sound insulation on objects (R'w,Dnta,Dntw) are significantly lower than laboratory derived airborne noise insulation indexes (Rw) of these structures. The reasons for this are indirect ways of transferring noise from the room to the room, without removing or minimizing the effect of which on the real object can not be achieved by constructing high (≥65 dB).

To increase the accuracy of design and ensure the required sound insulation of enclosing structures, Acoustic Group has developed and successfully applied a method based on the principle of integrated soundproofing of cinema halls.

In the auditorium, complete sound insulation of all surfaces of the floor, walls and ceiling is performed. Additional sound insulation, in order to exclude indirect noise propagation, is subject to the floor, ceiling, or walls of the cinema, even if there are no serviced rooms behind them. Only in this way, in real construction conditions, it is possible to provide actual isolation of air noise by enclosing structures in the range R_w= 67 – 72 дБ.

Tables 3.1 and 3.2 show the required laboratory values for airborne noise isolation indices, in which, according to the **Acoustic Group**, the Cinema halls will meet the standards of **Dolby Laboratories Inc.*** regarding the rationing of levels of penetrating noise into the rooms of the auditoriums of Cinema halls.

Table 3.3 gives the required values of the indices of the reduced level of impact noise in Cinema halls. Practice shows that laboratory-measured values for the structures of separate floors are in good agreement with field measurements of correctly executed structures. At the same time, the measurement procedure in accordance with ISO 717-2: 2006 has a small but necessary «margin of safety» for the results, which allows the use of laboratory values for practical design.

Therefore, the following procedure is recommended when designing enclosing structures of multi-hall Cinema halls in part of walls, partition walls and floors:

- in accordance with the technical specification, the design standard is chosen: the requirements of Acoustic Group for the halls of a given category of comfort in terms of providing the required value of sound insulation (category A - high comfort conditions, B - comfort conditions and C - conditions that are acceptable for operation);
- according to tables 3.1 and 3.2 for the relevant types of premises required laboratory values of the sound insulation index are selected for building structures;
- cells of the table, for each value of the laboratory index, contains a list of references to schemes of constructions of various types is indicated. All of them, either digit to number, or with a small margin satisfy the acoustic requirements and can be chosen at the discretion of the designer;
- maximum heights of partition walls and linings are indicated on the diagram sheets 1.02-1.40, 2.02-2.10 and 3.02-3.04. Reference is also given to the values of the mass of one square meter of the construction of partition walls, linings or false ceilings;
- in cases when the room requires the decoration of non-combustible materials, the constructions having the letters «NC» at the end of the code and containing in their design non-combustible lining - Glasroc F boards;
- material consumption rates for each type of construction is given in Section 6.

Selection of structures for soundproofing is also possible using the summary tables: L1.01 on sheets 1.01.1 and 1.01.2, L2.01 on sheet 2.01, L3.01 on sheet 3.01 and L4.01 on sheet 4.01. These tables show the insulation values of air noise for different types of partition walls, linings, suspended ceilings and Gyproc floating floors.

Table L4.01 on sheet 4.01 contains values of indices of the reduced level of impact noise for different types of constructions of floating floors.

Engineering solutions for the arrangement of soundproof structures in Cinema halls in the album are coordinated and recommended for use by Nevafilm, a recognized expert in the design of commercial Cinema halls in the Russian Federation and CIS countries.

It is recommended to clarify the requirements for the enclosing designs of Cinema halls by calculations made by specialists in the field of film technology and architectural and building acoustics.

* Dolby Laboratories Inc. is recognized expert in standards development and recording and playback technologies for Cinema halls.

Table 3.1. Cinema halls. Required indexes of airborne sound insulation and numbers of structure schemes

Type of enclosing structure	**Laboratory** values of weighted sound reduction index Rw, dB according to **Acoustic Gro**up standards and **numbers of structural schemes**:		
	Comfort category of the cinema according to the requirements of soundproofing:		
	A The highest category of comfort	**B** Comfort conditions	**C** Conditions permissible for operation
Light plasterboard partition walls			
1. Walls between cinema halls, between the cinema and the restaurant with live music, karaoke halls	**72** **AW 45.48** sheet 1.40	**70** **AW 45.44** sheet 1.38 **AW 42.46** sheet 1.26	**69** **AW 35.46** sheet 1.37 **AW 45.44** sheet 1.38
2. Walls between the cinema and the foyer, between the cinema and the restaurant with a background music, between the cinema and shops	**69** **AW 35.46** sheet 1.37 **AW 45.44** sheet 1.38	**67** **AW 25.46** sheet 1.33 **AW 35.44** sheet 1.35 **AW 23.36** sheetт 1.17 **AW 22.46** sheet 1.21 **AW 32.44** sheet 1.23 **AW 32.47HT** sheet 1.25	**65** **AW 25.44** sheet 1.31 **AW 21.26** sheet 1.13 **AW 22.44** sheet 1.19 **AW 23.35HT** sheet 1.18
3. Wall between the cinema and the projection room, between the cinema and the technical room	**67** **AW 25.46** sheet 1.33 **AW 35.44** sheet 1.35 **AW 23.36** sheet 1.17 **AW 22.46** sheet 1.21 **AW 32.44** sheet 1.23 **AW 32.47HT** sheet 1.25	**65** **AW 25.44** sheet 1.31 **AW 21.26** sheet 1.13 **AW 22.44** sheet 1.19 **AW 23.35HT** sheet 1.18	**65** **AW 25.44** sheet 1.31 **AW 21.26** sheet 1.13 **AW 22.44** sheet 1.19 **AW 23.35HT** sheet 1.18
Combined walls and partition walls of massive walls and plasterboard linings			
4. Walls between the cinema halls, between the cinema and the restaurant with live music, karaoke halls	**72** **ALA 54.12 + ALA 54.13** sheet 5.04 **ALA 54.12 + ALA 54.13HT** sheet 5.05	**70** **ALA 11.12 + ALA 11.12** sheet 5.01 **ALB 72.22 + ALB 72.22** sheet 5.06 **ALC 72.22 + ALC 72.23** sheet 5.07	**69** **ALA 11.12 + ALA 11.12** sheet 5.01 **ALC 54.12 + ALC 54.12** sheet 5.03 **ALB 11.12 + ALB 11.13HT** sheet 5.02

NOTE: Selection of the design of the partition walls for the required value of sound insulation is determined by the maximum height of the structure, the type of the base and the upper abutment, as well as the need for non-combustible lining.

Selection of required structures is also possible using summary tables: **L1.01** on sheets **1.01.1** and **1.01.2, L2.01** on sheet **2.01.**
These tables show the insulation values for air noise for different types of **Gyproc** soundproof walls and linings.

Table 3.1. CONTINUED. Cinema halls. Required indexes of airborne sound insulation and numbers of structure schemes

Type of enclosing structure	**Laboratory** values of weighted sound reduction index Rw, dB according to Acoustic Group standards and numbers of structural schemes:		
	Comfort category of the cinema according to the requirements of soundproofing:		
	A The highest category of comfort	**B** Comfort conditions	**C** Conditions permissible for operation
Continued. Combined walls and partition walls of massive walls and plasterboard linings			
5. Walls between cinema and foyer, between cinema and restaurant with a background music, between cinema and shops	**69** **ALA 11.12 + ALA 11.12** sheet 5.01 **ALB 11.12 + ALB 11.13HT** sheet 5.02 **ALC 54.12 + ALC 54.12** sheet 5.03	**67** **ALA 72.23** лист 2.09 **ALC 11.12 + ALC 54.12** лист 5.08 **ALC 11.13HT + ALC 54.12** лист 5.09	**65** **ALA 54.12** sheet 2.05 **ALA 54.13HT** sheet 2.07 **ALA 72. 22** sheet 2.08
6. Walls between cinema and projection room, between cinema and technical room	**67** **ALA 72.23** sheet 2.09 **ALC 11.12 + ALC 54.12** sheet 5.08 **ALC 11.13HT + ALC 54.12** sheet 5.09	**65** **ALA 54.12** sheet 2.05 **ALA 54.13HT** sheet 2.07 **ALA 72.22** sheet 2.08	**65** **ALA 54.12** sheet 2.05 **ALA 54.13HT** sheet 2.07 **ALA 72.22** sheet 2.08
Combined floors of reinforced concrete boards, floating floors and plasterboard ceilings			
7. Floors between cinema halls, between cinema and restaurants with live music, karaoke halls	**72** **AFB 221 + AC 64.22** лист 5.12 **AFB 222/AFB 227 +** **AC 64.22** лист 5.13	**70** **AC 64.32** sheet 3.04 **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/AFB 227 +** **AC 64.12** sheet 5.11	**69** **AC 64.22** sheet 3.03 **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/ AFB 227 +** **AC 64.12** sheet 5.11
8. Floors between cinema halls and cafes, restaurants with background music, shops	**69** **AC 64.22** sheet 3.03 **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/AFB 227 +** **AC 64.12** sheet 5.11	**67** **AC 64.12** sheet 3.02 **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/AFB 227 +** **AC 64.12** sheet 5.11	**65** **AFA 225** sheet 4.10 **AC 64.12** sheet 3.02 **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/ AFB 227 +** **AC 64.12** sheet 5.11
9. Floors between cinema halls and technical rooms	**67** **AC 64.12** sheet 3.02 **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/AFB 227 +** **AC 64.12** sheet 5.11	**65** **AFA 225** sheet 4.10 **AC 64.12** sheet 3.02 **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/ AFB 227 +** **AC 64.12** sheet 5.11	**65** **AFA 225** sheet 4.10 **AC 64.12** sheet 3.02 **AFB 221 + AC 64.12** sheet 5.10 **AFB 222/ AFB 227 +** **AC 64.12** sheet 5.11

NOTE: Selection of the design of the partition walls for the required value of sound insulation is determined by the maximum height of the structure, the type of the base and the upper abutment, as well as the need for non-combustible lining.

Selection of required structures is also possible using summary tables: **L1.01** on sheets **1.01.1** and **1.01.2, L2.01** on sheet **2.01, L3.01** on sheet **3.01** and **L4.01** on sheet **4.01.** These tables show the insulation values for air noise for different types of soundproofing linings, **Gyproc** suspended ceilings and «floating» floors.

Table 3.2. Cinema halls. Required indexes of airborne sound insulation and numbers of structure schemes

Types of enclosing structures for all categories of cinema halls: **Wall lining, suspended ceilings and soundproofing floors**	Weighted sound reduction index improvement ΔRw, dB, according to Acoustic Group standards and numbers of structural schemes:
1. Walls, floors and ceilings, cinema halls adjacent to unprotected premises (roof, basement, unexpired rooms, etc.)	**≥ 10*** **ALA, ALB, ALC 11.12** sheet 2.02 **ALA, ALB, ALC 54.12** sheet 2.05 **ALA, ALB, ALC 72.22** sheet 2.08 **AC 64.12** sheet 3.02 **AFA, AFB 222** sheet 4.07 **AFA, AFB 225** sheet 4.10 **AFA, AFB 227** sheet 4.12

* – value of additional insulation of airborne noise measured on the base wall / floors with its own sound insulation is not lower **Rw = 49 dB**.

NOTE: Selection of lining design for the required sound insulation value is determined by the maximum height of the structure.

Selection of required constructions is also possible using the summary tables: **L1.01** on sheets **1.01.1** and **1.01.2, L2.01** on sheet **2.01, L3.01** on sheet **3.01** and **L4.01** on sheet **4.01.** These tables show the insulation values for air noise for different types of soundproofing linings, suspended ceilings and **Gyproc** floating floors.

Table 3.3. Cinema halls. Required indexes of airborne impact insulation and numbers of structure diagrams

Types of enclosing structures for all categories of cinema halls:	Airborne impact insulation indexes of soundproofing structures, Ln,w dB, at which compliance with actual sound insulation is met according to **Acoustic Group** standards:
1. Floors between cinema halls	**40** **AFA 223** sheet 4.08 **AFA 224** sheet 4.09 **AFB 225** sheet 4.10 **AFA 227** sheet 4.12 ** **AFA, AFB 221** sheet 4.06 ** **AFA, AFB 222** sheet 4.07 ** **AFB 223** sheet 4.08 ** **AFB 227** sheet 4.12
2. Floors between cinema halls, restaurants, shops, karaoke halls	
3. Floors between technical rooms and cinema halls	

** – In the case of location of the cinema hall at the bottom and presence of a soundproof ceiling structure in it, in combination with the use of a complex soundproofing system in the cinema hall, it is allowed in the upper room to apply the construction of a floating floor with an index of the given level of impact noise by **10 dB** more.

NOTE: Selection of required structures is also possible with the help of the summary table **L4.01** on sheet **4.01**, which shows the values of airborne impact insulation for different types of **Gyproc** floating floors.

4. Installation of soundproofing framed partition walls

4.1. Soundproofing partition walls mounting technology

4.1.1. Installation of sound-proofing framed partition walls is performed in accordance with Gyproc technologies taking into account the following features:

– elements of sound-insulating partition walls are enclosed to the enclosing structures through gaskets made of Vibrostek-M material, weighted sound reduction index improvement ΔRw;
– frameworks of double partition walls, made of U-shaped profiles Gyproc Ultrasteel, do not have connections with each other. For this, the frames are exposed with a gap of at least 10 mm;
– frames of double partition walls made of W-shaped profiles Gyproc Ultrasteel AcouStud 100/44 mm are connected together by reinforcing bridges of Gyproc AKU-line material 12.5 mm high with a height of 300 mm in 600 mm increments. The jumpers are attached to the profiles through 2 layers of Vibrostek-M elastic gasket 4 mm thick each;
– internal space of the frame is filled with special Acoustic sound absorbing boards 50 mm thick in one, two, three or four layers;
– frame is clad with special soundproofing Gyproc AKU-line sheets 12.5 mm in two, three or four layers on each side;
– if required, on the partition walls walled with Gyproc AKU-line sections on two layers on each side, an incombustible sheet Glasroc F 6 mm.

4.1.2. When installing sound-proof frame-and-partition walls, gaps and through holes shall be eliminated.

4.1.3. When installing structures of frame-and-partition walls, the elements specified in Tables 5.1, 5.3 - 5.6.

4.2. Installation of sound-proof frame lining

4.2.1. Installation of sound-insulating frame linings is performed in accordance with Gyproc technologies taking into account the following features:

– elements of the soundproofing linings adjoin to the enclosing structures exclusively through the gaskets from Vibrostek-M material, from the outside the joint is filled with vibroacoustic sealant Vibrosil;
– when installing the frame lining with the use of Vibroflex-Connect PS vibration-proof fasteners, these supports are used at the rate of: one fastening no more than every 1.5 m of the rack profile, but not less than 3 fastenings. With a profile length of up to 3 m. From the edge of the profile, the Vibroflex-Connect PS mount is mounted at a distance of no more than 150 mm;
– if required, for mechanical reinforcement of the lining framework with a thickness of 50 mm, a «double» version of the studs 50/40 is used, which are fastened together by means of self-cutters of the type LN;
– inner space of frame is filled with specialized AkuLite sound-absorbing boards 50 mm thick in one or two layers;
– frame is lined with special soundproofing Gyproc AKU-line sheets 12.5 mm in two or three layers;
– if required, the lining trimmed with two layers of sheets Gyproc AKU-line 12.5 mm, non-combustible sheet Glasroc F 6 mm can also be mounted.

4.2.2. When installing sound-insulating frame linings, the elements specified in Tables 5.1 to 5.6 are used.

4.3. Installation of suspended sound-proofing ceilings

4.3.1. Installation of suspended soundproof ceilings is performed in accordance with Gyproc technologies taking into account the following features:

– elements of the soundproof suspended ceiling are attached to the walls, columns and other vertical enclosing structures without fastening through the gaskets made of Vibrostek-M material. On the side of the room the joint is filled with Vibrosil vibroacoustic sealant;
– when installing a soundproof suspended ceiling, Vibroflex-Connect PP suspension brackets are applied in steps of 800-900 mm. The maximum distance from the edge of the profile to the first suspension should not be more than 150 mm. Rated load per suspension - 15 kg;
– main profiles of two-level frame are mounted in steps of 600 mm, the pitch of the perpendicular secondary profiles is 400-500 mm (the step is a multiple of the sheet size Gyproc AKU-line 12.5 mm);
– extension for ceilings of the ceiling is made of the ceiling profile 60/27 and direct suspension, which is cut into two parts (scheme AC 64.32);
– internal space of the frame is filled with specialized AkuLite sound-absorbing boards 50 mm thick in one, two or three layers;
– frame is lined with special soundproofing sheets Gyproc AKU-line 12.5 mm in two layers.

4.3.2. When installing soundproof suspended ceilings, the elements specified in Tables 5.1-5.6 are used.

4.4. Installation of floating floors

Soundproofing of «floating» floors is performed in the following order:

4.4.1. Using Vibrostek-V300 and AkuFloor-B30 boards under sheet-backing coat from Rigidur floor elements:

– Soundproofing system with prefabricated floor elements Rigidur is arranged by free laying of these floor elements on soundproofing gaskets from one or two layers of Vibrostek-V300 or one layer of boards AkuFlor-B30.

- Installation of the prefabricated soundproofing floor is performed on a previously leveled base, which, after the leveling screed has dried, must be cleaned of construction debris.

- Vibrostek-V300 material is rolled out and cut in accordance with the specified dimensions in such a way as to completely cover the floor area with placing the material on walls or columns to a height slightly larger than the assembled base.

- Soundproofing boards AkuFloor-B30 are laid on the joint overlap in the joint without a gap in accordance with the specified dimensions throughout the floor area. On the perimeter of the room, in order to avoid the contact of the floor elements with the walls and columns, edge pad made of Vibrostek-M material is applied in two layers. Edge liner to vertical surfaces is fixed with Vibrosil sealant.

- Installation of Rigidur floor elements is carried out in accordance with Gyproc technologies.

- Rigidur floor elements are laid on the soundproofing layer and fastened together by means of a groove joint and a 19 mm long screw with a pitch of 150-200 mm.

- Installation of floor elements is recommended to run in rows, from left to right from any corner of the room. The first panel of the first row cuts both combs, and the second panel of the same row has only a comb along the long side. The marked boards are cut using a jigsaw. Boards of each subsequent row are laid with overlapping joints of at least 250 mm.

- To increase the strength of the base of the construction of the prefabricated floor, after the preassembled elements of the floor, after the preliminary priming, 18 mm thick plywood with a gap of 5 mm is glued onto the caoutchouc mastic. The pitch of the screws should be 300x300 mm. In this case, the ends of the plywood must necessarily adjoin all walls and columns also through one or two layers of the elastic pad Vibrostek-V300 or Vibrostek-M.

– After setting the mastic, the protruding edges of the Vibrostek material (type M or V300) are cut with a sharp knife. All seams around the perimeter of the room, as well as between the plywood walls are sealed with vibroacoustic sealant Vibrosil.

4.4.2. 4.4.2. Using AkuFloor-B30 boards and AkuFloor-S20 boards under levelling sand-cement screed:

– Before laying out the boards of the material AkuFlor-B30 and S20, you must thoroughly clean the floor of the construction debris.

– AkuFloor-B30 or S20 acoustic insulation boards are laid to overlap the joint in the joint without a gap in accordance with the specified dimensions in such a way as to completely cover the floor area. When laying two or three layers of AkuFloor material, each subsequent layer is laid perpendicularly to the bottom layer with overlapping joints.

– In order to avoid a rigid contact between the screed and other building structures, it is necessary to wind the edge strip on all the walls along the perimeter of the room or column to a height of 30-40 mm above the floor level. The rim gasket can be made of materials AkuFloor-B30 or AkuFloor-S20 in one layer or from Vibrostek-M material in two layers. Edge liner to vertical surfaces is fixed with the help of Vibrosil sealant.

– Separating layer of reinforced polyethylene film with a thickness of 200 μm is placed on top of the layer of AkuFloor soundproofing boards with the edge edging on all walls and columns. This is necessary to ensure that when the screed is installed, the solution does not fall on the mineral wool board and the edge seal.

– After laying the separating layer of polyethylene, a cement-sand screed made of M-300 sand concrete or 60 mm concrete for AkuFloor-S20 and AkuFloor-B30 and 80 mm for two and three layers of material AkuFloor-S20.

– When assembling the screed, it is necessary to reinforce it with a metal mesh with a cell size of 50 x 50 mm and a rod diameter of 4 mm. The grid should be located in the layer of screed not less than 20 mm from its lower level and not above the middle line of the screed. The mesh is laid with overlapping joints of 100 mm, which are knitted by wire every 200 mm.

– Surface of mortar is leveled using a slat. With a large surface area of the floor, the leveling screed is carried out with areas of up to 30 m2 with the obligatory deformation joints using Vibrostek.

– After the floor arrangement, the polyethylene film, as well as excess edgeband, is cut to the finished floor level. Joints between screed and walls (columns) are filled with Vibrosil sealant.

4.4.3. Using rolled sound-proofing material Shumanet-100 Combi under levelling sand-cement screed:

– – Before rolling out the cloths of the Shumanet-100Combi material, it is necessary to sweep the floor thoroughly in order to prevent the debris from getting between the base and the boards of the material.

– – Shumanet-100Combi is rolled out and cut in accordance with the specified dimensions in such a way as to completely cover the floor area and at the same time ensure the material is placed on walls or columns.

– – Bituminous surface of the material should be facing upward, and the edges should be one on top of the other with an overlap of 30-50 mm. In addition, it is necessary to bring the edges of the material to walls or columns above the level of the screed to be installed to avoid rigid contact between the screed and other building structures. The material, if necessary, is fixed with a bituminous self-adhesive tape or tape to prevent shear during the screed device. The joints between the webs of the material are also glued with a bitumen self-adhesive tape or tape with a width of 50 mm.

– – In the places of doorways, corners, pipe outlets, internal communications and other elements of the arrangement of the premises, it is necessary to provide wrapping (bypass) with the material of Shumanet-100Kombi of these elements. Material Shumanet-100Combi is wound around the protruding element, fixed along the upper edge to the circumference of the element with a bitumen self-adhesive tape or self-adhesive tape, and they also glue a vertical seam.

– – After laying the cushioning material Shumanet-100Combi perform a cement-sand screed with a thickness of 60 mm of sand concrete M-300 or ready-mixed concrete.

– – When assembling the screed, it is necessary to reinforce it with a metal mesh with a cell size of 50 x 50 mm and a 4 mm diameter rod. The grid should be located in the layer of screed not less than 20 mm from its lower level and not above the middle line of the screed. The mesh is laid with overlapping joints of 100 mm, which are knitted by wire every 200 mm.

– – Surface of the mortar is leveled using a slat. With a large surface area of the floor, the leveling screed is carried out with areas up to 30 m2 with the obligatory arrangement of expansion joints.

– – After installation of the screed, the technological tape or adhesive tape, as well as the surplus material of Schumanet-100Combi cut the level of the foot of the floor. Joints between screed and walls (columns) are filled with Vibrosil sealant.

4.4.4. Using Shumoplast levelling mixture:

– Before using the soundproofing leveling compound, make sure that the localfloor irregularities and the debris size do not exceed 10 mm.

– On the walls and columns around the perimeter of the room with a paint brush, a primer layer is applied. Noise-bearing primer of a height slightly higher than the height of the leveling screed.

– Then Shumoplast mixture is applied to the walls and columns to the places treated with soil to an average layer thickness of 20 mm using a polyurethane «derby float».

– After processing the perimeter, Shumoplast mixture is poured onto the overlap and compacted using a polyurethane «float» to an average layer thickness of 20 mm.

– After 48 hours at a temperature of at least 15° C, a mixture of 20 mm thick is completely polymerized, and directly there is a reinforced cement-sand screed made of M-300 sand concrete or 60 mm concrete. To protect the dried applied Shumoplast mixture prior to the installation of the leveling screed in places of high throughput (staircases, entrance groups), it is recommended to use polyethylene film, on top of which then a screed is applied.

– When assembling the screed, it is necessary to reinforce it with a metal mesh with a cell size of 50 x 50 mm and a rod diameter of 4 mm. The grid should be located in the layer of screed not less than 20 mm from its lower level and not above the middle line of the screed. The mesh is laid with overlapping joints of 100 mm, which are knitted by wire every 200 mm.

– Surface of the mortar is leveled using a slat. With a large floor area, the leveling screed is carried out with areas of up to 30 m2 with the obligatory arrangement of expansion joints. In the places of the device of expansion joints, in order to eliminate rigid bonds, roll material Shumanet-100Combi.

– 4.4.5. Using bearings of Sylomer elastomer and AkuLite boards under levelling sand-cement screed:

– Design of the soundproof floor is carried out on bearing elements made of Sylomer material. Supports 120 x 120 mm in size from Sylomer SR55 material 2 x 25 mm thick and 9 mm thick plywood are glued together with glue for polyurethane. The total thickness of the support element is 59 mm.

– Before the design of the soundproofing floor construction, it is necessary to level and thoroughly sweep the floor of the construction debris.

– In order to avoid rigid contact of the floor construction with other constructions of the building, it is necessary to make a Vibrostek-M edge banding in all the walls along the perimeter of the room and the column in 2 layers to a height of 30-50 mm above the floor level of the floor. The gasket is glued to the surface of the walls and columns using a Vibrosil sealant.

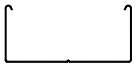
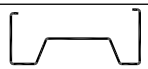
– Bearing of elastomer Sylomer SR55 are placed on the overlap in increments of 500 x 500 mm. Mineral slab AkuLite 50 mm thick is laid between the supports. To do this, the slabs cut out «windows» in the size of 150 x 150 mm.
– Plywood joints of 9 mm thick are laid on the butt joints in the joint. Above them, overlapping joints, a second layer of plywood 9 mm is mounted. On the plywood sheets, a separating layer of reinforced polyethylene film with a thickness of 200 μm is laid, and edges are applied to all walls and columns. This is necessary so that when the screed is installed, the solution does not get between the plywood walls inside the structure, as well as the edge gasket.
– After laying the separating layer of polyethylene, a cement-sand screed made of M-300 sand concrete or 80 mm concrete should be made.
– When assembling the screed, it is necessary to reinforce it with a metal mesh with a cell size of 50 x 50 mm and 4 mm diameter rod. The grid should be located in the layer of screed not less than 20 mm from its lower level and not above the middle line of the screed. The mesh is laid with overlapping joints of 100 mm, which are knitted by wire every 200 mm.
– Surface of the mortar is leveled using a slat. With a large surface area of the floor, the leveling screed is carried out with areas up to 100 m2 with the obligatory arrangement of expansion joints and the use of Vibrostek.
– After the floor installation, the polyethylene film, as well as excess edgebanding, is cut to the finished floor level. Joints between screed and walls (columns) are filled with Vibrosil sealant.

4.4.6. When installing sound-insulating floating floors, the materials and elements specified in Tables 5.3 to 5.7 are used.

5. Components of soundproofing structures

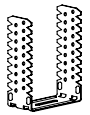
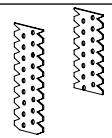
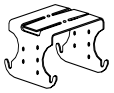
5.1. Frames of soundproofing structures are made of galvanized metal profiles produced by Gyproc (table 5.1):

Table 5.1. Nomenclature of metal profiles

No.	Name	Section	Grade	Length, m	Application
1.	Channel **Ultrasteel**		50/37	3,0 4,0	U channels of the framework of partition walls and wall lining
2.			100/37		
3.	Stud **Ultrasteel**		50/40		Racks of the frame of partition walls and wall lining
4.			100/40		
5.	Ceiling channel **Ultrasteel**		28/27		Frame of false ceiling and wall lining
6.	Ceiling profile **Ultrasteel**		60/27		Framework of suspended ceilings and wall lining
7.	AcouStud **Ultrasteel**		100/44		Racks of partition walls

5.2. For mounting and installation of soundproofing structures, the following product nomenclature is used (Table 5.2):

Table 5.2. Nomenclature of products for fastening and installation of frame structures

No.	Name	Type	Application
1.	Bracket		Fastening of ceiling profiles 60/27
2.	Bracket, cutted in two parts		Fastening of ceiling profiles
3.	Connector clip		Connection of ceiling profiles 60/27 at two levels

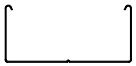
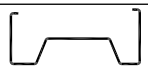
– Bearing of elastomer Sylomer SR55 are placed on the overlap in increments of 500 x 500 mm. Mineral slab AkuLite 50 mm thick is laid between the supports. To do this, the slabs cut out «windows» in the size of 150 x 150 mm.
– Plywood joints of 9 mm thick are laid on the butt joints in the joint. Above them, overlapping joints, a second layer of plywood 9 mm is mounted. On the plywood sheets, a separating layer of reinforced polyethylene film with a thickness of 200 μm is laid, and edges are applied to all walls and columns. This is necessary so that when the screed is installed, the solution does not get between the plywood walls inside the structure, as well as the edge gasket.
– After laying the separating layer of polyethylene, a cement-sand screed made of M-300 sand concrete or 80 mm concrete should be made.
– When assembling the screed, it is necessary to reinforce it with a metal mesh with a cell size of 50 x 50 mm and 4 mm diameter rod. The grid should be located in the layer of screed not less than 20 mm from its lower level and not above the middle line of the screed. The mesh is laid with overlapping joints of 100 mm, which are knitted by wire every 200 mm.
– Surface of the mortar is leveled using a slat. With a large surface area of the floor, the leveling screed is carried out with areas up to 100 m2 with the obligatory arrangement of expansion joints and the use of Vibrostek.
– After the floor installation, the polyethylene film, as well as excess edgebanding, is cut to the finished floor level. Joints between screed and walls (columns) are filled with Vibrosil sealant.

4.4.6. When installing sound-insulating floating floors, the materials and elements specified in Tables 5.3 to 5.7 are used.

5. Components of soundproofing structures

5.1. Frames of soundproofing structures are made of galvanized metal profiles produced by Gyproc (table 5.1):

Table 5.1. Nomenclature of metal profiles

No.	Name	Section	Grade	Length, m	Application
1.	Channel **Ultrasteel**		50/37	3,0 4,0	U channels of the framework of partition walls and wall lining
2.			100/37		
3.	Stud **Ultrasteel**		50/40		Racks of the frame of partition walls and wall lining
4.			100/40		
5.	Ceiling channel **Ultrasteel**		28/27		Frame of false ceiling and wall lining
6.	Ceiling profile **Ultrasteel**		60/27		Framework of suspended ceilings and wall lining
7.	AcouStud **Ultrasteel**		100/44		Racks of partition walls

5.2. For mounting and installation of soundproofing structures, the following product nomenclature is used (Table 5.2):

Table 5.2. Nomenclature of products for fastening and installation of frame structures

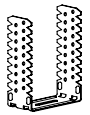
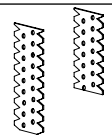
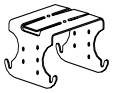
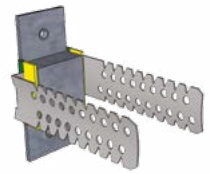
No.	Name	Type	Application
1.	Bracket		Fastening of ceiling profiles 60/27
2.	Bracket, cutted in two parts		Fastening of ceiling profiles
3.	Connector clip		Connection of ceiling profiles 60/27 at two levels

Table 5.2. CONTINUED. Nomenclature of products for fastening and installation of frame structures

Name	Type	Application
Vibroflex-Connect PP Acoustic hanger with two mounting holes Ø 8 mm		For vibration isolation of frames of suspended ceilings
Vibroflex-Connect PS Acoustic wall tie with two mounting holes Ø 8 mm		For vibration isolation of frames of wall lining

5.3. Filling of frames of sound-insulating structures of walls, linings and suspended ceilings is made by sound-absorbing boards (table 5.3, item 1); Soundproofing boards and roll materials are used for the installation of floating floors (Table 5.3, paragraphs 2-6):

Table 5.3. Nomenclature of sound-absorbing and sound-proof materials

No.	Name	Size, m length x width x thickness	Qty in package, pcs./m^2	Package volume, m^3
1.	**AkuLite** acoustic wool slab	1,0 x 0,6 x 0,05	8/4,8	0,24
2.	**AkuFloor-B30** acoustic wool slab for floor	1,0 x 0,6 x 0,03	8/48	0,12
3.	**AkuFloor-S20** acoustic wool slab for floor	1,2 x 0,6 x 0,02	10/7,2	0,144
4.	Acoustic underlay **Shumanet-100Combi**	1,0 x 15,0 x 0,005	/15	-
5.	Acoustic underlay **Vibrostec-V300**	1,0 x 0,004	roll/450	-
6.	Soundproofing leveling coating **Shumoplast**	Basic thickness layer 20 mm	/10	0,2

5.4. Abutting of the end parts of the soundproofing structures to the surrounding surfaces (floor, walls, ceiling slabs, facing from gypsum boards) is made through a vibration isolating pad Vibrostek-M with the subsequent filling of the seam with the Vibrosil sealing compound. For the device of soundproof floors according to scheme AFA 223 the polyurethane elastomer Sylomer is applied (table 5.4):

Table 5.4. Nomenclature of vibration isolating gaskets, supports and sealing compounds

No.	Name	Size, m	Cartridge volume, ml	Qty per package, pcs.
1.	**Vibrostek-M 100** (Vibration isolating tipe)	30 x 0,1 x 0,004	–	1
2.	**Vibrostek-M 150** (Vibration isolating tipe)	30 x 0,15 x 0,004	–	1
3.	**Vibrosil** (one-component silicone sealant)	-	300	25
4.	**Sylomer SR55** (Polyurethane elastomer)	5 x 1,5 x 0,025	-	1

5.5. Lining of frames of soundproof partition walls is made of soundproof gypsum plasterboard sheets Gyproc AKU-Line 12.5 mm thick in two or three layers. In the case of special requirements for fire safety, the partition walls or lining is additionally lined with a layer of non-combustible Glasroc F sheets 6 mm thick. For the assembly of prefabricated floors, non-combustible floor elements of Rigidur with a thickness of 25 mm are used (Table 5.5):

Table 5.5. Nominal sizes of gypsum-fiber and gypsum boards used in soundproof structures

No.	Name	Size, m	Application
1.	Acoustic plasterboard **Gyproc AKU-Line**	2,5 x 1,2 x 0,0125 3,0 x 1,2 x 0,0125	Sound-proof partition walls, lining, suspended ceilings
2.	Non-combustible board **Glasroc F**	2,4 x 1,2 x 0,006	Non-combustible lining layer in soundproof partition walls, lining, suspended ceilings
3.	**Rigidur** Flooring Elements	1,5 x 0,5 x 0,025	Prefabricated structures of soundproof floors

5.6. For installation of soundproofing structures, the following nomenclature of self-tapping screws, anchor dowel-nails (table 5.6a) and plastic dowels (table 5.6b):

Table 5.6a. Nomenclature of self-tapping screws and anchor dowels-nails for installation of soundproof structures

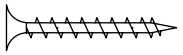
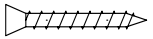
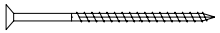
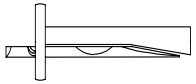
No.	Name	Type	Diameter/ length, mm	Application
1.	Bolt screw TN		3/25; 3/35; 3/40; 3/55	Fastening of gypsum plasterboard sheets
2.	Bolt screw MN		3,9/19	Fastening of floor elements
3.	Bolt screw LN		3/11	Connection of metal parts to each other
4.	Bolt screw multipurpose		5/60; 6/60; 6/80;	Fastening of door boxes, vibration-proof fasteners **Vibroflex-Connect PS**
5.	Wedge bolt		6/40	Mounting of vibration isolation fasteners **Vibroflex-Connect PP** to slabs

Table 5.66. Nomenclature of plastic dowels and dowels-nails for installation of soundproof structures

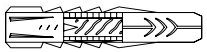
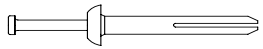
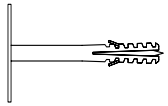
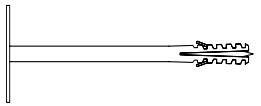
No.	Purpose	Type of screw plug	View
1.	For installation of vibration isolation fastenings **Vibroflex-Connect PS** to the walls of brick and reinforced concrete	Universal dowel Fisher UX 8/50 for universal screw 5/60	
2.	For installation of vibration isolation fastenings **Vibroflex-Connect PS** to the walls of foam concrete	Fisher GB 8/50 foam dowel for universal 5/60 screw	

Table 5.66. CONTINUED. Nomenclature of plastic dowels and dowels-nails for installation of soundproof structures

No.	Purpose	Type of screw plug	View
3.	For fixing PN profiles	Dowel-nail (plastic-metal) 6/40	
4.	For fixing two layers (2x50 mm) of sound absorbing boards AkuLite to floor slabs	Dowel-nail polypropylene 8/150	
5.	For fixing three layers (3x50 mm) of sound absorbing boards AkuLite to floor slabs	Dowel-nail polypropylene 10/200	

5.7. When constructing floating floors, the following nomenclature of general construction materials is used (Table 5.7):

Table 5.7. Nomenclature of building materials for mounting of soundproof floating floors

No.	Material	Application
1.	Cement-sand mixture M-300	Arrangement of leveling screed
2.	Polyethylene reinforced film with thickness of 200 microns	Separation layer between soundproofing material and screed
3.	Masonry grid 50x50 mm, Ø 4 mm	Reinforcing layer in the construction of leveling screed
4.	Plywood sanded 1525x1525x9 mm	Formwork and laying in the construction of floors AFA, AFB 224
5.	Plywood polished 1525x1525x18 mm	Reinforcing layer in the construction of prefabricated floors
6.	Mastic rubber	For gluing plywood to each other and in the construction of prefabricated floors

6. Tables of material consumption for soundproofing structures

Rates of consumption of specialized and general building materials for the construction of soundproof structures are given in Tables 6.1 to 6.5.

For the construction of partition walls and lining, the norms are given from the calculation of the dimensions of the partition walls (lining) H = 2.75 m; L = 4.00 m; S = 11 m2. The calculated step of the frame racks is 600 mm. For suspended ceilings and soundproof floors, the consumption rates are based on the size of the room 10 x 10 = 100 m2.

For partition walls, linings, suspended ceilings and floors, the norms for the consumption of materials are given without taking into account the openings, complex geometry of the room and losses for cutting and trimming.

Table 6.1. Consumption of materials per square metre of sound-proofing partition walls at single frame

Name / Type of structure		AW 11.14	AW 11.15	AW 11.16	AW 11.15NC	AW 12.14	AW 12.24	AW 12.25	AW 12.26	AW 12.25NC
	UoM	Thickness of partition walls, mm								
		100	113	125	106	150	150	163	175	156
Frame and fastening										
Gyproc Ultrasteel **Chanel 50/37**	Run. m	0,7	0,7	0,7	0,7	-	-	-	-	-
Gyproc Ultrasteel **Chanel 100/37**		-	-	-	-	0,7	0,7	0,7	0,7	0,7
Gyproc Ultrasteel **Stud 50/40**		2,2	2,2	2,2	2,2	-	-	-	-	-
Gyproc Ultrasteel **Stud 100/50**		-	-	-	-	2,2	2,2	2,2	2,2	2,2
Vibrostek-M100 gasket	Run. m	2,5	-	-	-			5,0	5,0	5,0
Vibrostek-M150 gasket		-	2,5	2,5	2,5	2,5	2,5	-	-	-
Dowel-nail **6x40 mm**	pcs.	1,6								
AkuLite sound absorbing board, thickness 50 mm	m^2	1,0	1,0	1,0	1,0	1,0	2,0	2,0	2,0	2,0
Lining										
Sheet **Gyproc AKU-line** 12,5 mm	m^2	4,0	5,0	6,0	4,0	4,0	4,0	5,0	6,0	4,0
Non-combustible sheet **Glasroc F** 6	m^2	-	-	-	1,0	-	-	-	-	1,0
Screws **TN 25**	pcs.	12								
Screws **TN 35**	pcs.	30	21	12	21	30	30	21	12	21
Screws **TN 55**	pcs.	-	15	30	-	-	-	15	30	-
Screws **TN 40**	pcs.	-	-	-	15	-	-	-	-	15
Sealing of joints and fixing of Vibrostek-M gasket										
Vibrosil sealant (tube 300 ml)	pcs.	1,2						1,6		

Table 6.2. Consumption of materials per square metre of sound-proofing partition walls at double individual frame

Name / Type of structure		AW 21.24	AW 21.25	AW 21.26	AW 21.25 NC	AW 23.34	AW 23.35	AW 23.36	AW 2 3.35 NC	AW 22.44 AW 32.44	AW 22.45	AW 22.46 AW 32.46 AW 42.46	AW 22.45 NC AW 32.47 NC
	UoM	Thickness, mm											
		160	173	185	166	210	223	235	216	260/ 280	273	285/ 305/525	266/311
Frame and fastening													
Gyproc Ultrasteel **Chanel 50/37**	Run. m	1,4	1,4	1,4	1,4	0,7	0,7	0,7	0,7	-	-	-	-
Gyproc Ultrasteel **Chanel 100/37**		-	-	-	-	0,7	0,7	0,7	0,7	1,4	1,4	1,4	1,4
Gyproc Ultrasteel **Stud 50/40**		4,4	4,4	4,4	4,4	2,2	2,2	2,2	2,2	-	-	-	-
Gyproc Ultrasteel **Stud 100/50**		-	-	-	-	2,2	2,2	2,2	2,2	4,4	4,4	4,4	4,4
Vibrostek-M100 gasket	Run. m	5,0	5,0	5,0	5,0	-	-	-	-	-	-	-	-
Vibrostek-M150 gasket		-	-	-	-	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0
Dowel-nail **6x40 mm**	pcs.	3,2											
AkuLite sound absorbing board, thickness 50 mm	m^2	2,0	2,0	2,0	2,0	3,0	3,0	3,0	3,0	4,0	4,0	4,0	4,0
Casing													
Gyproc AKU-line 12,5 sheet	m^2	4,0	5,0	6,0	4,0	4,0	5,0	6,0	4,0	4,0	5,0	6,0	4,0/6,0
Glasroc F non-combustible sheet, 6 mm	m^2	-	-	-	1,0	-	-	-	1,0	-	-	-	1,0
Screws **TN 25**	pcs.	12											
Screws **TN 35**	pcs.	30	21	12	21	30	21	12	21	30	21	12	12
Screws **TN 40**	pcs.	-	-	-	15	-	-	-	15	-	-	-	-
Screws **TN 60**	pcs.	-	15	30	-	-	15	30	-	-	15	30	30/36
Sealing of joints and fixing of Vibrostek-M gasket													
Vibrosil sealant (tube 300 ml)	pcs.	1,6											

Table 6.3. Consumption of materials per square metre of sound-proofing partition walls at double individual frame

Name / Type of structure		**ALA 11.12 ALB 11.12 ALC 11.12**	**ALA 11.13 ALB 11.13 ALC 11.13**	**ALA 11.13NC ALB 11.13NC ALC 11.13NC**	**ALA 54.12 ALB 54.12 ALC 54.12**	**ALA 54.13 ALB 54.13 ALC 54.13**	**ALA 54.13NC ALB 54.13NC ALC 54.13NC**	**ALA 72.22 ALB 72.22 ALC 72.22**	**ALA 72.23 ALB 72.23 ALC 72.23**	**ALA 72.23NC ALB 72.23NC ALC 72.23NC**
	UoM	**Thickness, mm**								
		85	**98**	**91**	**85**	**98**	**91**	**135**	**148**	**141**
Frame and fastening										
Gyproc Ultrasteel **Chanel 50/37**	Run. m	0,7	0,7	0,7	-	-	-	-	-	-
Gyproc Ultrasteel **Chanel 100/37**		-	-	-	-	-	-	0,7	0,7	0,7
Gyproc Ultra **Chanel 28/27**		-	-	-	0,7	0,7	0,7	-	-	-
Gyproc Ultrasteel **Stud 50/40**		2,2	2,2	2,2	-	-	-	-	-	-
Gyproc Ultrasteel **Stud 100/50**		-	-	-	-	-	-	2,2	2,2	4,4
Gyproc Ultra **Profile 60/27**		-	-	-	2,2	2,2	2,2	-	-	-
Vibroflex-Connect PS soundproofing wall fastening	pcs.	-	-	-	2,2	2,2	2,2	-	-	-
Vibrostek-M 100 gasket	Run. m	2,5	2,5	2,5	2,5	2,5	2,5			
Vibrostek-M 150 gasket								2,5	2,5	2,5
Dowel-nail **6x40 mm**	pcs.	1,6			-			1,6		
AkuLite sound absorbing board, thickness 50 mm	m^2	1,0	1,0	1,0	1,0	1,0	1,0	2,0	2,0	2,0
Casing										
Gyproc **AKU-line** sheet, 12,5 mm	m^2	2,0	3,0	2,0	2,0	3,0	2,0	2,0	3,0	2,0
Glasroc F non-combustible sheet, 6 mm	m^2	-	-	1,0	-	-	1,0	-	-	1,0
Screws **TN 25**	pcs.	6								
Screws **TN 35**	pcs.	15	6	6	15	6	6	15	6	6
Screws **TN 40**	pcs.	-	-	15	-	-	15	-	-	15
Screws **TN 60**	pcs.	-	15	-	-	15	-	-	15	-
Sealing of joints and fixing of Vibrostek-M gasket										
Vibrosil sealant (tube 300 ml)	pcs.	0,8								

Table 6.4. Consumption of materials per square metre of sound-proofing floating floor

Name / Type of structure		AFA 111 AFB 111	AFA 112 AFB 112	AFA 121 AFB 121	AFA 211 AFB 211	AFA 221 AFB 221	AFA 222 AFB 222	AFA 223 AFB 223	AFA 224 AFB 224	AFA 225 AFB 225	AFA 226 AFB 226	AFA 227 AFB 227
	UoM	Thickness, mm										
		29	33	55	65	80	90	120	157	110	125	80
Floor components												
Rigidur floor components, 25 mm	pcs.	1,3	1,3	1,3	-	-	-	-	-	-	-	-
Sandcrete M-300 (bag 50 kg)	pcs.	-	-	-	2,3	2,3	2,3	2,3	3,1	3,1	3,1	2,3
Coil mesh (cell 50x50 mm), diameter 4 mm (map 0,5x2 m)	m^2	-	-	-	1,1							
Polyethylene film (for strain covering)	m^2	-	-	-	1,1							
Reinforced film (separating layer)	m^2	-	-	-	1,1							
Laminated glass fiber canvas **Vibrostek-V300**	m^2	1,0	2,0	-	-	-	-	-	-	-	-	-
AkuFloor-B30, mineral board	m^2	-	-	1,0	-	-	1,0	2,0	-	-	-	-
AkuFloor-S20, mineral board	m^2	-	-	-	-	-	-	-	-	2,0	3,0	1,0
Shumanet-100Combi soundproofing material	m^2	-	-	-	1,0	Perimeter	-	-	-	-	-	-
Shumoplast, levelling coating, thickness 20 mm	m^2	-	-	-	-	0,021	-	-	-	-	-	-
Shumoplast-soil*	Kg/ run.m	-	-	-	-	0,05	-	-	-	-	-	-
Sylomer SR55, elastomer	m^2	-	-	-	-	-	-	-	0,14	-	-	-
Plywood sheet, thickness 9 mm		-	-	-	-	-	-	-	2,07	-	-	-
AkuLite sound absorbing board, thickness 50 mm	m^2	-	-	-	-	-	-	-	1,0	-	-	-
Vibrostek-M100, gasket	Run. m	Perimeter x 2				-	Perimeter x 2					Perimeter x 2
Vibrostek-M150, gasket	Run. m							Perimeter x 2				
Sealing of joints and fixing of Vibrostek-M gasket												
Vibrosil sealant (tube 300 ml)	pcs.	0,35										

* when applying on wall with height 100 mm.

Table 6.5. Consumption of materials per square metre of sound-proofing suspended ceiling

Name / Type of structure		AC 64.12	AC 64.22	AC 64.32
	UoM	Thickness of suspended floor, mm		
		115	175	225
Frame and fastening				
Gyproc Ultra **Chanel 28/27**	Run. m	Perimeter		
Gyproc Ultra **Profile 60/27**		3,9		
Two-level connector for profiles **PP 60/27**	pcs.	3,1		
Profiles extender **PP 60/27**	pcs.	1,0		
Vibro insulating ceiling lifting bar **Vibroflex-Connect PP**	pcs.	2,8		
Vibrostek-M 100 gasket	Run. m	Perimeter x 2		
Wedge bolt	pcs.	5,6		
Straight lifting bar	pcs.	-	-	2,8
Gyproc Ultra **Profile 60/27** (for extension of straight lifting bars)	pcs.	-	-	0,6
AkuLite, sound absorbing plate thickness 50 mm	m^2	1,0	2,0	3,0
Facing				
Gyproc AKU-line, sheet, 12,5 mm	m^2	2,0		
Screws **TN 25**	pcs.	6		
Screws TN 25 **TN 35**	pcs.	15		
Sealing of joints and fixing of Vibrostek-M gasket				
Vibrosil sealant (tube 300 ml)	pcs.	0,35		

Table 6.6. Consumption of materials per square metre of sound-proofing partition walls using profile Gyproc Ultra AKY-MC

Name / Type of structure		AW 15.24	AW 15.25	AW 15.26	AW 15.25NC	AW 25.44	AW 25.45	AW 25.46	AW 25.45NC	AW 35.44 AW 45.44	AW 35.46 AW 45.46	AW 45.48
	UoM	Thickness of partition walls, mm										
		150	163	175	156	260	273	285	266	280/540	305/565	590
Frame and fastening												
Gyproc Ultrasteel **Chanel 100/37**	Run. m	0,7	0,7	0,7	0,7	1,4	1,4	1,4	1,4	1,4	1,4	1,4
AcouStud **Ultrasteel 100/44**		2,2	2,2	2,2	2,2	4,4	4,4	4,4	4,4	4,4	4,4	4,4
Vibrostek-M100 gasket		-	5,0	5,0	5,0	-	-	-	-	-	-	-
Vibrostek-M100 gasket		2,5	-	-	-	5,0	5,0	5,0	5,0	5,0	5,0	5,0
Dowel-nail **6x40 mm**	pcs.	1,6					3,2					
AkuLite sound absorbing plate, thickness 50 mm	m^2	2,0	2,0	2,0	2,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
Casing												
Gyproc **AKU-line**, sheet 12,5 mm	m^2	4,0	5,0	6,0	4,0	4,2	5,2	6,2	5,2	4,6	6,6	8,6
Glasroc non-combustible sheet F 6 mm	m^2	-	-	-	1	-	-	-	1	-	-	-
Screws **TN 25**	m^2	12										
Screws **TN 35**	m^2	30	21	12	21	30	21	12	21	30	12	12
Screws **TN 40**	pcs.	-	-	-	15	-	-	-	15	-	-	-
Screws **TN 60**	pcs.	-	15	30	-	-	15	30		-	30	42
Sealing of joints and fixing of Vibrostek-M gasket												
Vibrosil sealant **(tube 300 ml)**	pcs.	1,2	1,6									

7. Explanation of designations of sound-proofing partition walls, casing, Gyproc suspended ceilings and floors

7.1. Partition walls, casing and suspended ceiling

Designation: ABC DE.FG HT

ABC – alphabet designation of structure consisting of two/three Latin letters:
AW (Acoustic Wall) – sound-proofing partition walls
ALA, ALB, ALC (Acoustics Liner) - sound-proof lining on a reinforced concrete wall (A), on a brick wall (B), on a wall of foam blocks (C)
AC (Acoustic Celling) - soundproof suspended ceilings

D — type of structure:
1 - one-frame partition walls / lining on a common base
2 - two-frame partition walls on a common base
3 - two-frame partition walls on separate isolated bases
4 - spaced two-frame partition walls on separate isolated bases
5 - lining on vibration isolation fasteners
6 - suspended ceiling on vibration isolation mountings
7 - independent lining on sound proofing or sound insulationon the profile 100 mm

E — type of metal frame:
1 - frame of profiles 50 mm
2 - frame of profiles 100 mm
3 - frame of two profiles: 50 + 100 mm
4 - frame of profiles 60/27 mm
5 - frame of profiles Gyproc Ultra AKU-PS 100 mm

F – number of sound-proofing material layers
AkuLite, thickness - 50 mm.

G – general number of casing sheets, material Gyproc AKU-line 12,5 mm*

***NC –** these letters at the end of the code mean that one of the outer layers of the partition walls or lining on one side is made of non-combustible material Glasroc F 6 mm. In this case, the non-combustible layer enters the total number of strips of the skin (indicated by the number in the «G» position).

Example 1. Construction with code AW 25.44 is a two-frame sound-proof partition walls on a common base made of profiles Gyproc Ultra AKU-PS 100 mm, filled with 4 layers of boards AKULITE and lined with 4 sheets of Gyproc Aku-line 12,5 mm.

Example 2. Construction with code AW 32.47NC is a two-frame sound-insulating partition walls on separate sound-proof bases of profiles 100 mm, filled with 4 layers of ACCULITE boards and trimmed with 6 Gyproc Aku-line 12.5 mm sheets and one Glasroc F 6 mm sheet on the one hand.

Example 3. Construction with code ALA 54.12 is the lining of a reinforced concrete wall on vibration-resistant fasteners, made of metal profiles 60/27, filled with 1 layer

7.2. Soundproofing floors

Designation: ABC DEF
ABC — alphabet designation of floor structure consisting of three Latin letters:
AFA (Acoustics Floor on plate type A) - construction of a soundproof floor, arranged on a monolithic reinforced concrete slab of a thickness from 200 to 250 mm
AFB (Acoustic Floor on plate type B) - construction of a soundproof floor, constructed on a hollow-concrete reinforced concrete slab of thickness from 140 to 180 mm

D — type of levelling strain:
1 - Prefabricated floor base from sheets Rigidur 25 mm
2 - leveling screed of mixture of grade M300 with a thickness of 60 m**m**

E — purpose of floor structure:
1 - impact noise sound insulation
2 - impact noise and air-born noise insulation

F — sequence number of soundproofing material in floor structure:
For floor structures AFA, AFB 11...
1 - multilayered fiberglass Vibrostek-V300, one layer 4 mm
2 - multilayered fiberglass Vibrostek-V300, two layers 8 mm

For structures AFA, AFB 12...
1 - Mineral board AkuFloor-B30 30 mm

For structures AFA, AFB 21...
1 - material Shumanet-100Combi 5 mm

For structures AFA, AFB 22...

1 - leveling cover Shumoplast 20 mm
2 - mineral board AkuFloor-B30 30 mm
3 - mineral board AkuFloor-B30, two layers 60 mm
4 - bearings from Sylomer elastomer / boards AkuLite
5 - glass-fiber plate AkuFloor-S20, two layers 40 mm
6 - glass-fiber plate AkuFloor-S20, three layers 80 mm
7 - glass-fiber plate AkuFloor-S20, one layer 20 mm

Example 4. Construction with code AFA 211 is a soundproofing floor system on a monolithic reinforced concrete slab of thickness from 200 to 250 mm, using a screed made of a mixture of M300 grade 60mm thick, designed to isolate impact noise. Type of soundproof material - Shumanet-100Combi 5 mm.

Example 5. Construction with code AFB 121 is a soundproofing floor system on a hollow-concrete reinforced concrete slab of thickness from 140 to 180 mm, using a prefabricated floor base made of Rigidur 25 mm sheet, designed for insulation of impact and air noise. Type of soundproof material - mineral plate AkuFloor-B30 30 mm.

Example 6. Construction with code AFB 225 is a system of soundproofing flooring on a non-empty reinforced concrete slab of thickness from 140 to 180 mm, using a screed made of a mixture of M300 grade 60 mm thick, intended for insulation of impact and air noise. Type of soundproof material - fiberglass plate AkuFlor-S20, two layers 40 mm.

Table L1.01. Insulation indexes for airborne sound insulation of Gyproc framed partition walls

No	Frame**	Total thickness of the frame, mm	Number of layers of **AkuLite** material 50 mm	**Index of airborne sound insulation by the design of the partition walls, dB,** and structure code			
				Number of layers of casing material **Gyproc AKU-Line, 12.5 mm,** and incombustible plate **Glasroc 6 mm (NC)**			
				2 + 2	**2 + 3**	**3 + 3**	**2 + 2 + 1NC**
1.	Single frame on the profile Gyproc Ultra **50 mm**	50	1	**49** AW 11.14 sheet 1.02	**53** AW 11.15 sheet 1.03	**56** AW 11.16 sheet 1.04	**53** AW 11.15NC sheet 1.05
2.	Single frame on the profile Gyproc Ultra **100 mm**	100	1	**53** AW 12.14 sheet 1.06	-		
			2	**54** AW 12.24 sheet 1.07	**56** AW 12.25 sheet 1.08	**59** AW 12.26 sheet 1.09	**58** AW 12.25NC sheet 1.10
3.	Double frame on the profile Gyproc Ultra **50 + 50 mm**	110	2	**62** AW 21.24 sheet 1.11	**64** AW 21.25 sheet 1.12	**65** AW 21.26 sheet 1.13	**63** AW 21.25NC sheet 1.14
4.	Double frame on the profile Gyproc Ultra **50 + 100 mm**	160	3	**64** AW 23.34 sheet 1.15	**66** AW 23.35 sheet 1.16	**67** AW 23.36 sheet 1.17	**65** AW 23.35NC sheet 1.18
5.	Double frame on the profile Gyproc Ultra **100 + 100 mm**	210	4	**65** AW 22.44 sheet 1.19	**66** AW 22.45 sheet 1.20	**67** AW 22.46 sheet 1.21	**66** AW 22.45NC sheet 1.22
6.	Double frame on the profile Gyproc Ultra **100 + 100 mm on separate** soundproof floors and ceilings	230	4	**67** AW 32.44 sheet 1.23	-	**68** AW 32.46 sheet 1.24	**68*** AW 32.47NC sheet 1.25
7.	Double **spaced frame** on the profile Gyproc Ultra **100 + 100** mm **on separate** soundproof floors and ceilings	450	4	-	-	**70** AW 42.46 sheet 1.26	-

* - lining with casing code: 3+3 Gyproc AKU-Line 12,5 mm+1NC Glasroc 6 mm.

**** - Limit heights of structures of soundproof partition walls are indicated on sheets 1.02 - 1.40.**

Table L1.01. CONTINUED. Insulation indexes for airborne sound insulation of Gyproc framed partition walls

No.	Frame**	Total thickness of the frame, mm	Number of layers of **AkuLite** material 50 mm	**Index of airborne sound insulation by the design of the partition walls, dB,** and structure code			
				Number of layers of **Gyproc AKU-Line** casing material, 12.5 mm, and **Glasroc** non-combustible board, **6 mm (NC)**			
				2 + 2	**2 + 3**	**3 + 3**	**2 + 2 + 1NC**
8.	Single frame on Gyproc Ultra **AKU-PS profile, 100 mm**	100	2	**56** AW 15.24 sheet 1.27	**58** AW 15.25 sheet 1.28	**60** AW 15.26 sheet 1.29	**58** AW 15.25NC sheet 1.30
9.	Double frame on Gypros Ultra **AKU-PS 100 + 100 mm** profile on a general basis	210	4	**65** AW 25.44 sheet 1.31	**66** AW 25.45 sheet 1.32	**67** AW 25.46 sheet 1.33	**66** AW 25.45NC sheet 1.34
10.	Double frame on Gypros Ultra **AKU-PS 100 + 100** mm profile on separate soundproof floors and ceilings	230	4	**67** AW 35.44 sheet 1.35	**68** AW 35.45 sheet 1.36	**69** AW 35.46 sheet 1.37	-
11.	Double **spaced** frame on Gypros Ultra **AKU-PS 100 + 100 mm** profile on **separate** soundproof floors and ceilings	490	4	**70** AW 45.44 sheet 1.38	-	**71** AW 45.46 sheet 1.39	**72*** ** AW 45.48 sheet 1.40

**** - Limit heights of structures of soundproof partition walls are indicated on sheets 1.02 - 1.40.**

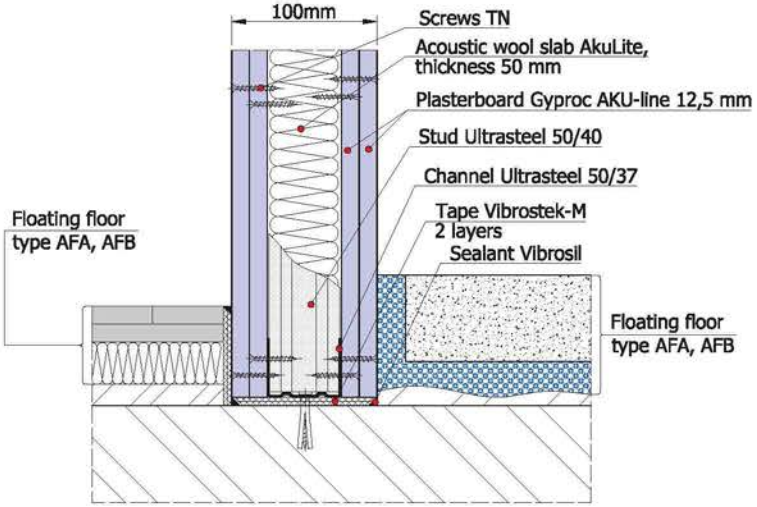
*** - lining with casing code: 4+4 Gyproc AKU-Line 12,5 mm

Results of measurements given in Table **L1.01** were performed by the Acoustics Laboratory of NNGASU (Nizhny Novgorod) under laboratory conditions in the absence of indirect noise transmission paths.

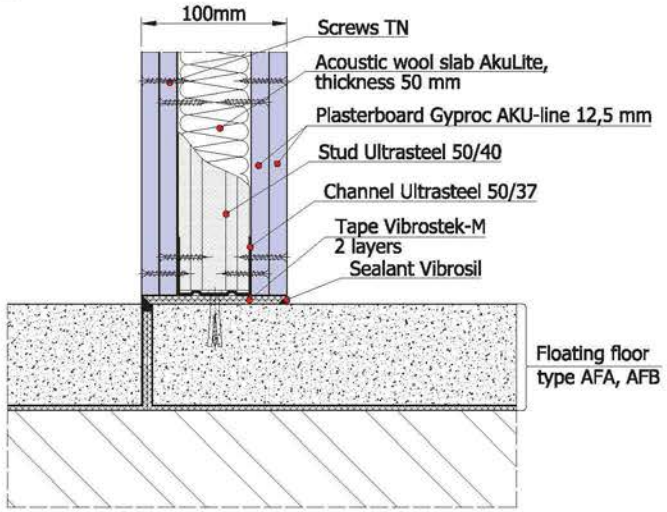
Design of 100 mm sound-insulating partition, type AW 11.14 | Rw = 49dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=4 m**
- **1 m^2 mass of partition m=52 kg**

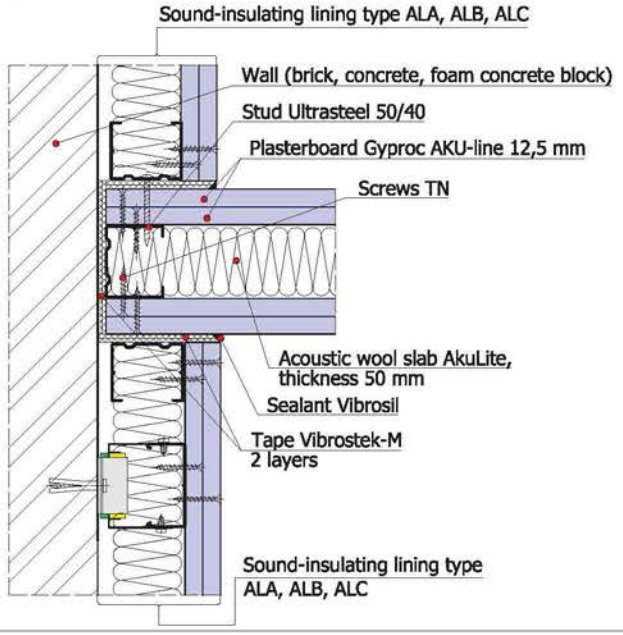
1.02.1 Junction of floating floor to partition



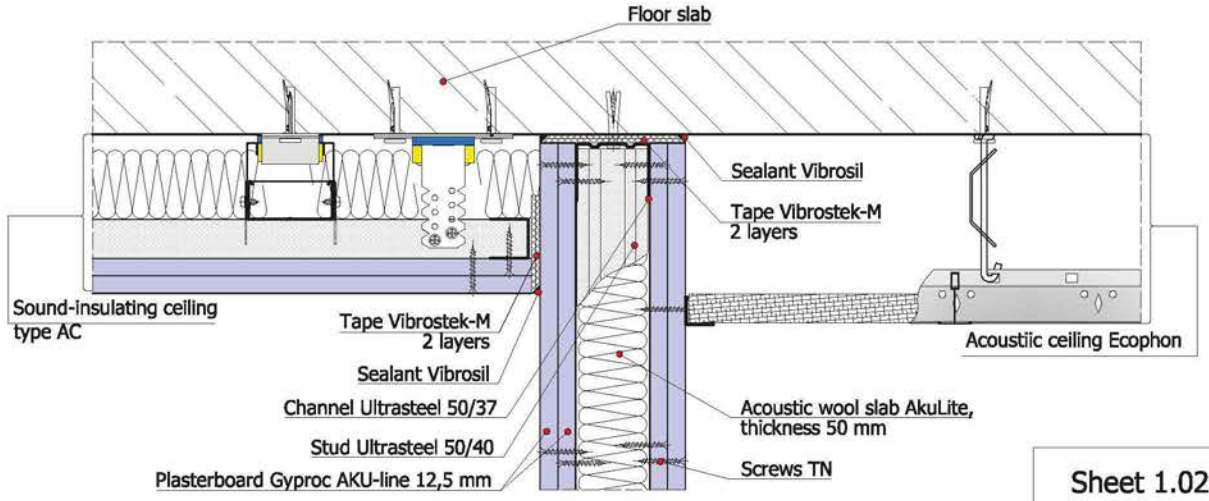
1.02.2 Junction of partition to floating floor



1.02.3 Junction of wall lining to partition



1.02.4 Junction of suspended ceiling to partition

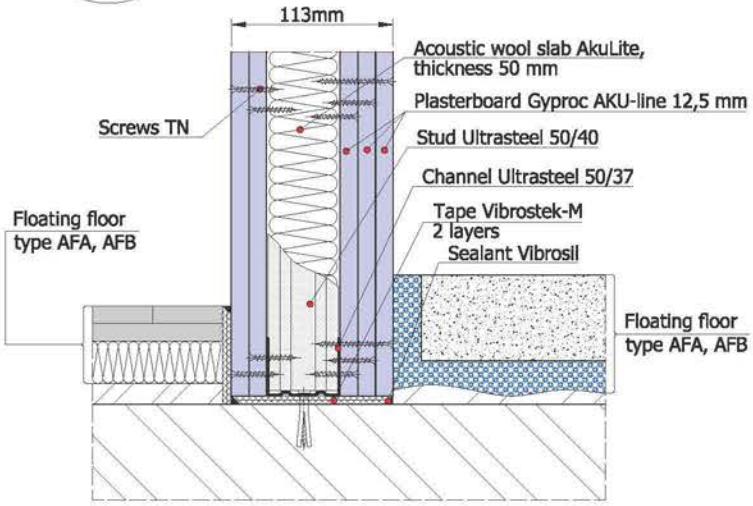


Sheet 1.02

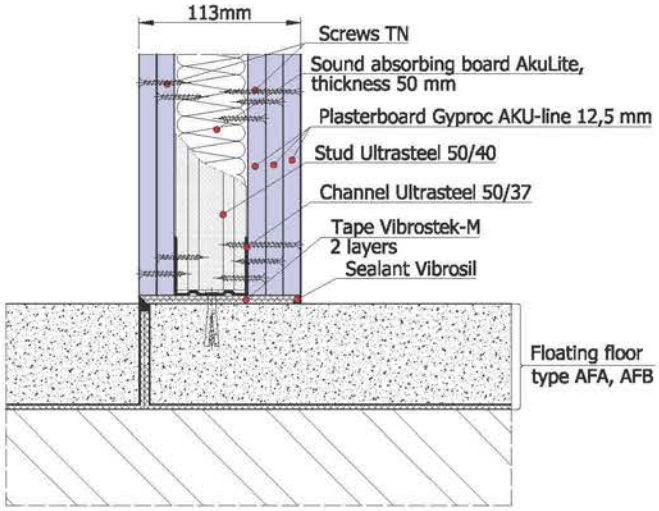
Design of 113 mm sound-insulating partition, type AW 11.15 | Rw = 53dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=4 m**
- **1 m^2 mass of partition m=64 kg**

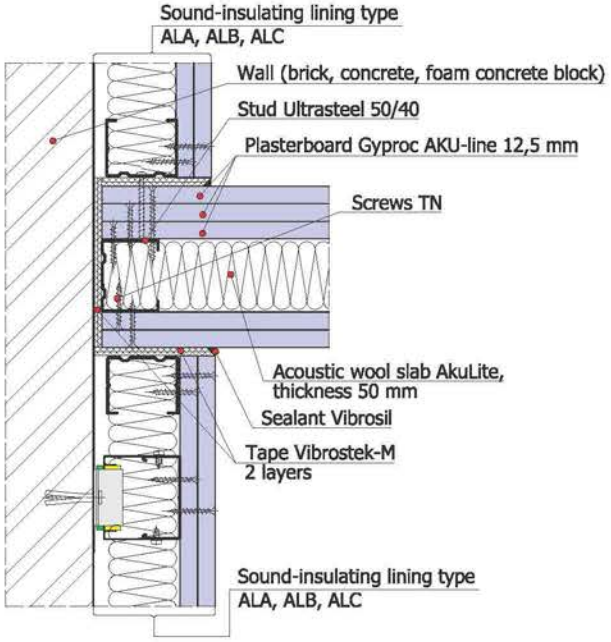
1.03.1 Junction of floating floor to partition



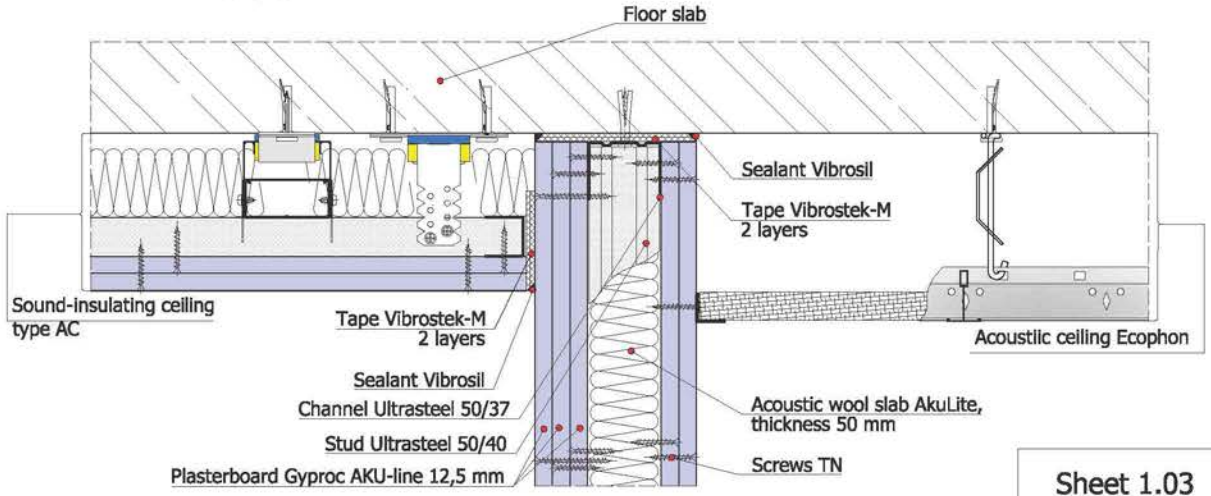
1.03.2 Junction of partition to floating floor



1.03.3 Junction of wall lining to partition



1.03.4 Junction of suspended ceiling to partition

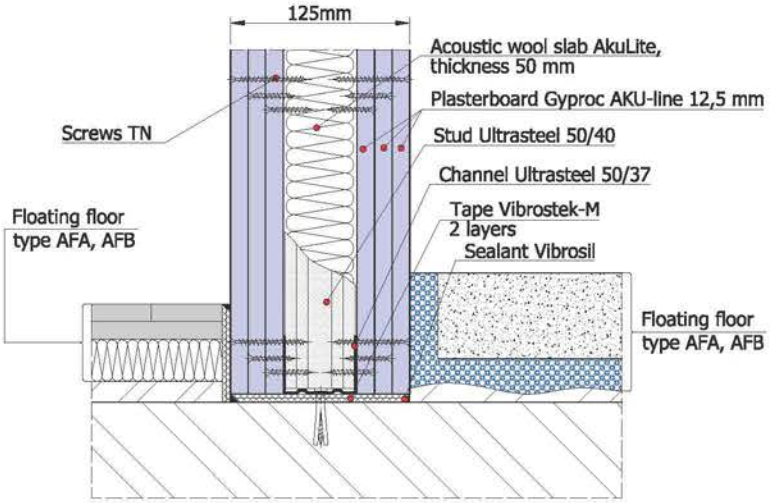


Sheet 1.03

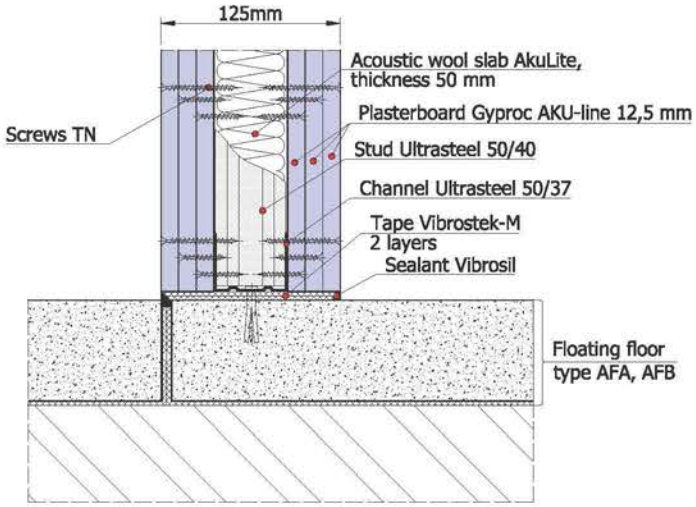
Design of 125 mm sound-insulating partition, type AW 11.16 | Rw = 56dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=4,5 m**
- **1 m^2 mass of partition m=76 kg**

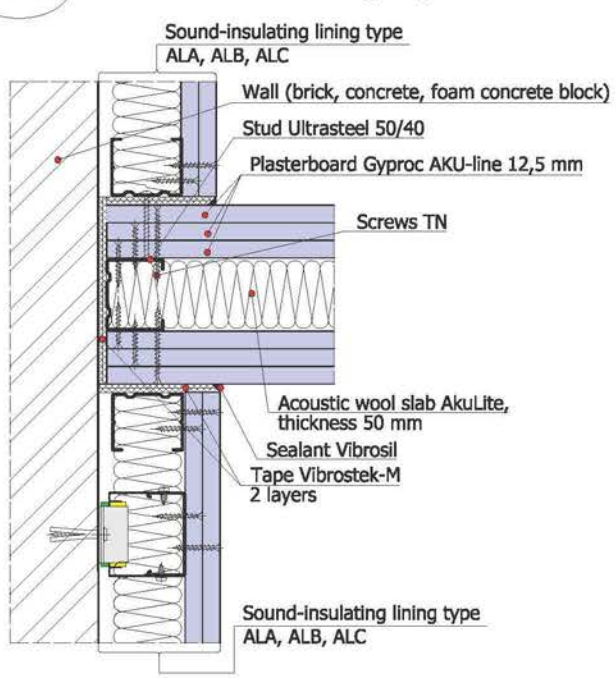
1.04.1 Junction of floating floor to partition



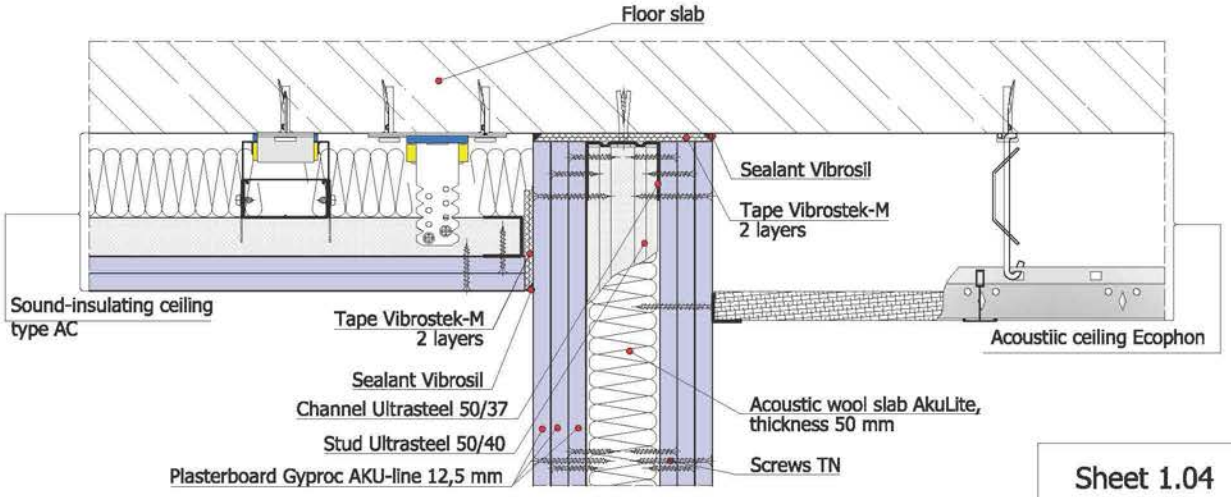
1.04.2 Junction of partition to floating floor



1.04.3 Junction of wall lining to partition



1.04.4 Junction of suspended ceiling to partition

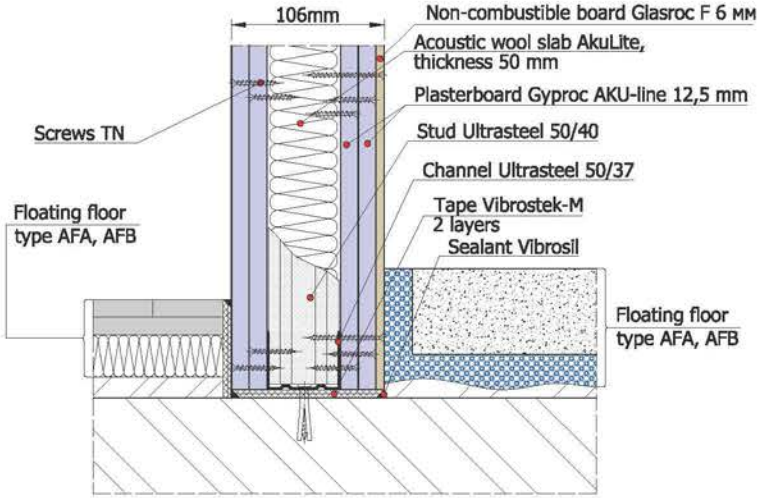


Sheet 1.04

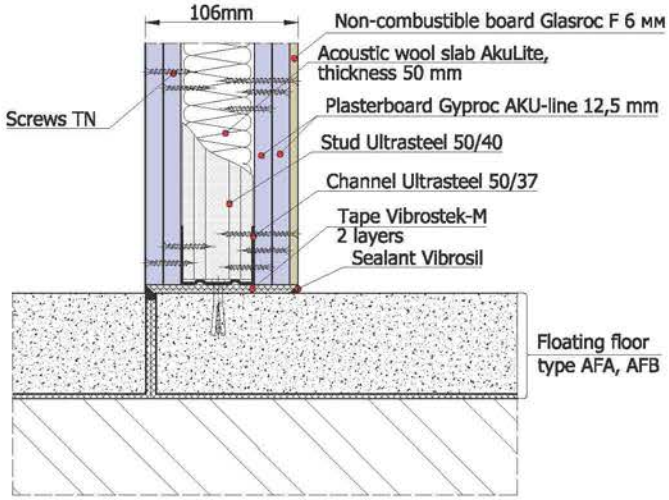
Design of 106 mm sound-insulating partition, type AW 11.15NC | Rw = 53dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=4 m**
- **1 m^2 mass of partition m=58 kg**

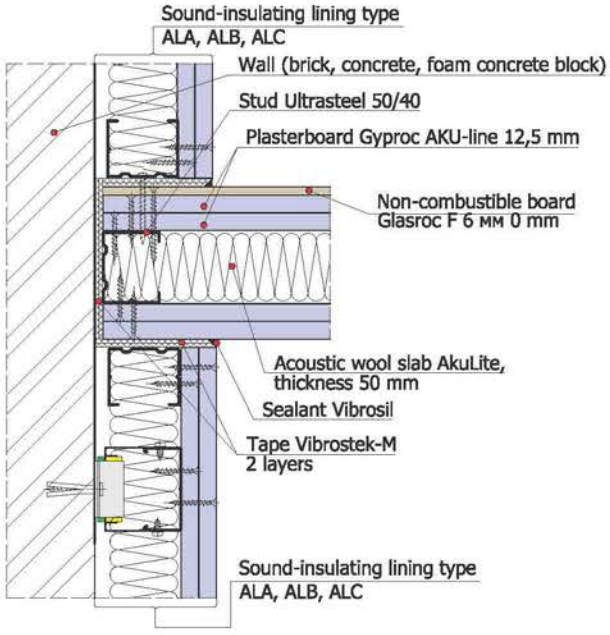
1.05.1 Junction of floating floor to partition



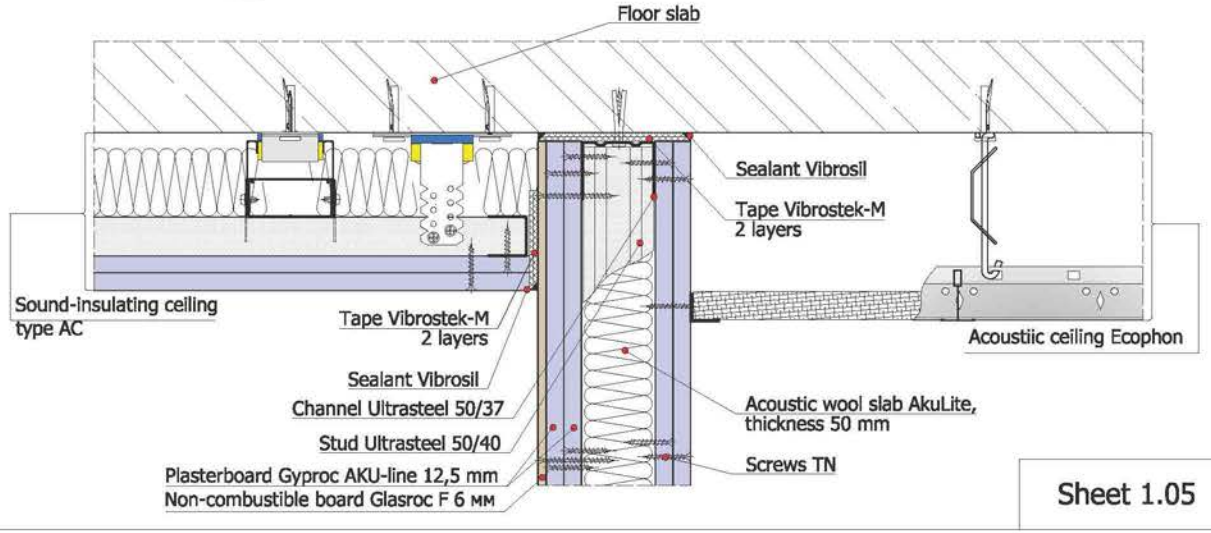
1.05.2 Junction of partition to floating floor



1.05.3 Junction of wall lining to partition



1.05.4 Junction of suspended ceiling to partition

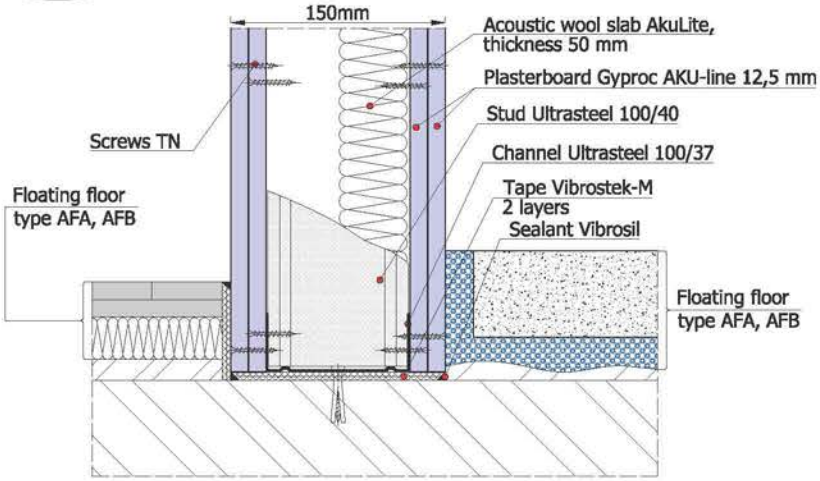


Sheet 1.05

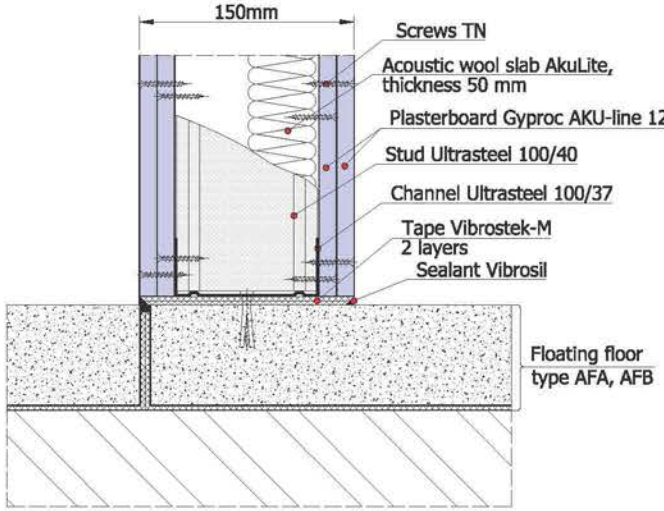
Design of 150 mm sound-insulating partition, type AW 12.14 | Rw = 53dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=6,5 m**
- **1 m^2 mass of partition m=52 kg**

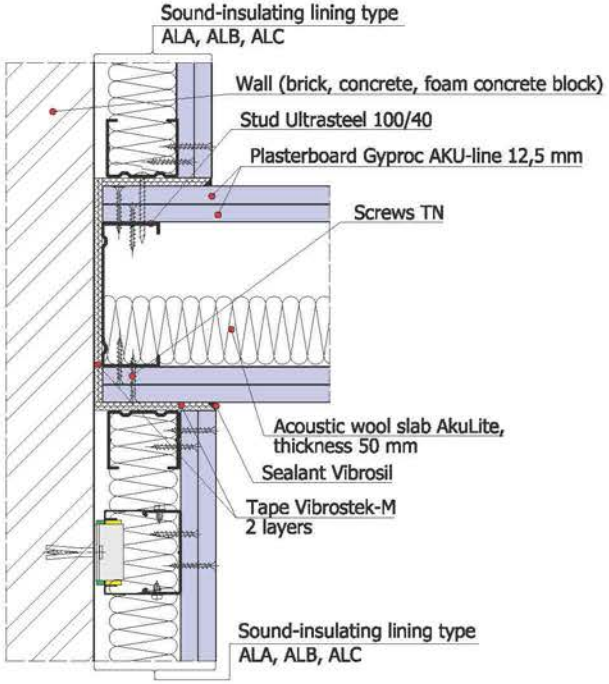
1.06.1 Junction of floating floor to partition



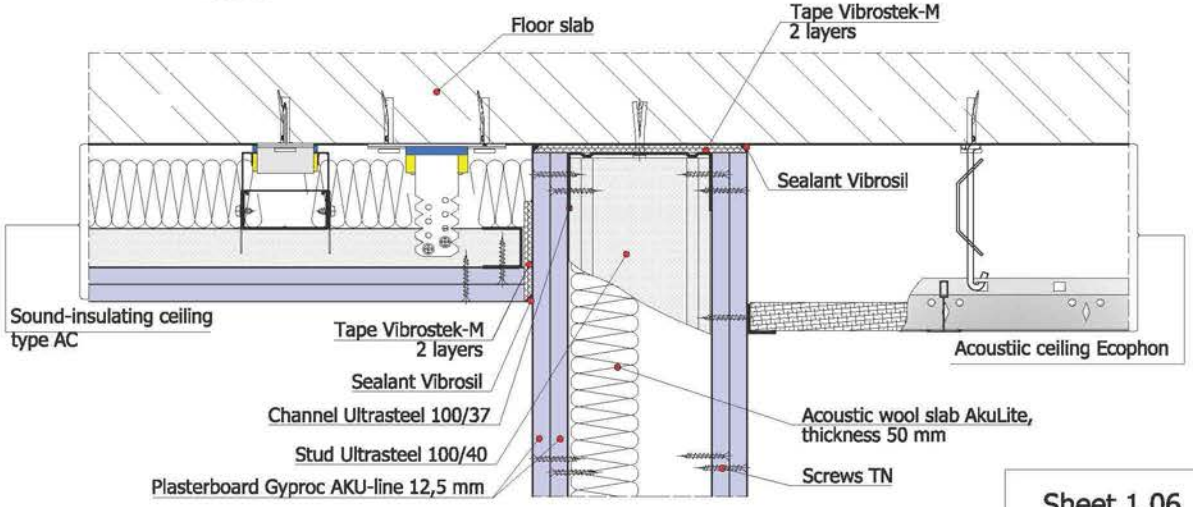
1.06.2 Junction of partition to floating floor



1.06.3 Junction of wall lining to partition



1.06.4 Junction of suspended ceiling to partition

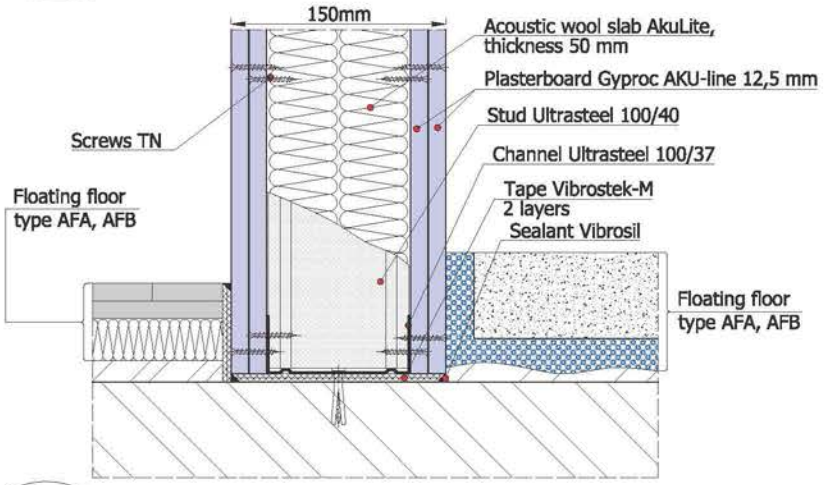


Sheet 1.06

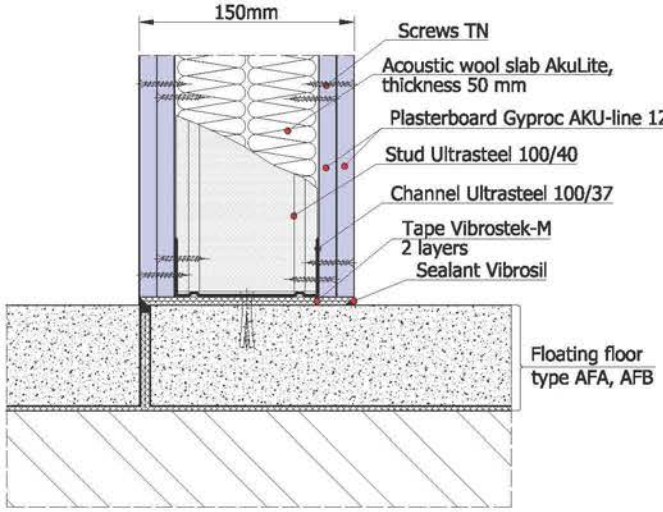
Design of 150 mm sound-insulating partition, type AW 12.24 | Rw = 54dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=6,5 m**
- **1 m^2 mass of partition m=54 kg**

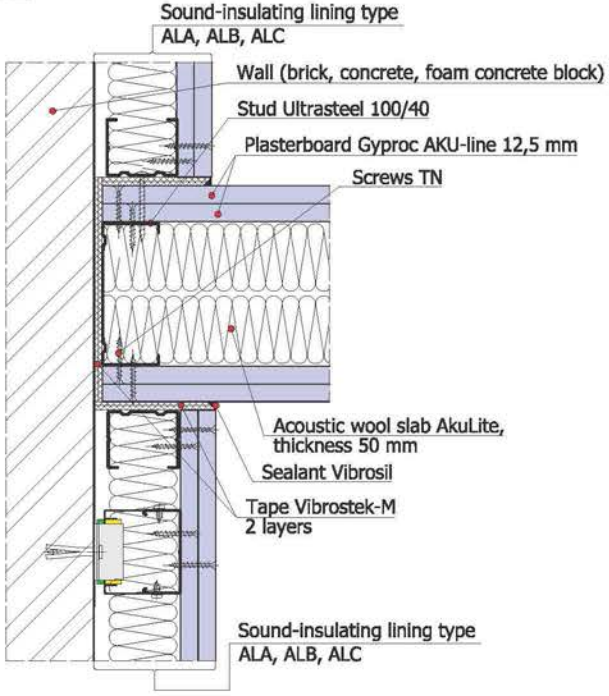
1.07.1 Junction of floating floor to partition



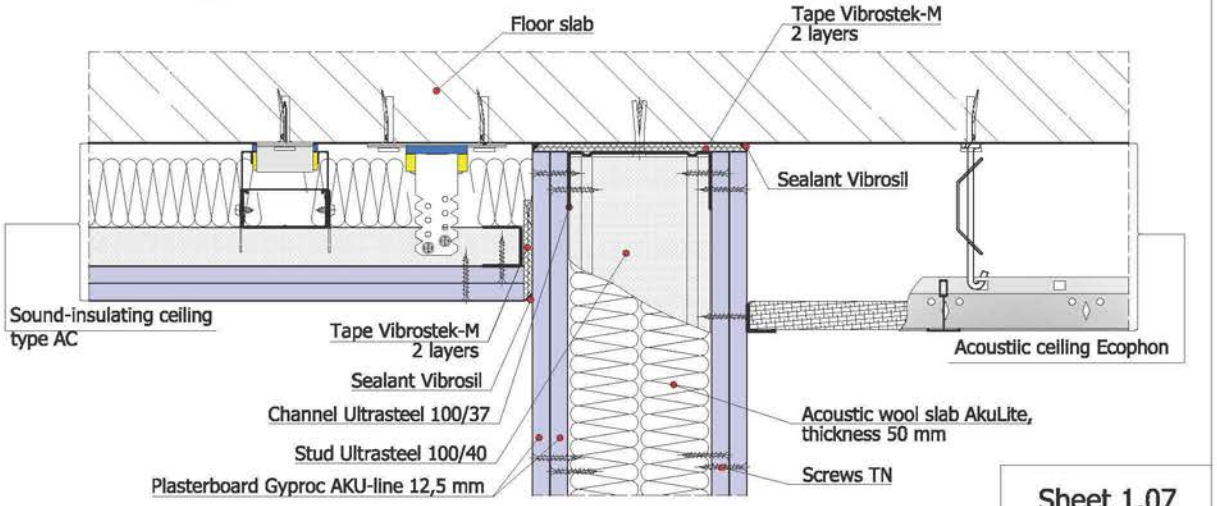
1.07.2 Junction of partition to floating floor



1.07.3 Junction of wall lining to partition



1.07.4 Junction of suspended ceiling to partition



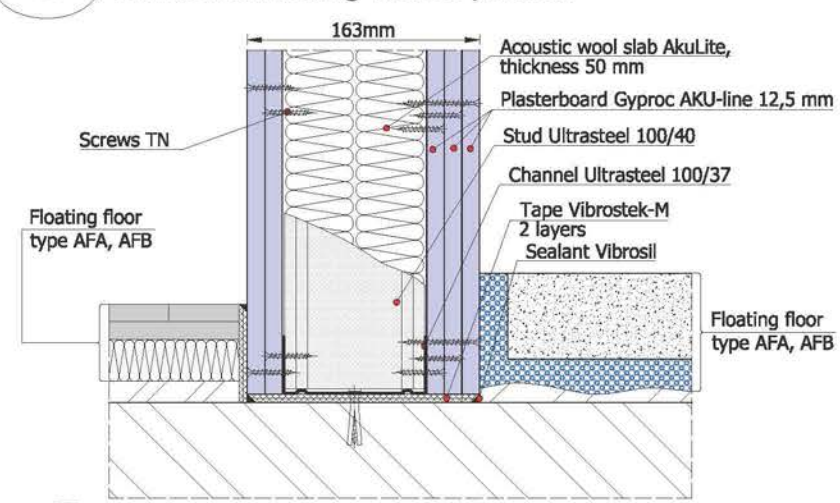
Sheet 1.07

Design of 163 mm sound-insulating partition, type AW 12.25

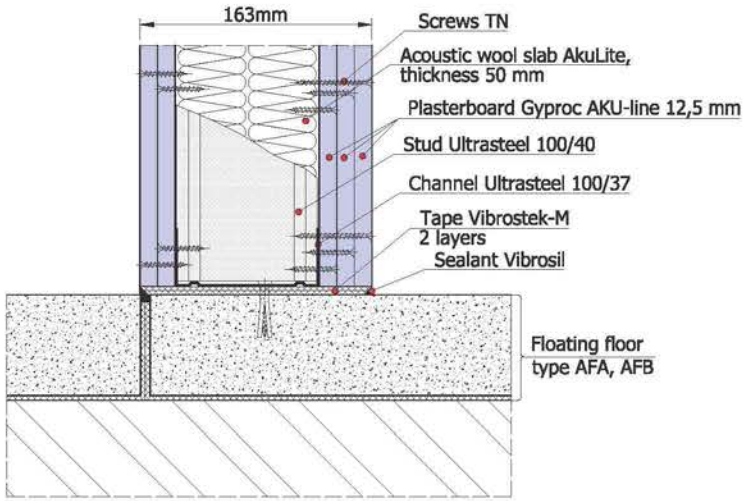
Rw = 56dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=6,5 m**
- **1 m^2 mass of partition m=66 kg**

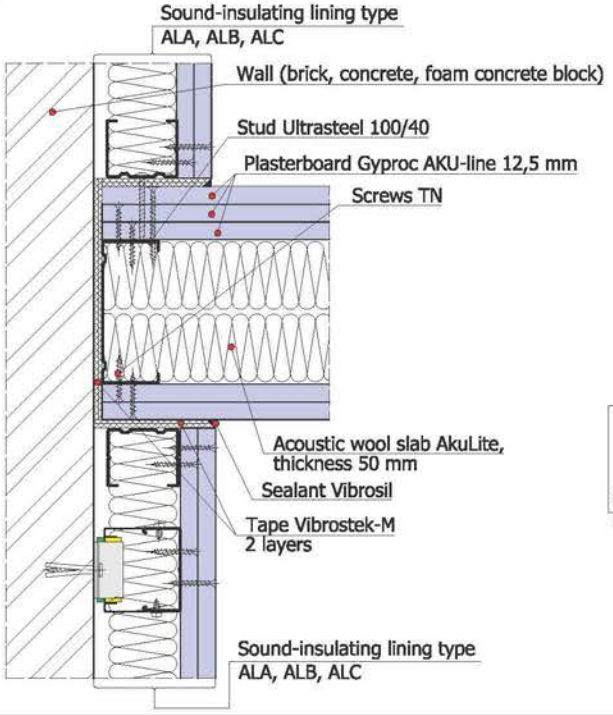
1.08.1 Junction of floating floor to partition



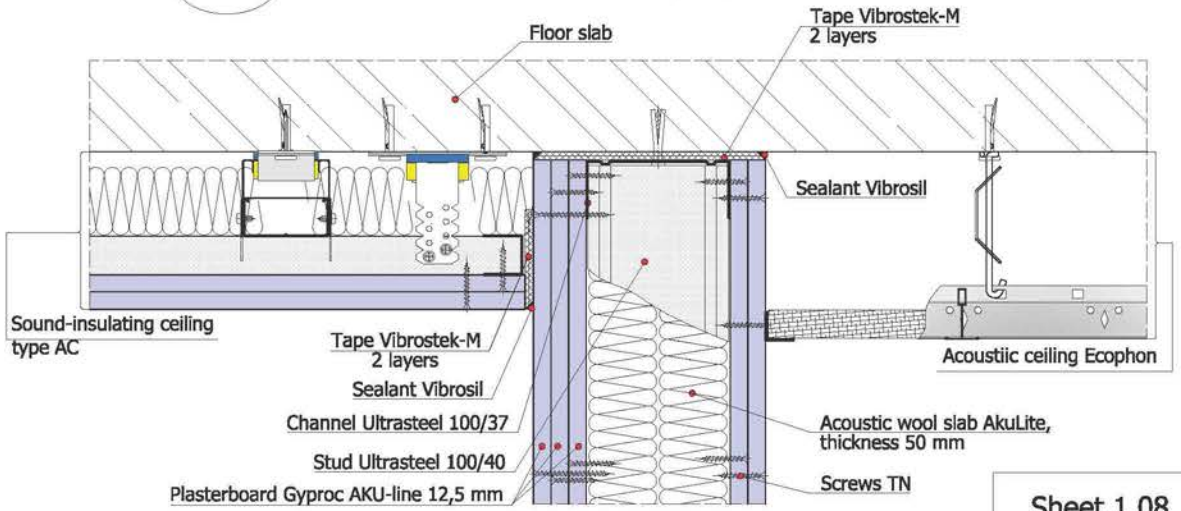
1.08.2 Junction of partition to floating floor



1.08.3 Junction of wall lining to partition



1.08.4 Junction of suspended ceiling to partition



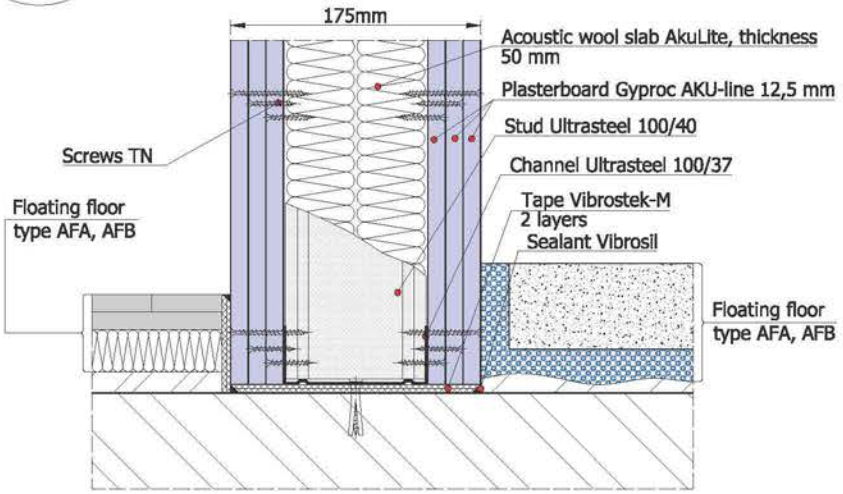
Sheet 1.08

Design of 175 mm sound-insulating partition, type AW 12.26

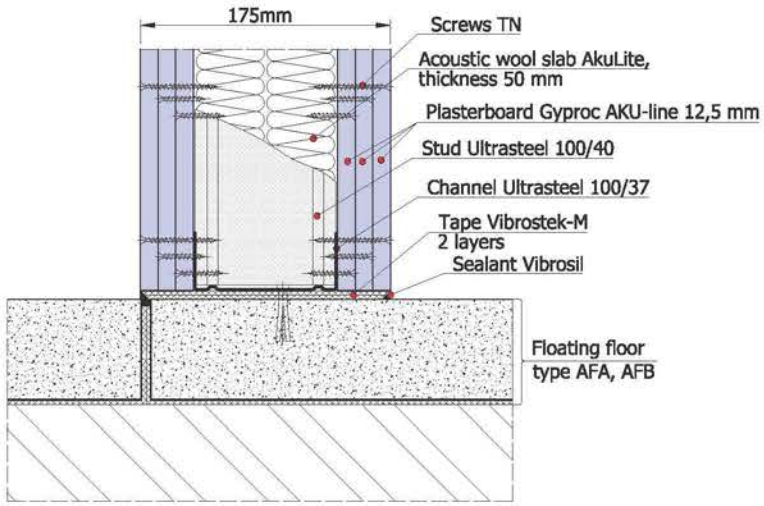
Rw = 59dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=7 m**
- **1 m^2 mass of partition m=78 kg**

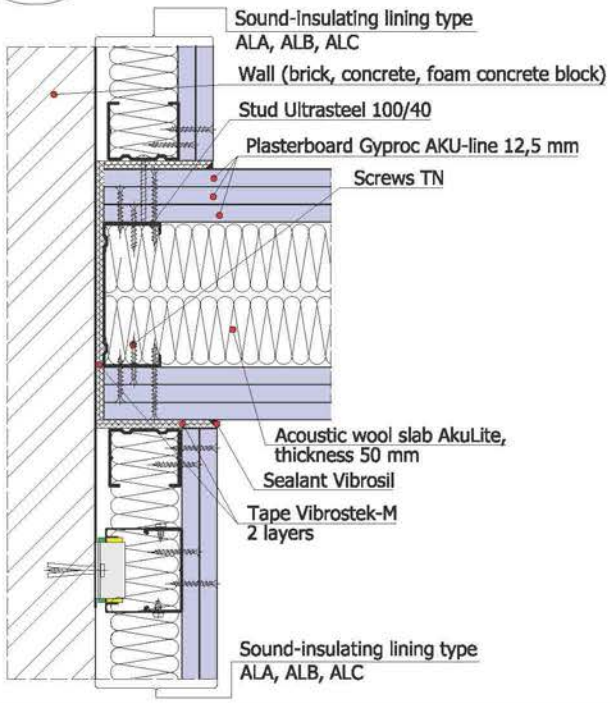
1.09.1 Junction of floating floor to partition



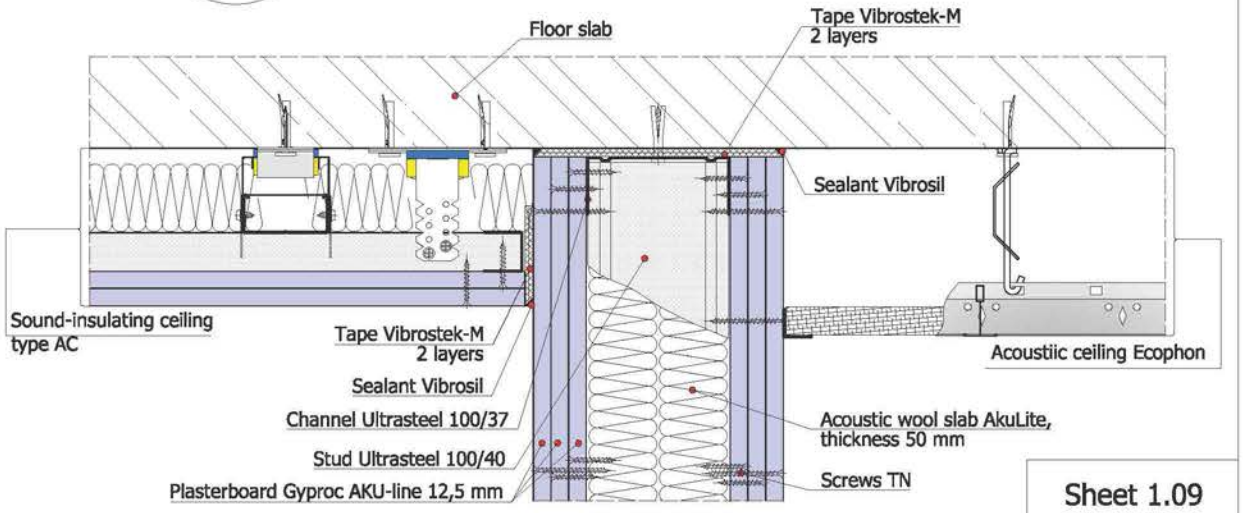
1.09.2 Junction of partition to floating floor



1.09.3 Junction of wall lining to partition



1.09.4 Junction of suspended ceiling to partition

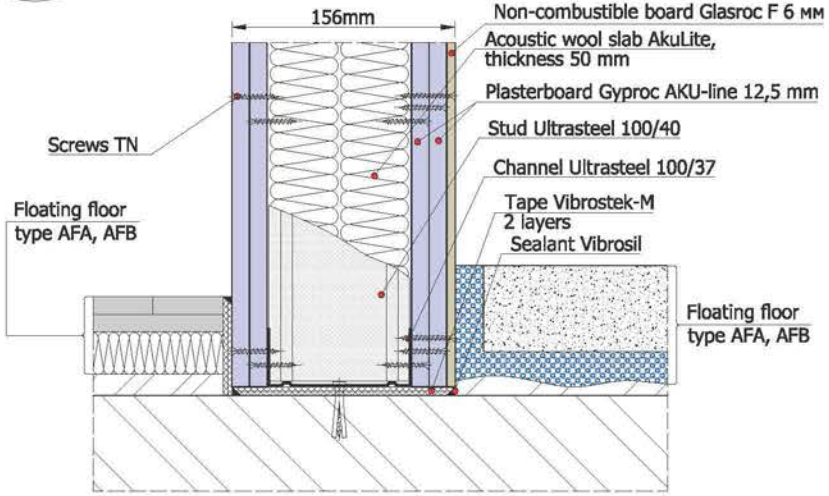


Sheet 1.09

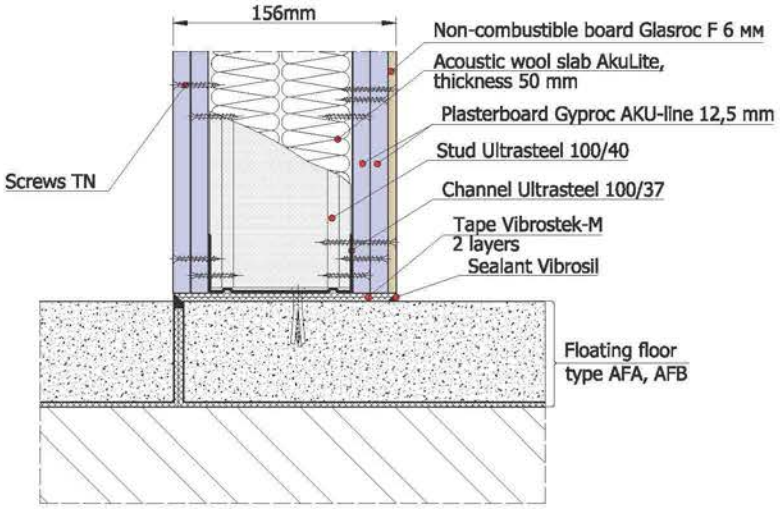
Design of 156 mm sound-insulating partition, type AW 12.25NC | Rw = 58dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=6.5 m**
- **1 m² mass of partition m=60 kg**

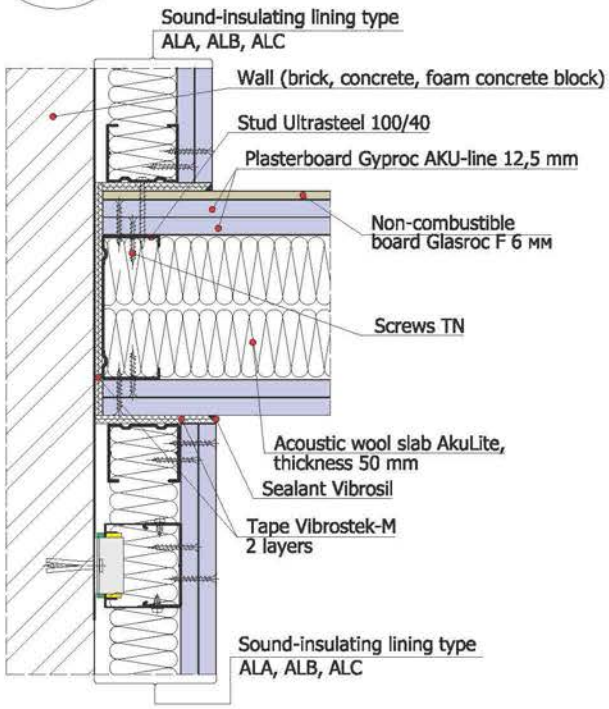
1.10.1 Junction of floating floor to partition



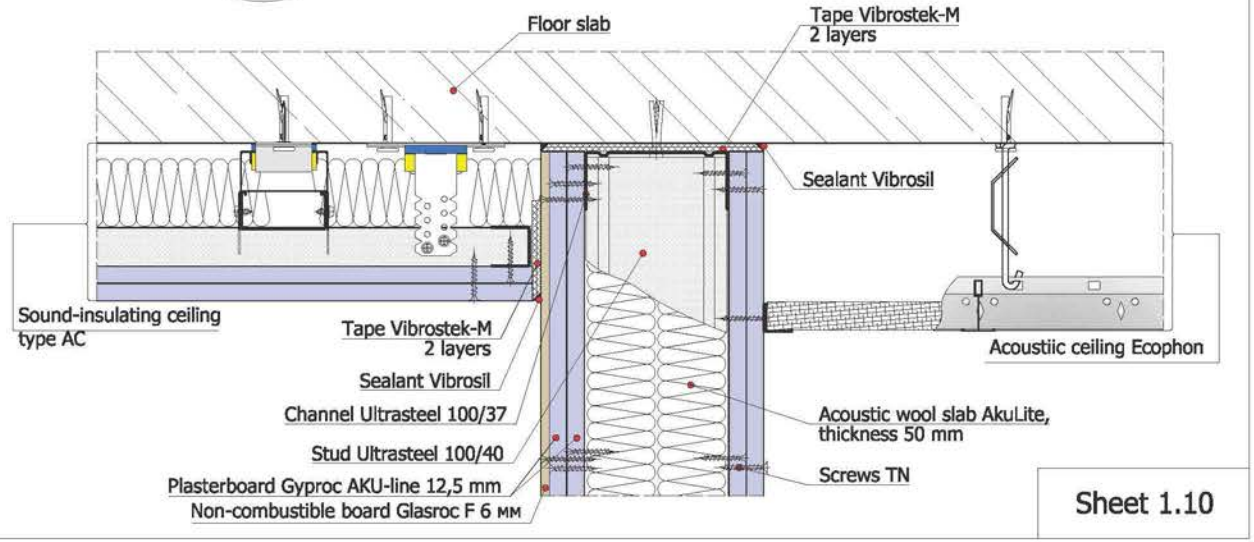
1.10.2 Junction of partition to floating floor



1.10.3 Junction of wall lining to partition



1.10.4 Junction of suspended ceiling to partition

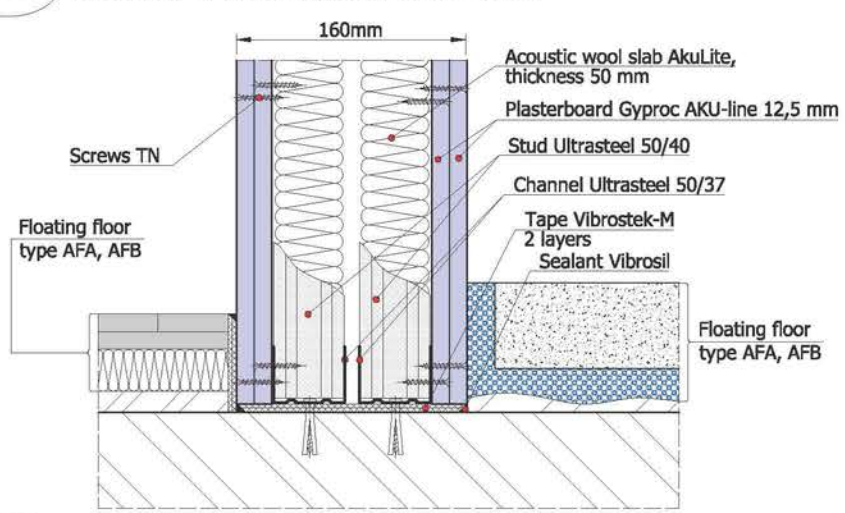


Sheet 1.10

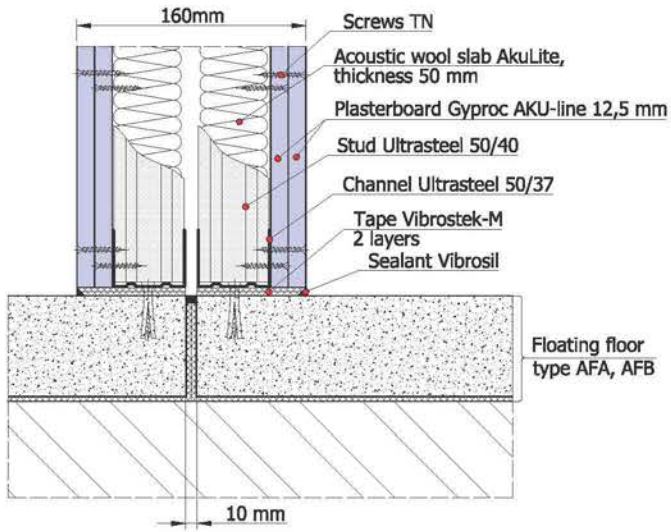
Design of 160 mm sound-insulating partition, type AW 21.24 | Rw = 62dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of partition m=57 kg**

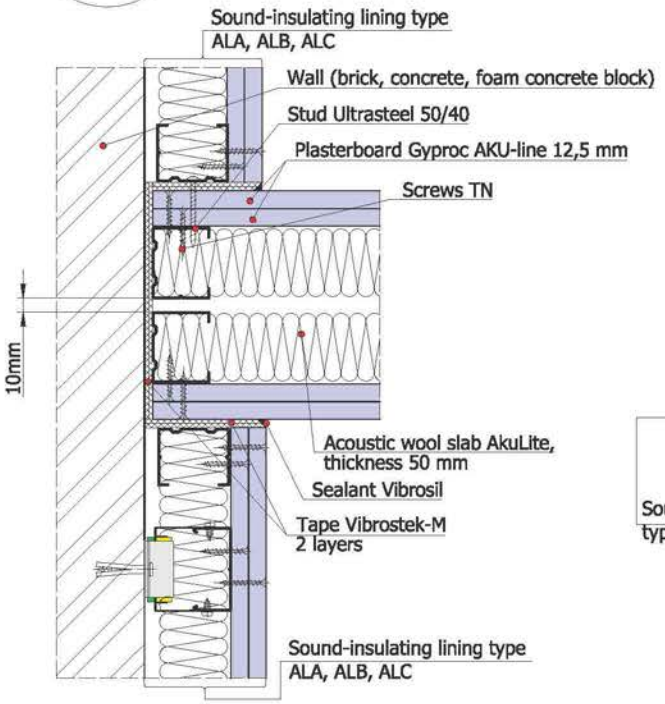
1.11.1 Junction of floating floor to partition



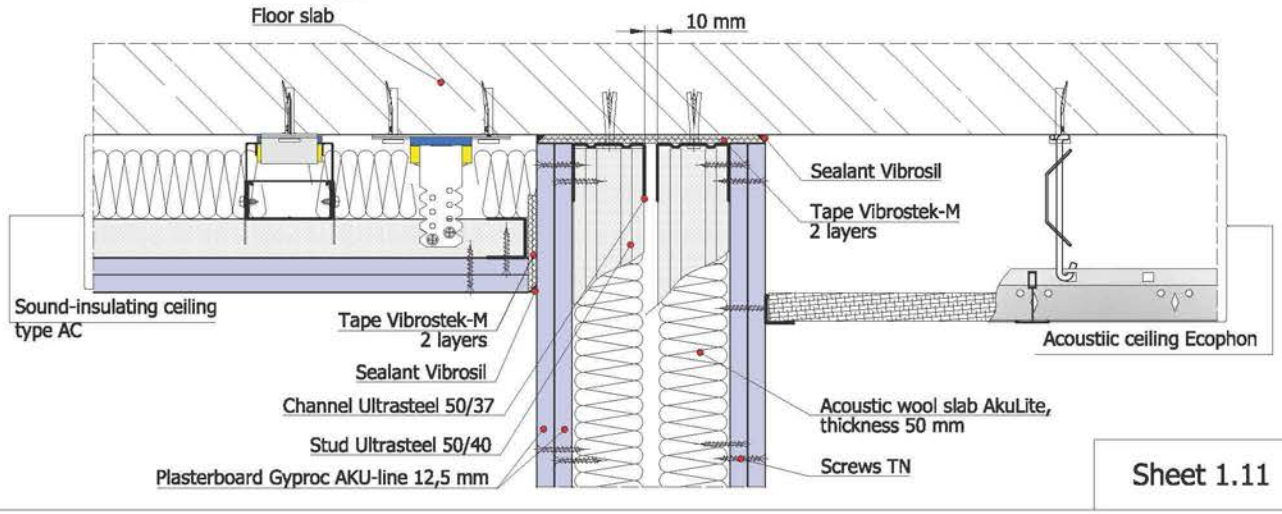
1.11.2 Junction of partition to floating floor



1.11.3 Junction of wall lining to partition



1.11.4 Junction of suspended ceiling to partition

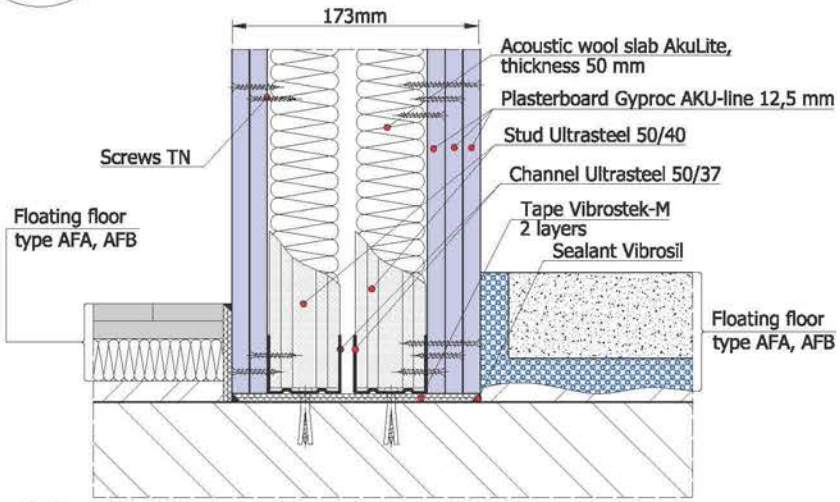


Sheet 1.11

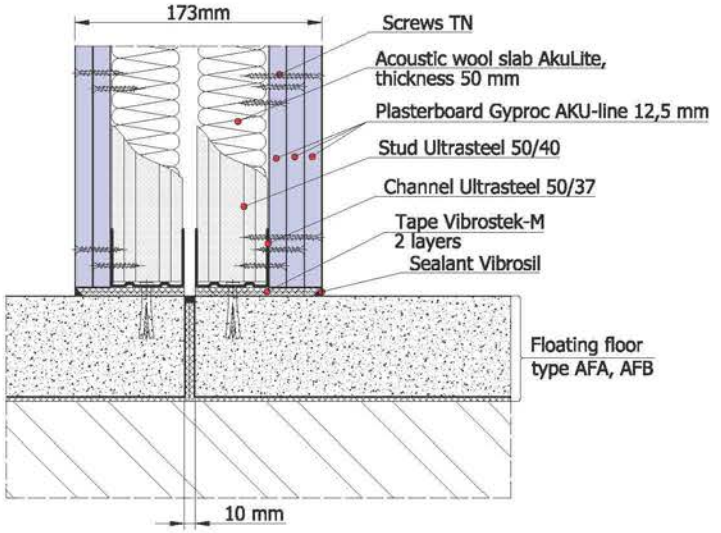
Design of 173 mm sound-insulating partition, type AW 21.25 | Rw = 64dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of partition m=69 kg**

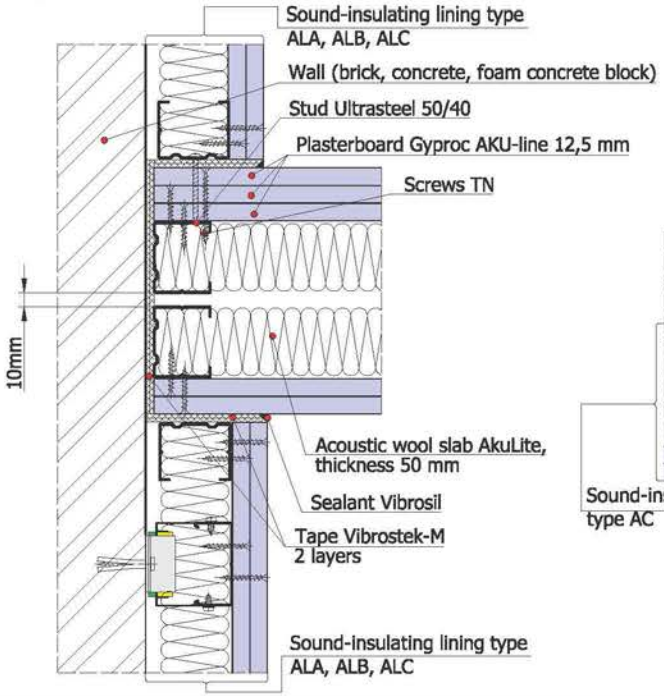
1.12.1 Junction of floating floor to partition



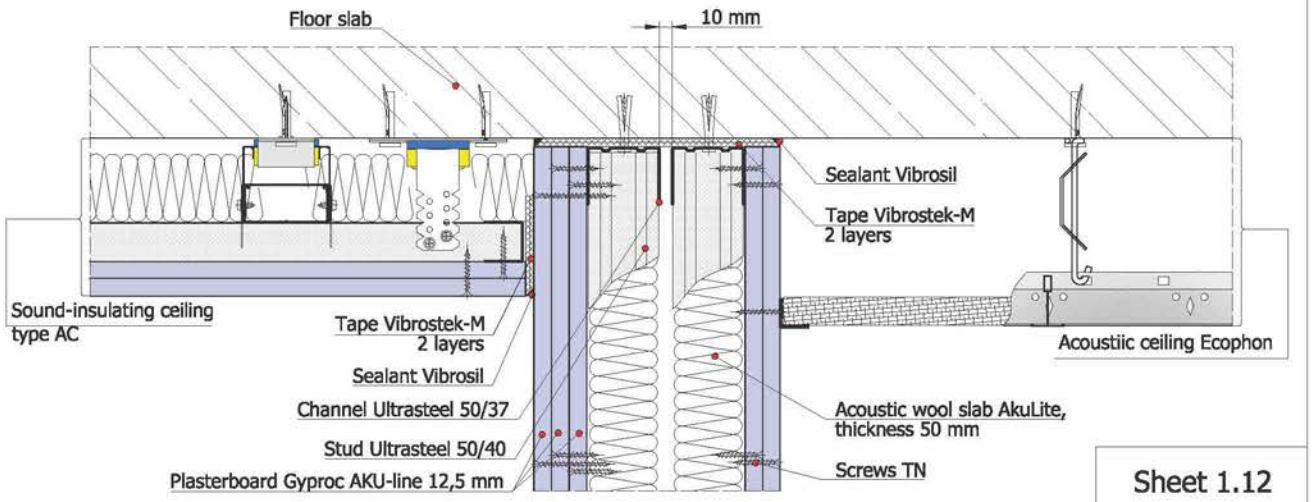
1.12.2 Junction of partition to floating floor



1.12.3 Junction of wall lining to partition



1.12.4 Junction of suspended ceiling to partition



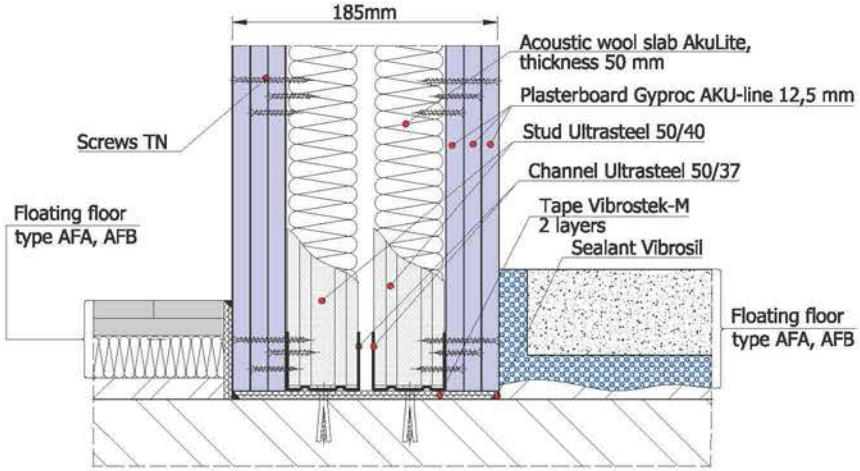
Sheet 1.12

Design of 185 mm sound-insulating partition, type AW 21.26

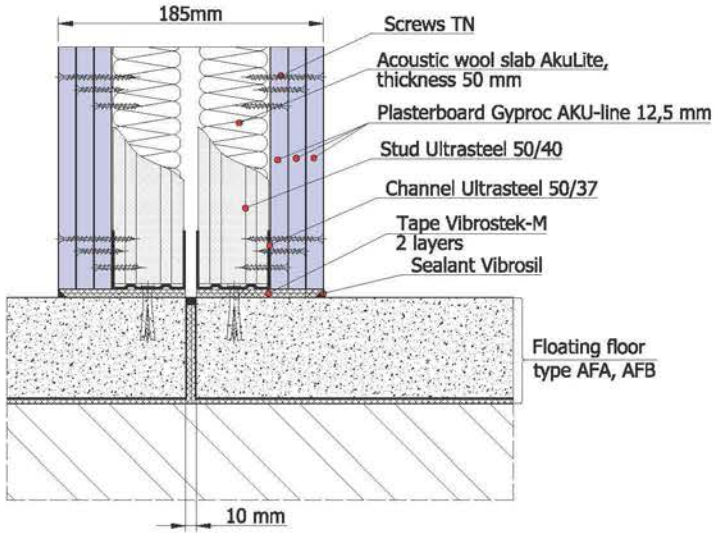
Rw = 65dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of partition m=81 kg**

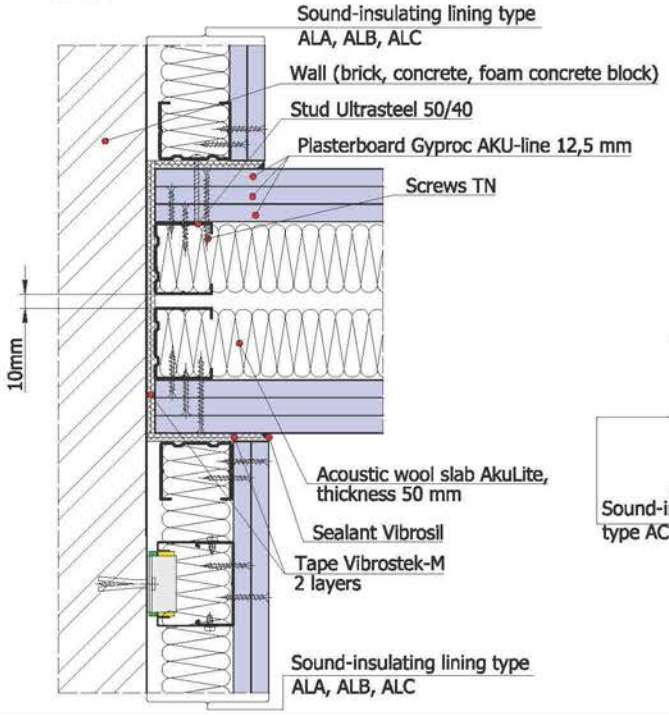
1.13.1 Junction of floating floor to partition



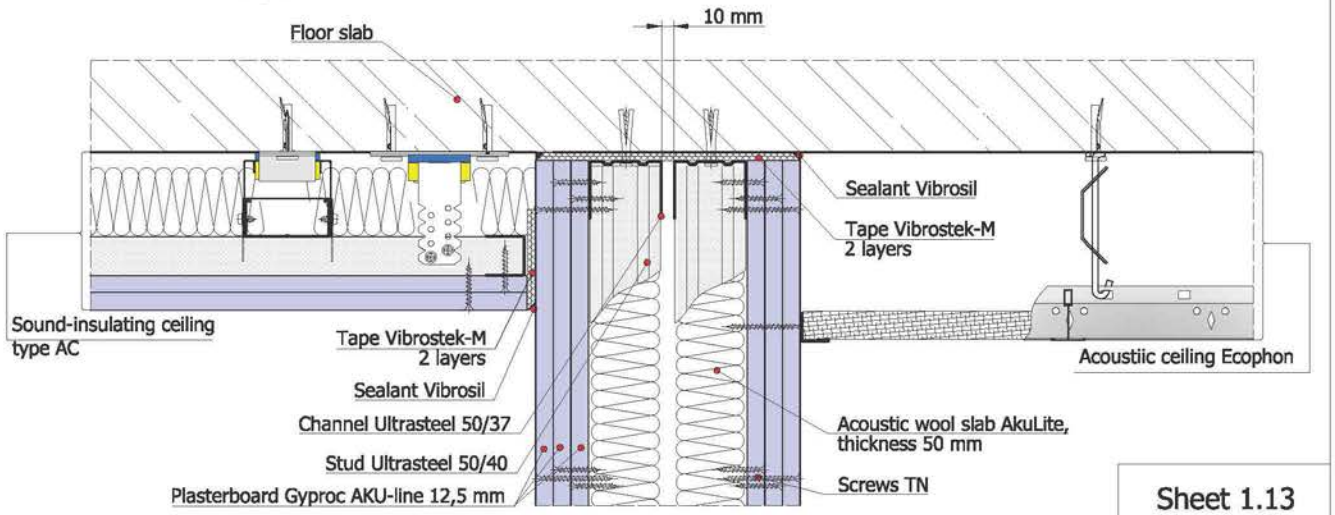
1.13.2 Junction of partition to floating floor



1.13.3 Junction of wall lining to partition



1.13.4 Junction of suspended ceiling to partition

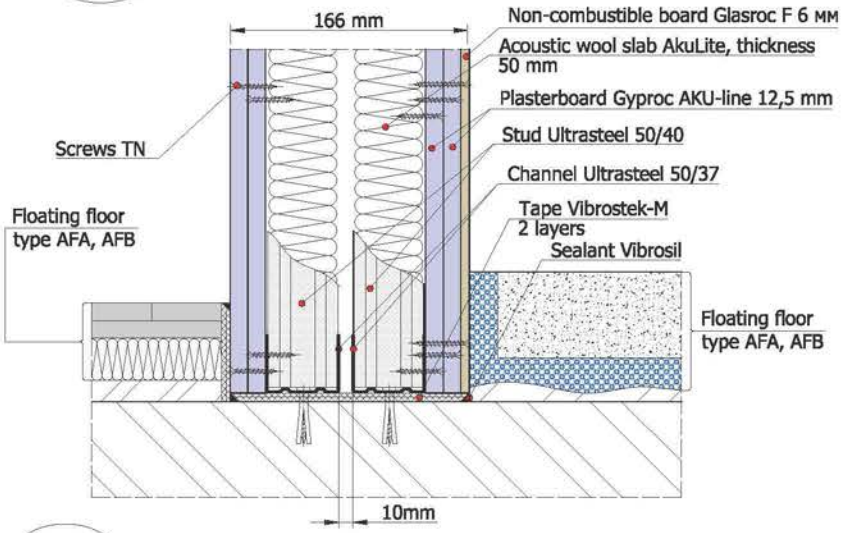


Sheet 1.13

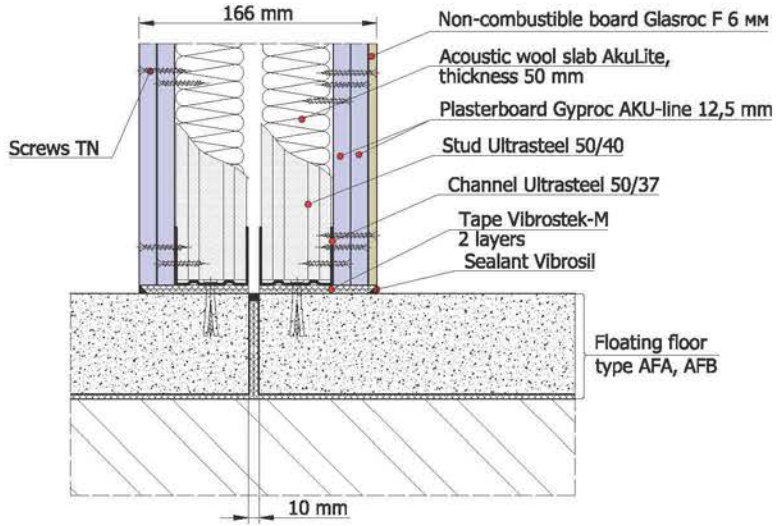
Design of 166 mm sound-insulating partition, type AW 21.25NC | Rw = 63dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of partition m=63 kg**

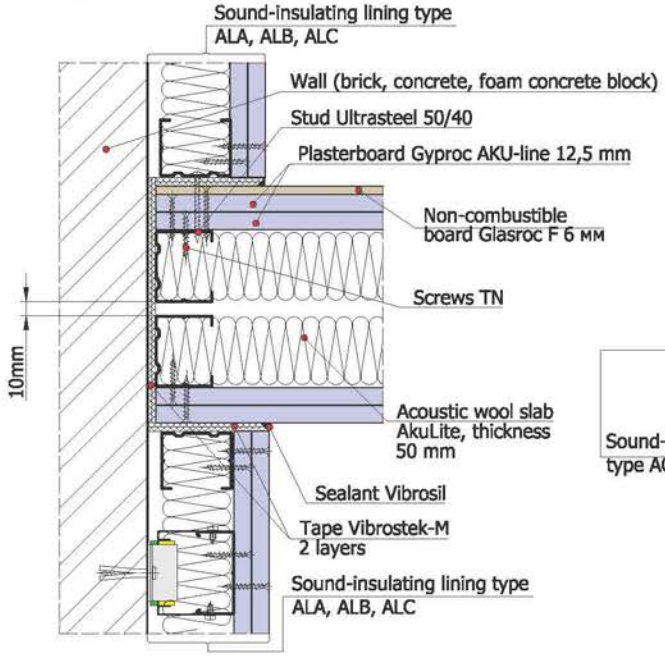
1.14.1 Junction of floating floor to partition



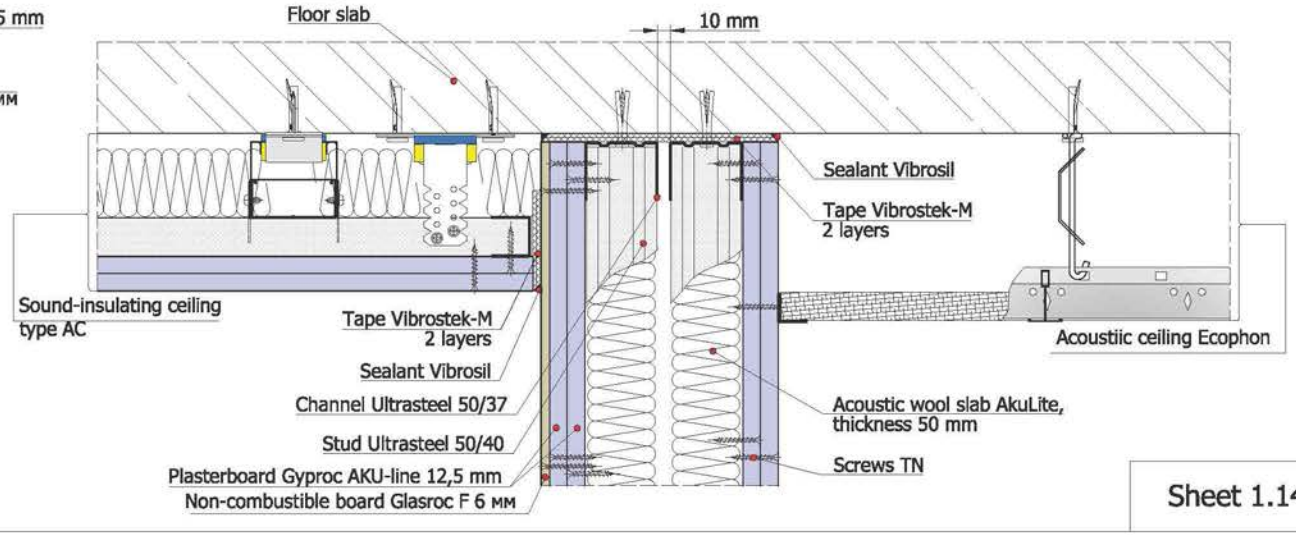
1.14.2 Junction of partition to floating floor



1.14.3 Junction of wall lining to partition



1.14.4 Junction of suspended ceiling to partition

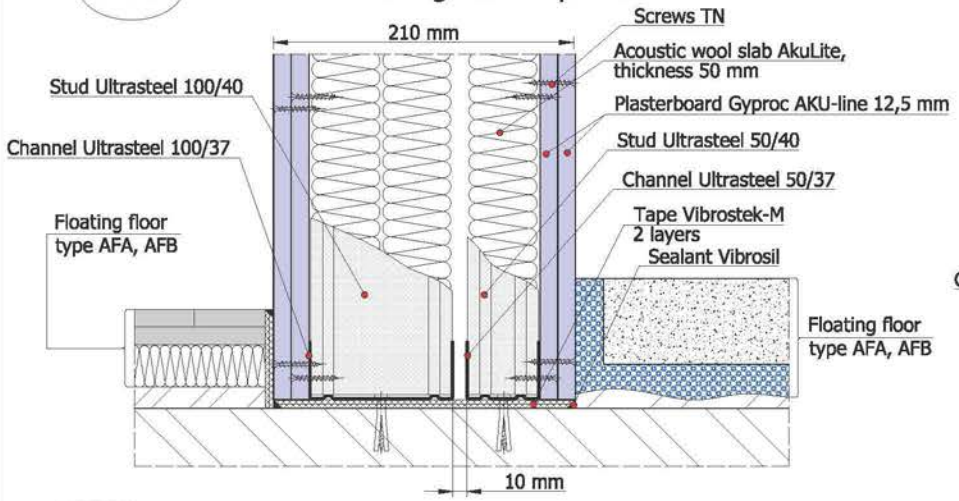


Sheet 1.14

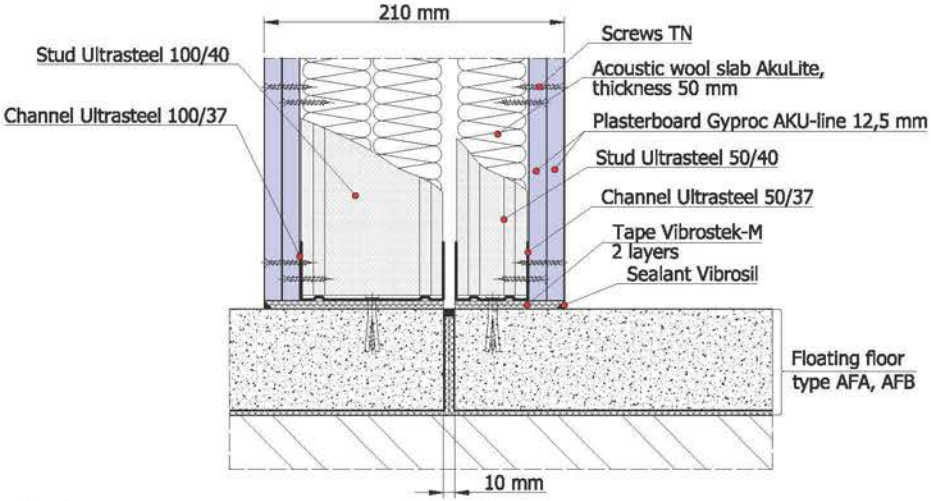
Design of 210 mm sound-insulating partition, type AW 23.34 | Rw = 64dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of partition m=57 kg**

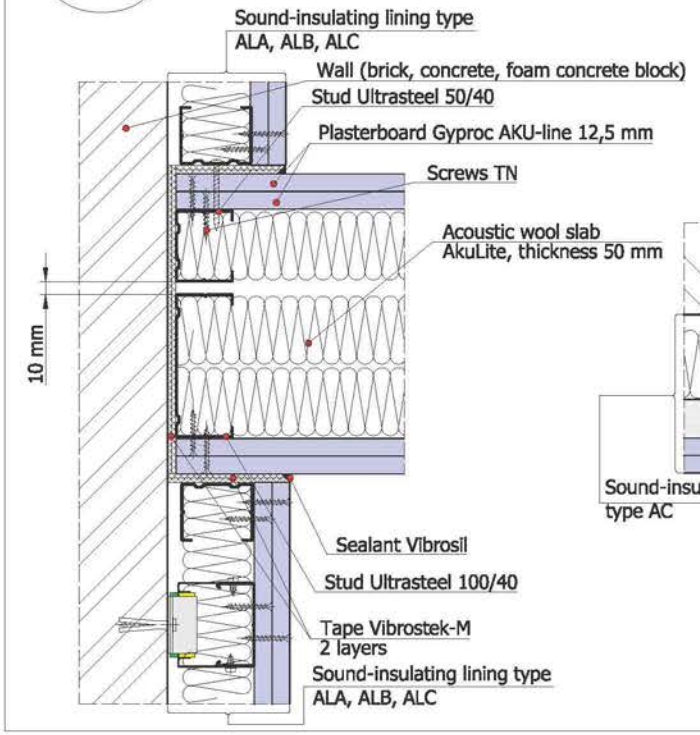
1.15.1 Junction of floating floor to partition



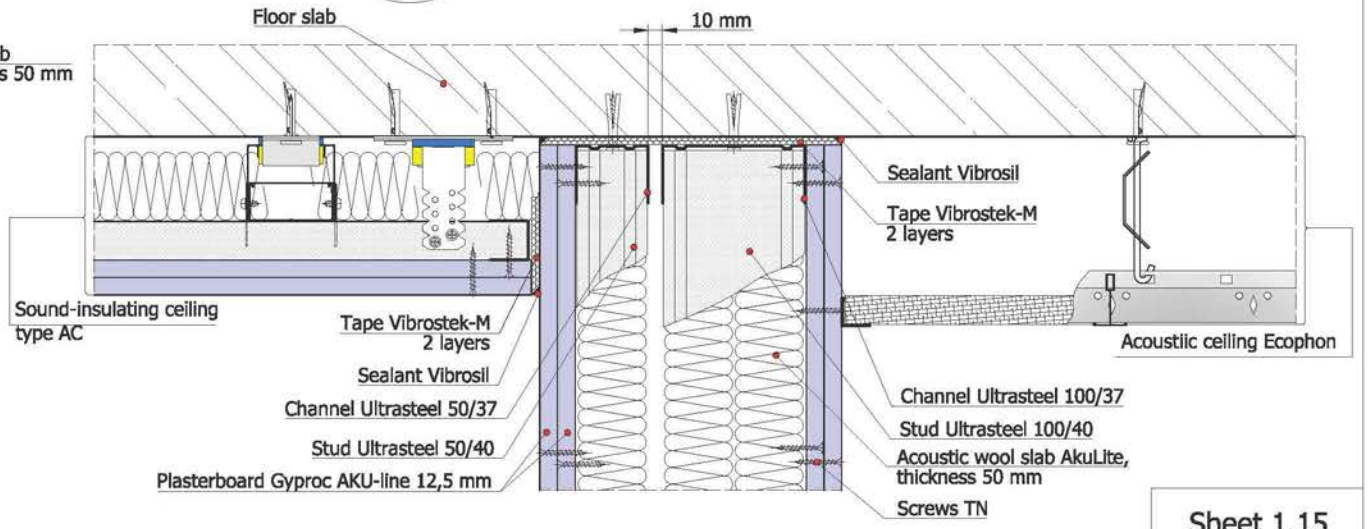
1.15.2 Junction of partition to floating floor



1.15.3 Junction of wall lining to partition



1.15.4 Junction of suspended ceiling to partition

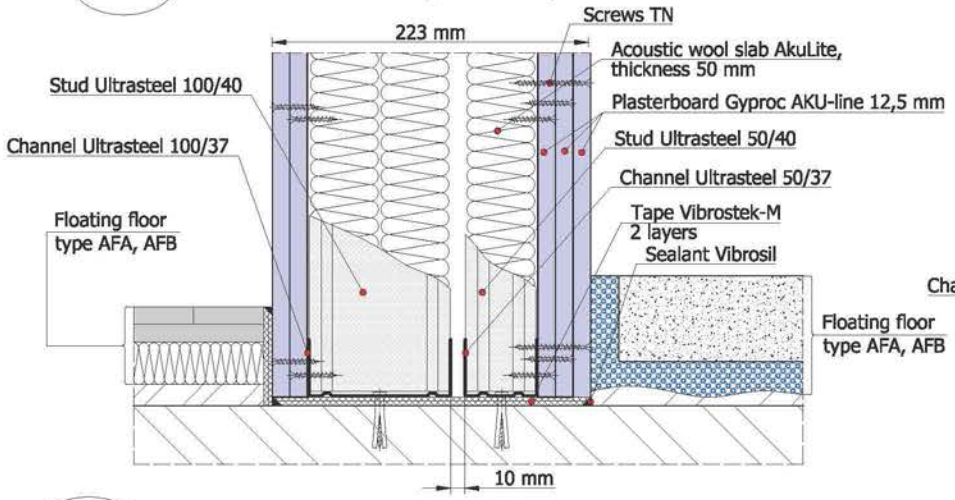


Sheet 1.15

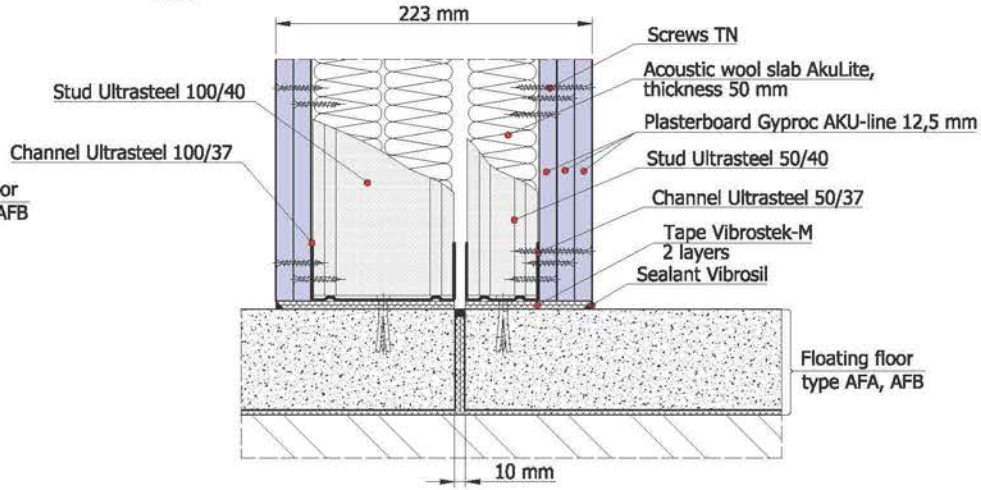
Design of 223 mm sound-insulating partition, type AW 23.35 | Rw = 66dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of partition m=69 kg**

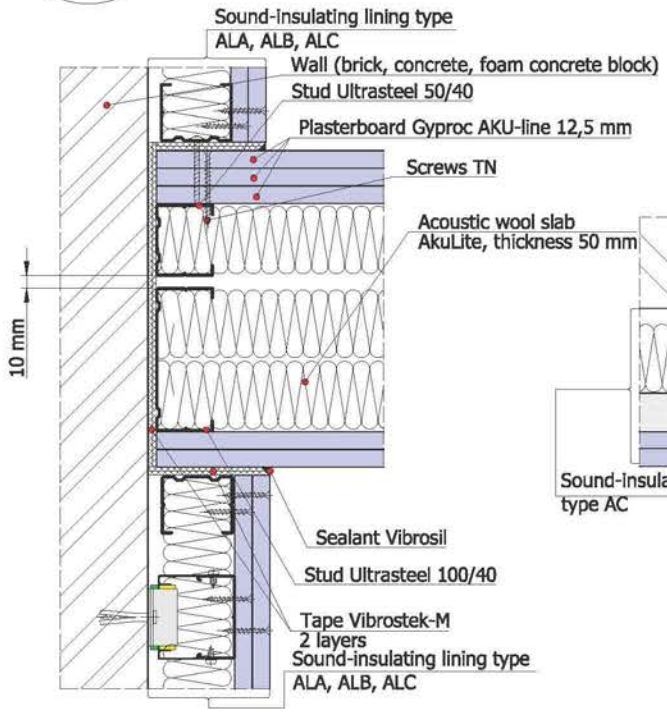
1.16.1 Junction of floating floor to partition



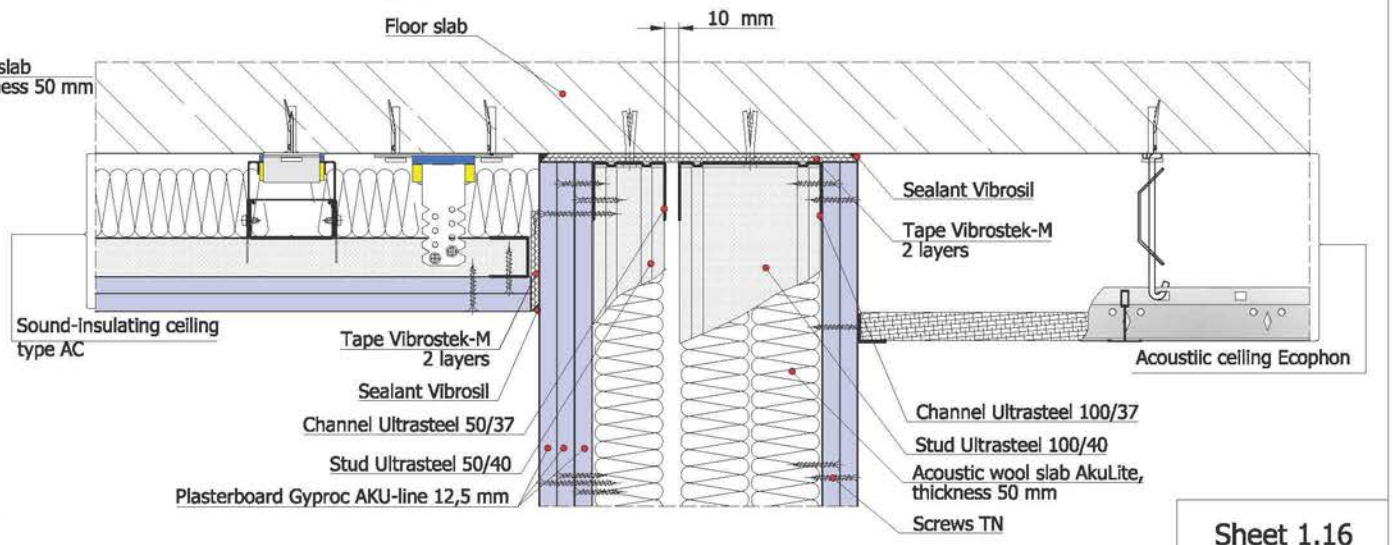
1.16.2 Junction of partition to floating floor



1.16.3 Junction of wall lining to partition



1.16.4 Junction of suspended ceiling to partition

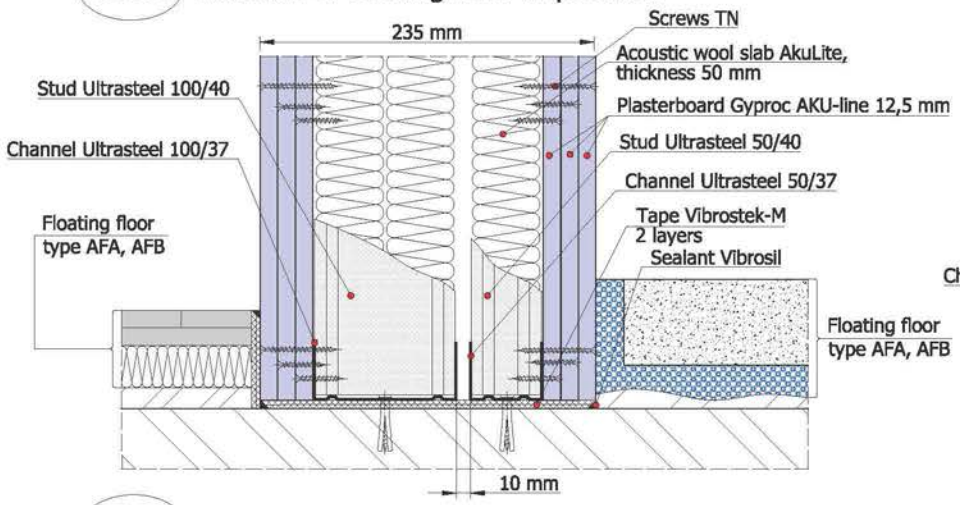


Sheet 1.16

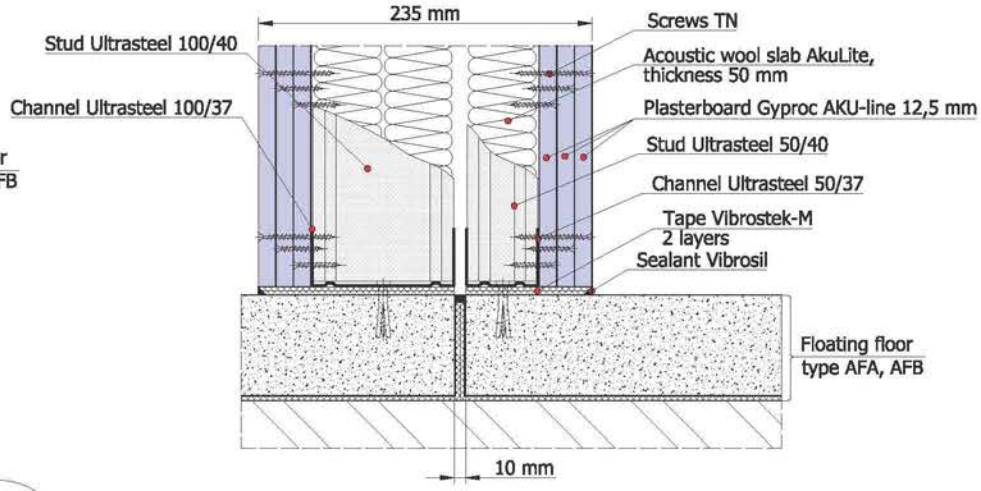
Design of 235 mm sound-insulating partition, type AW 23.36 | Rw = 67dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of partition m=81 kg**

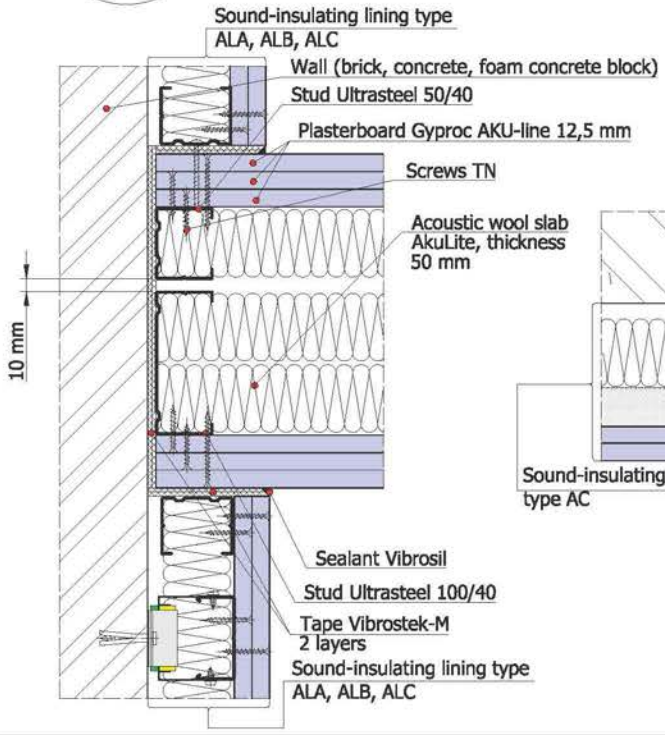
1.17.1 Junction of floating floor to partition



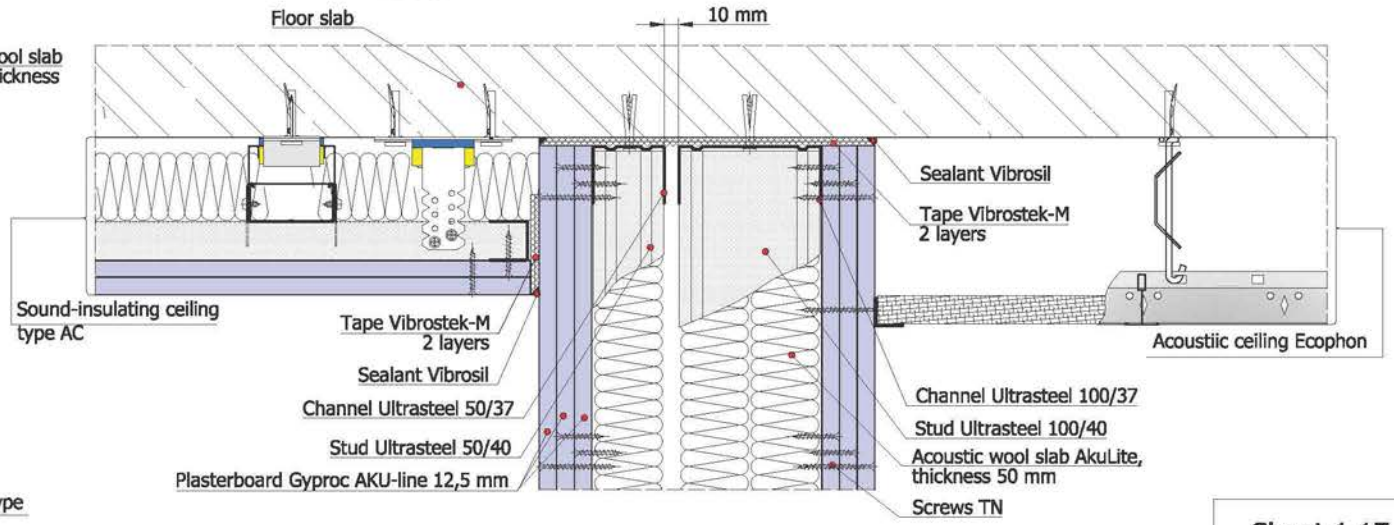
1.17.2 Junction of partition to floating floor



1.17.3 Junction of wall lining to partition



1.17.4 Junction of suspended ceiling to partition

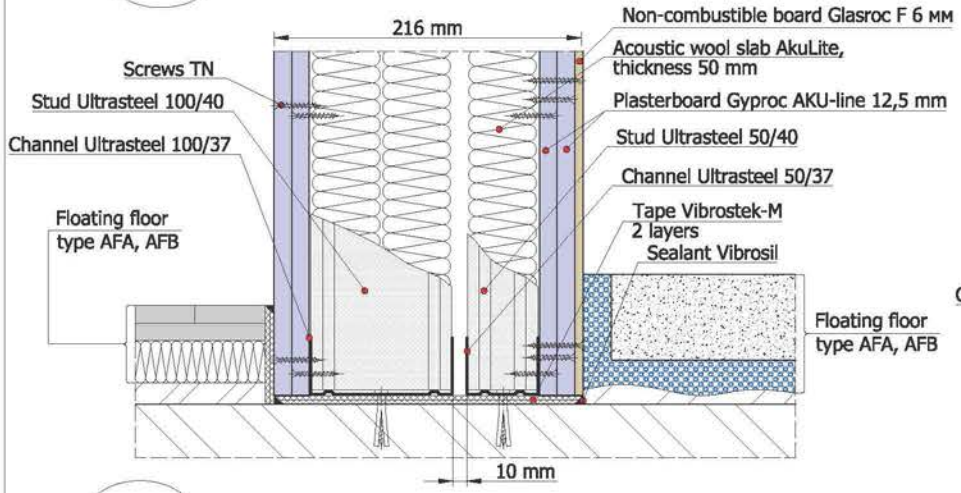


Sheet 1.17

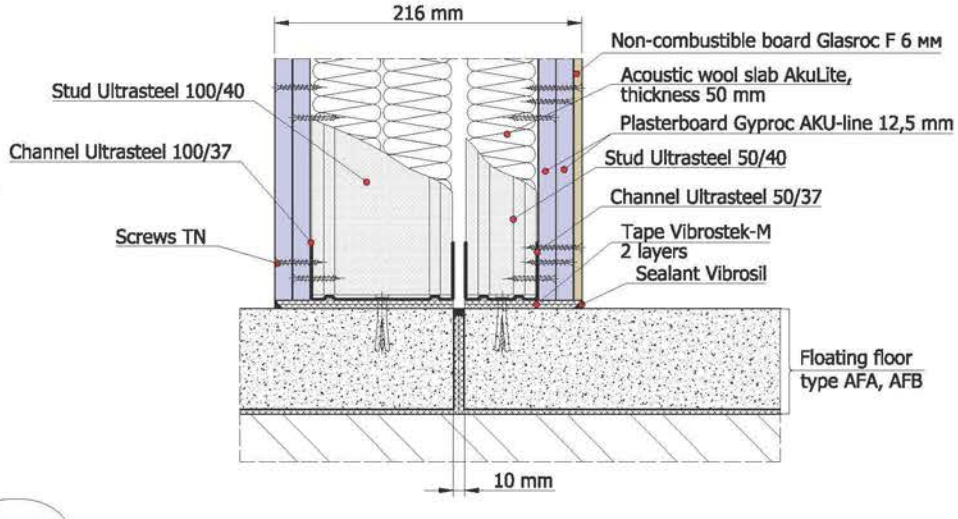
Design of 216 mm sound-insulating partition, type AW 23.35NC | Rw = 65dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of partition m=63 kg**

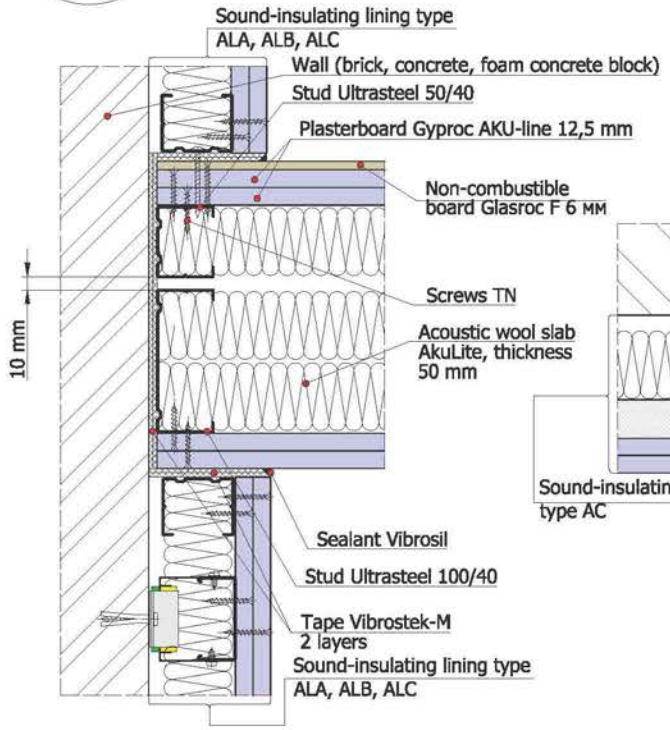
1.18.1 Junction of floating floor to partition



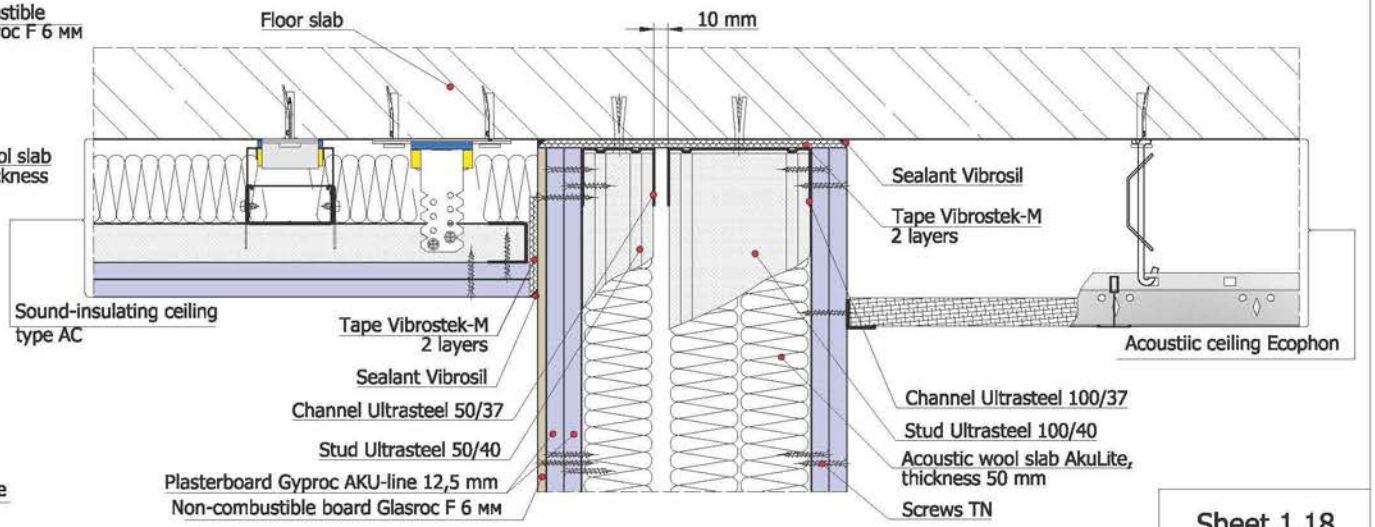
1.18.2 Junction of partition to floating floor



1.18.3 Junction of wall lining to partition



1.18.4 Junction of suspended ceiling to partition



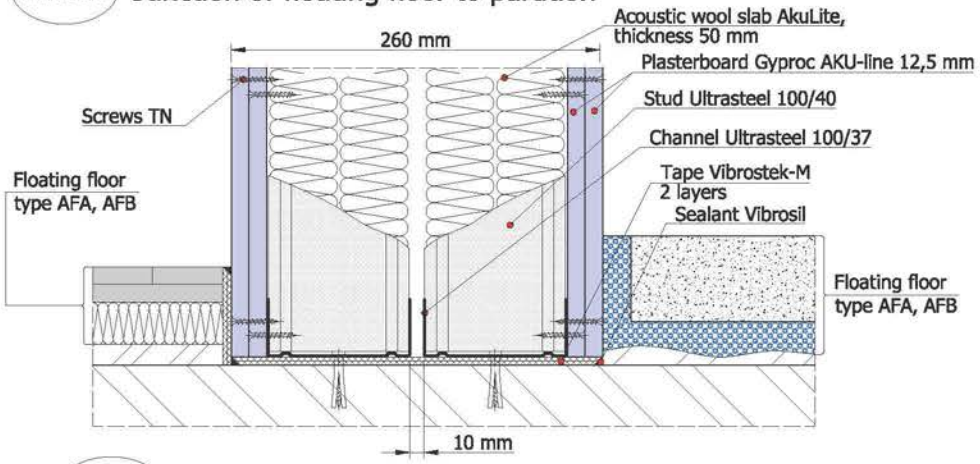
Sheet 1.18

Design of 223 mm sound-insulating partition, type AW 22.44

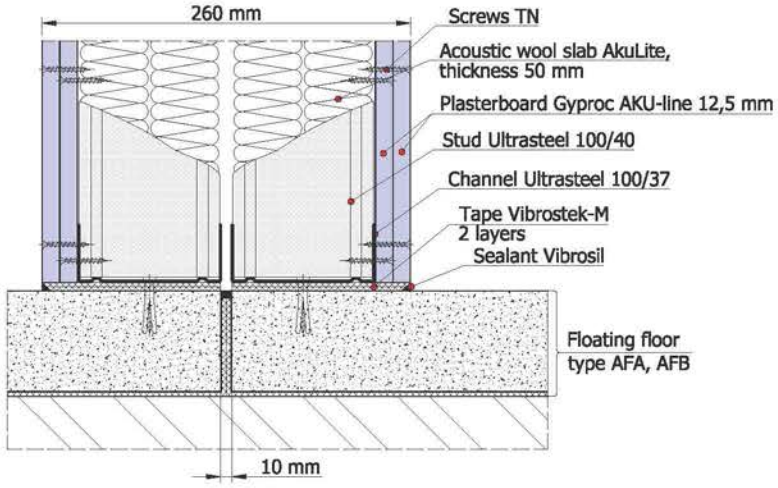
Rw = 65dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of partition m=59 kg**

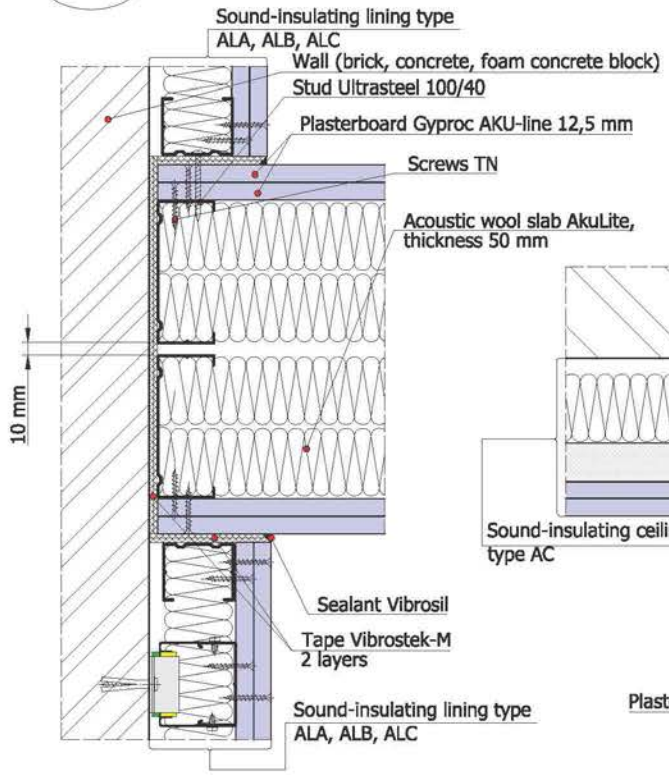
1.19.1 Junction of floating floor to partition



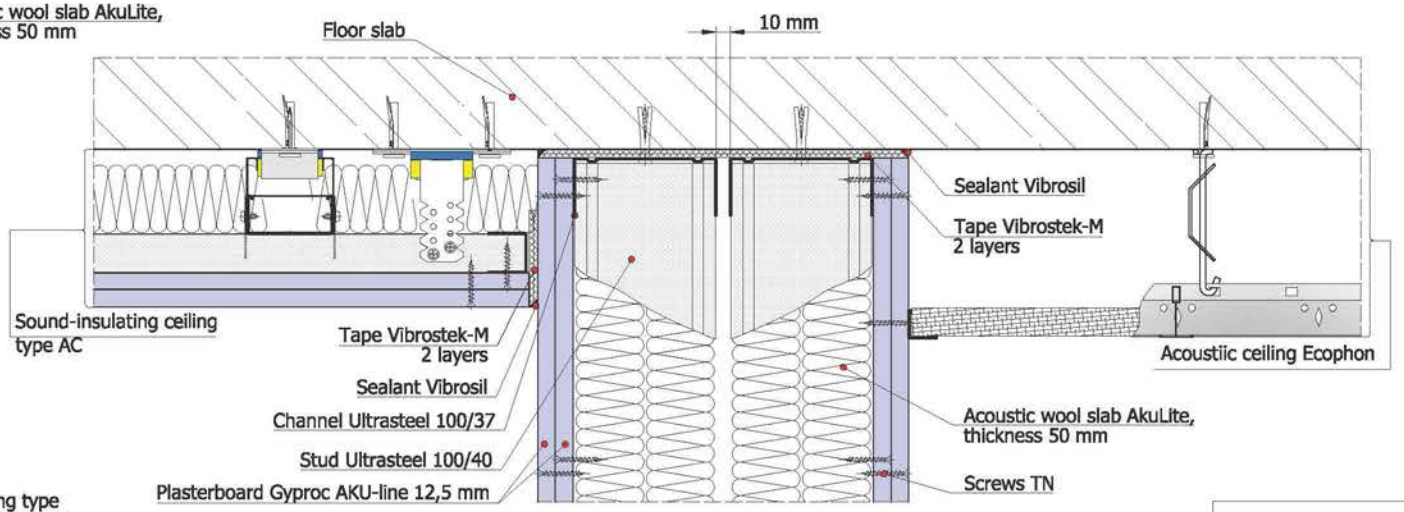
1.19.2 Junction of partition to floating floor



1.19.3 Junction of wall lining to partition



1.19.4 Junction of suspended ceiling to partition

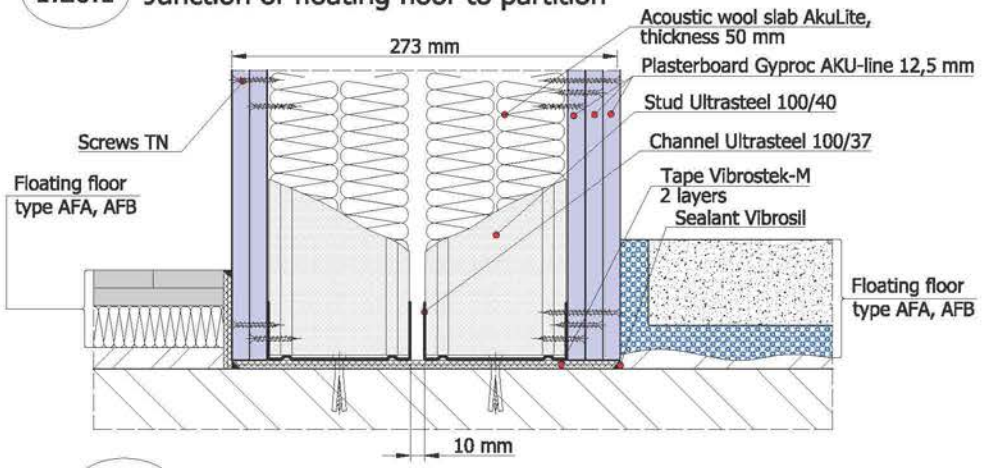


Sheet 1.19

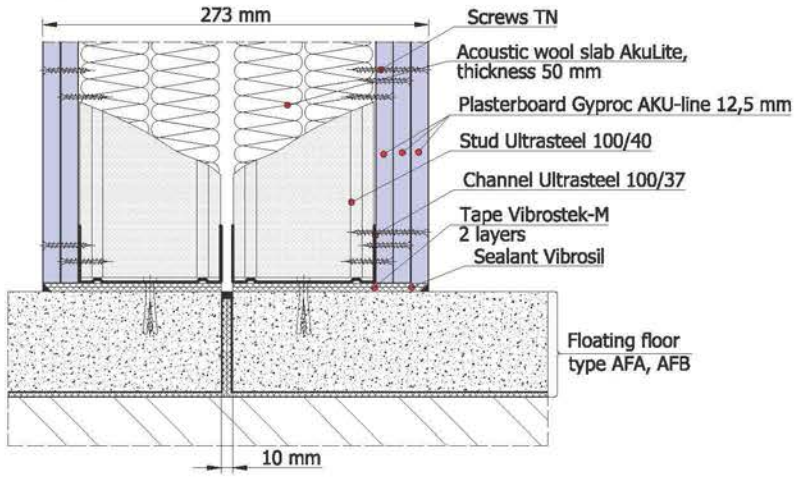
Design of 273 mm sound-insulating partition, type AW 22.45 | Rw = 66dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of partition m=71 kg**

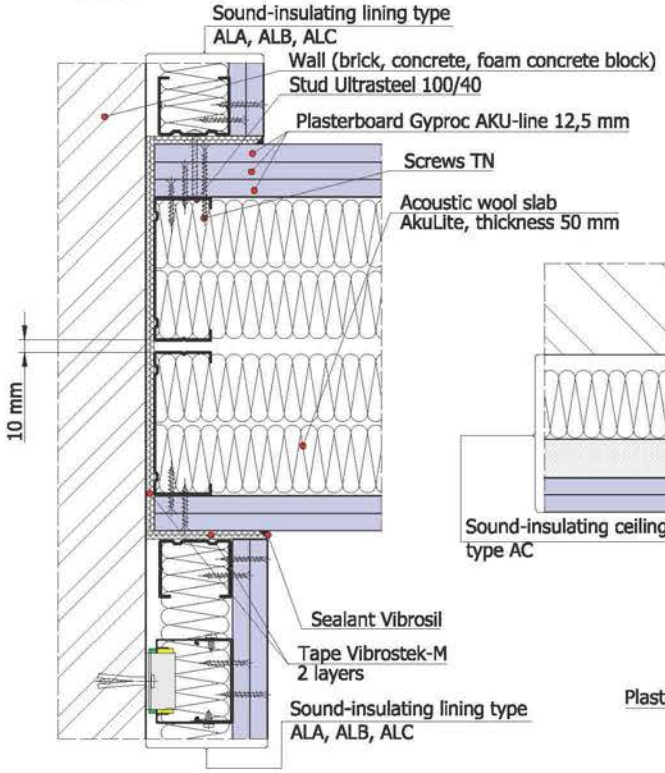
1.20.1 Junction of floating floor to partition



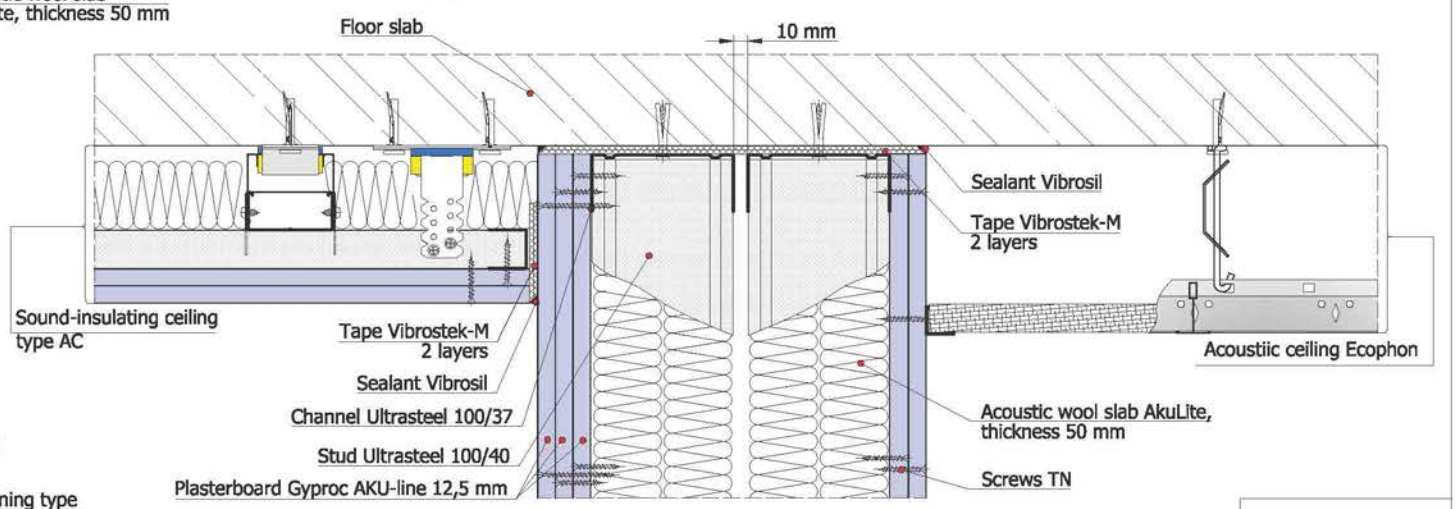
1.20.2 Junction of partition to floating floor



1.20.3 Junction of wall lining to partition



1.20.4 Junction of suspended ceiling to partition

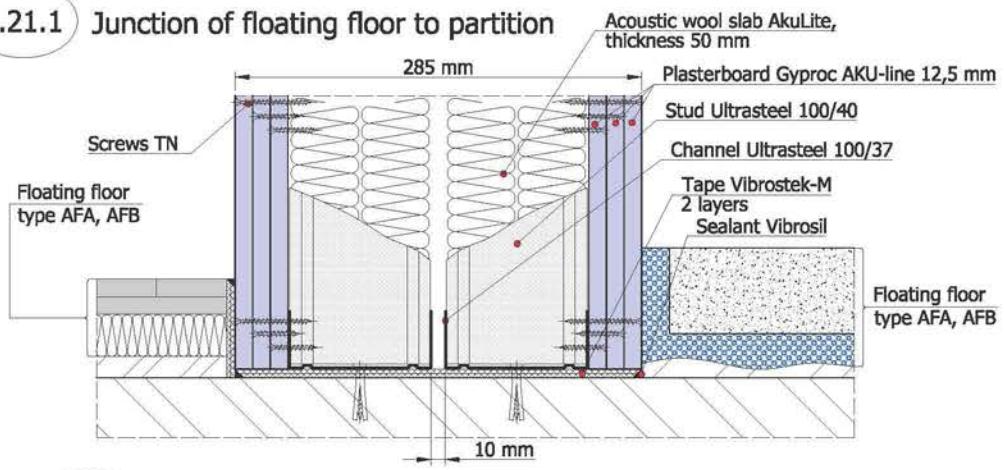


Sheet 1.20

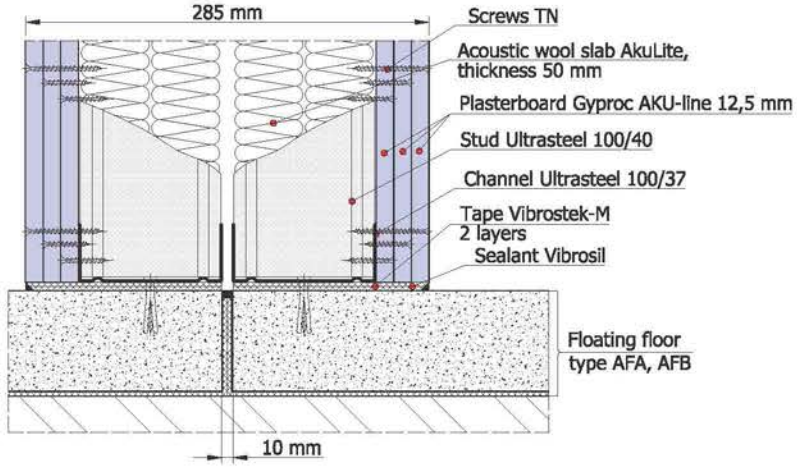
Design of 285 mm sound-insulating partition, type AW 22.46 | Rw = 67dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of partition m=83 kg**

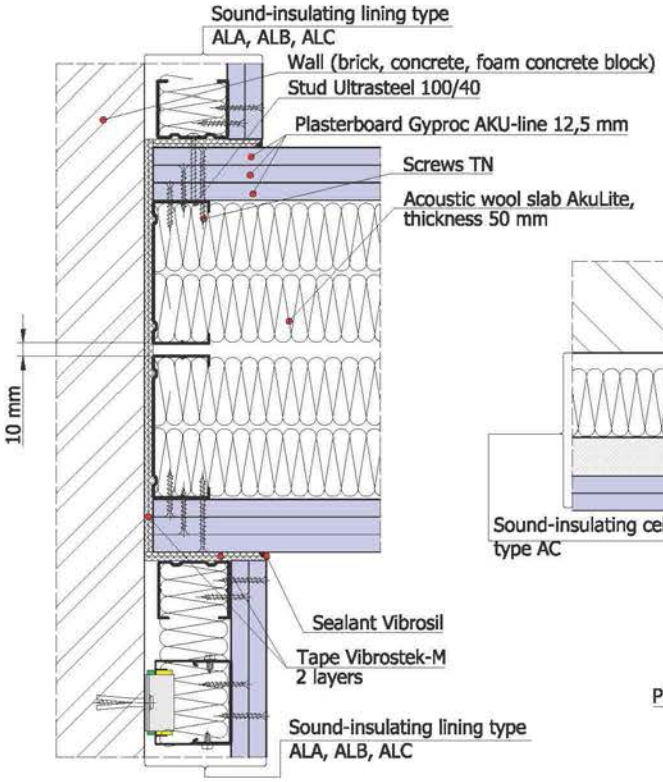
1.21.1 Junction of floating floor to partition



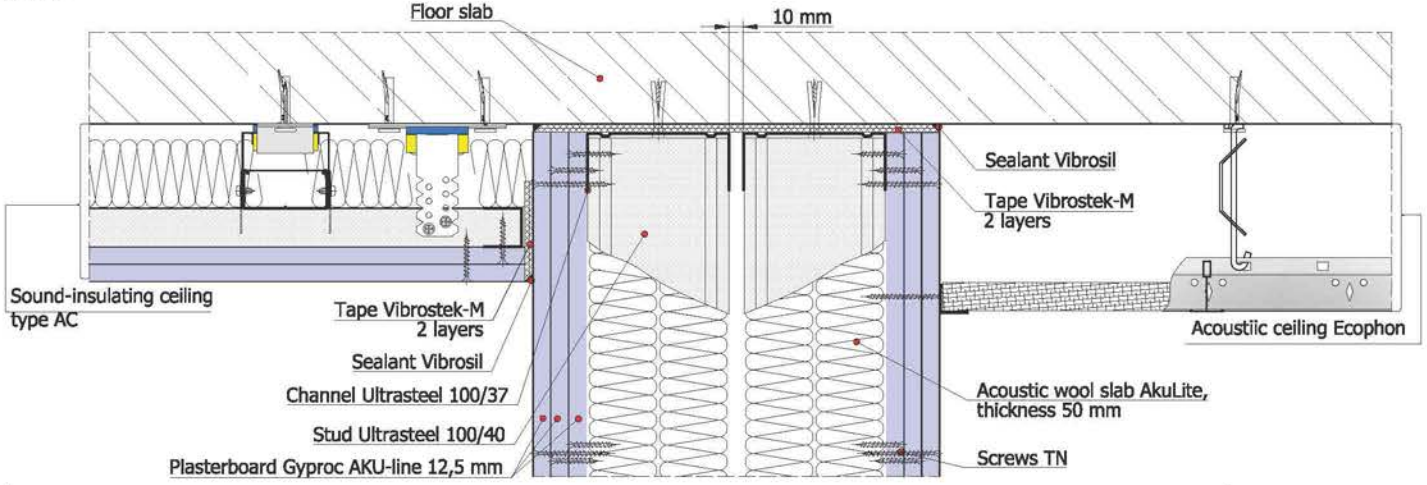
1.21.2 Junction of partition to floating floor



1.21.3 Junction of wall lining to partition



1.21.4 Junction of suspended ceiling to partition

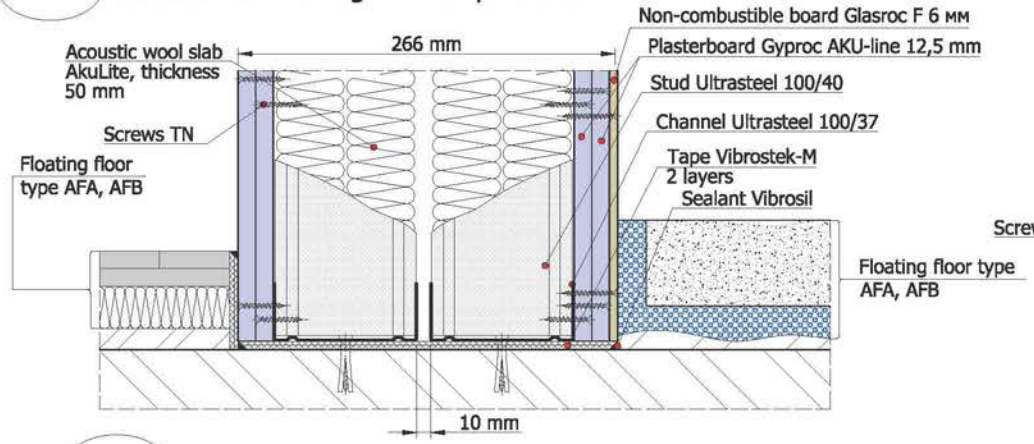


Sheet 1.21

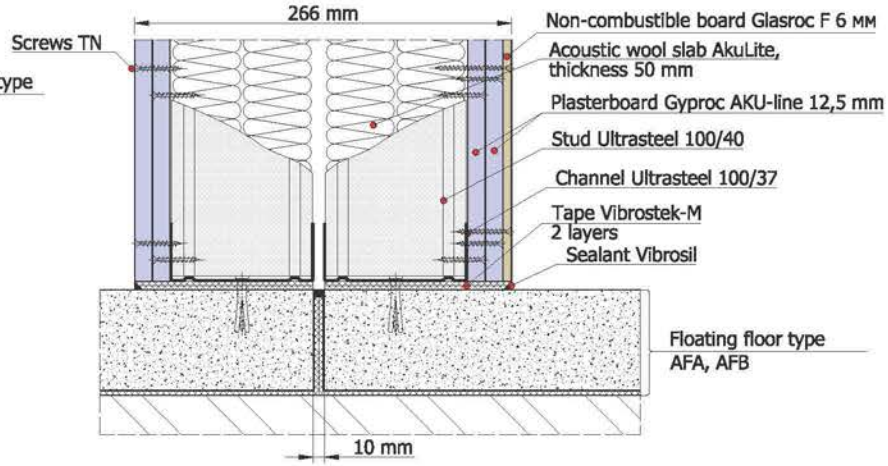
Design of 266 mm sound-insulating partition, type AW 22.45NC | Rw = 66дБ

- **Maximum heighth of partition with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of partition m=65 kg**

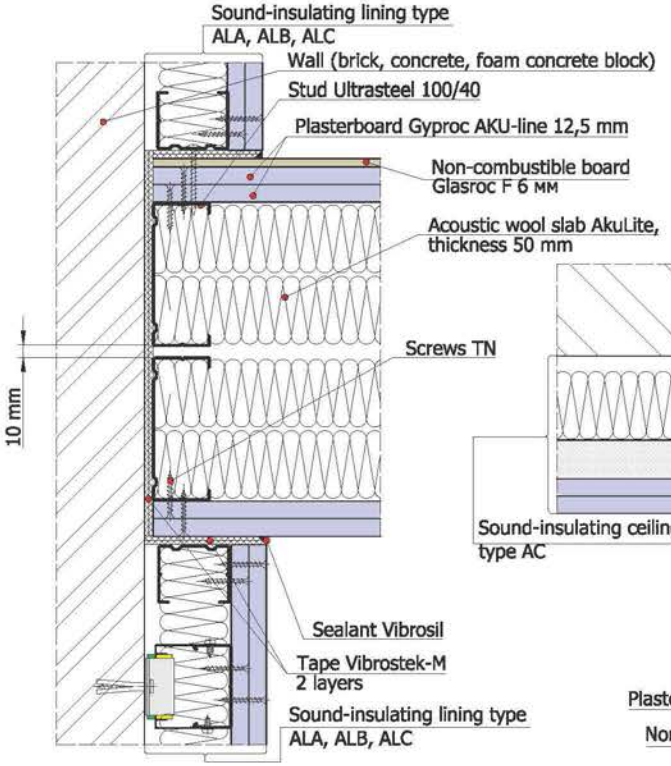
1.22.1 Junction of floating floor to partition



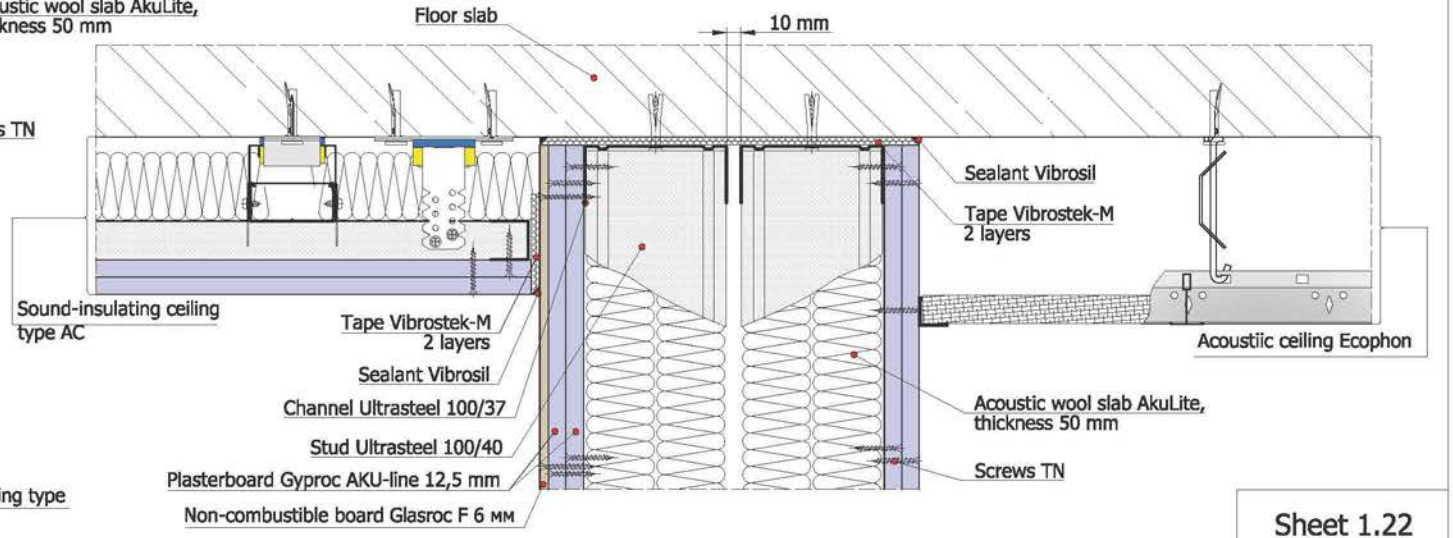
1.22.2 Junction of partition to floating floor



1.22.3 Junction of wall lining to partition



1.22.4 Junction of suspended ceiling to partition

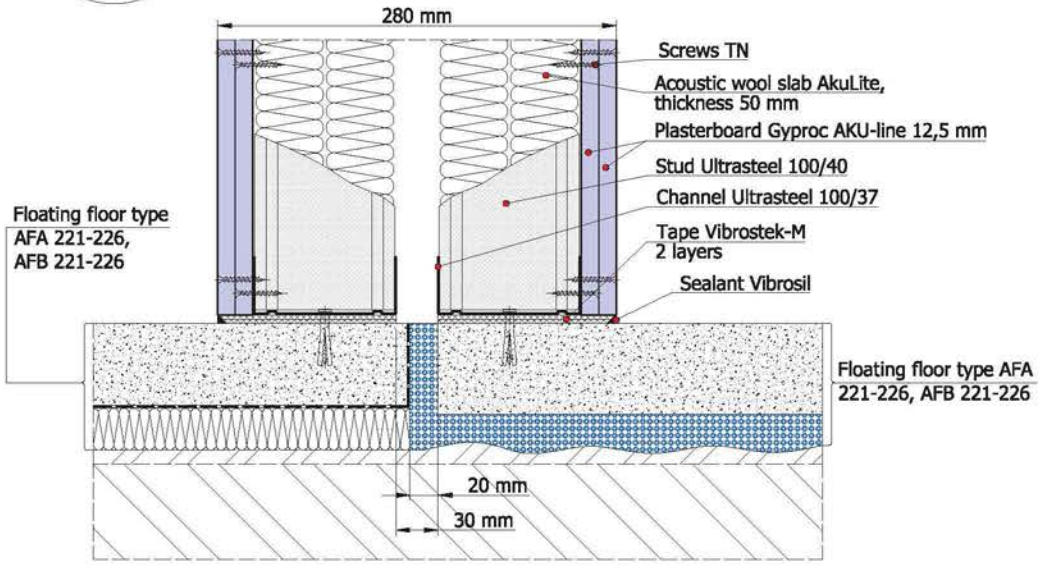


Sheet 1.22

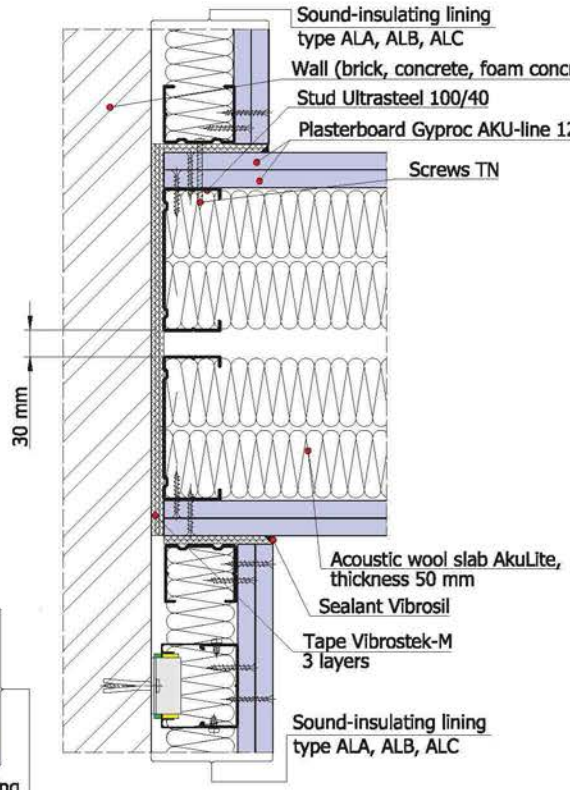
Design of 280 mm sound-insulating partition, type AW 32.44 | Rw = 67 dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of partition m=59 kg**

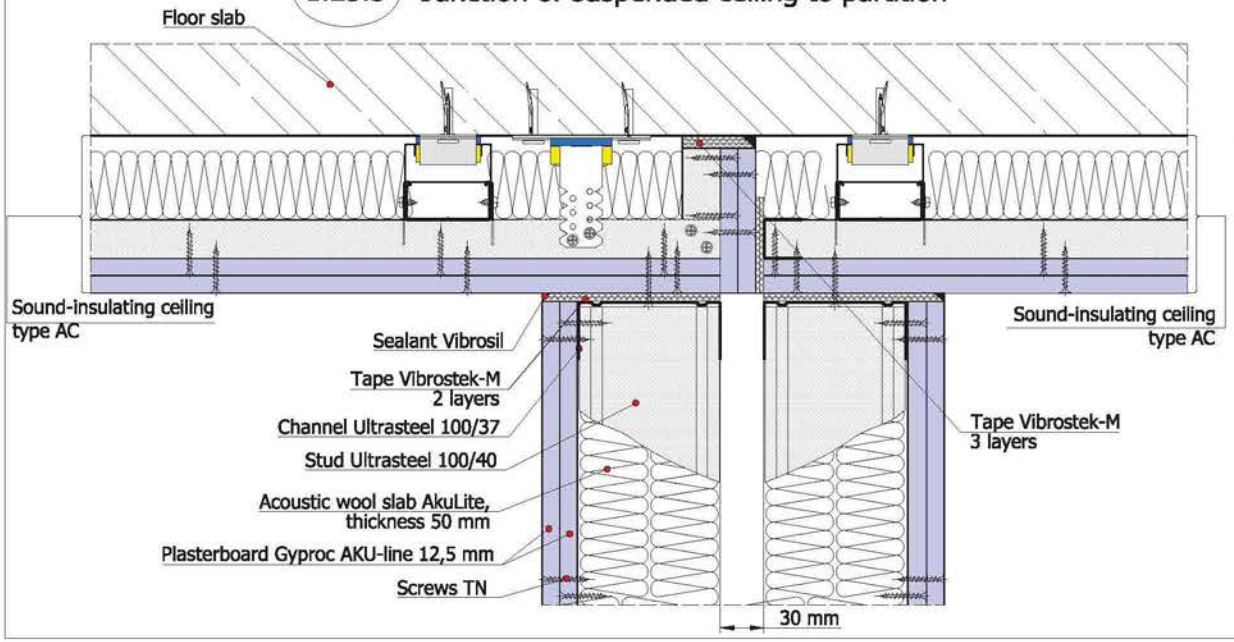
1.23.1 Junction of floating floor to partition



1.23.2 Junction of wall lining to partition



1.23.3 Junction of suspended ceiling to partition

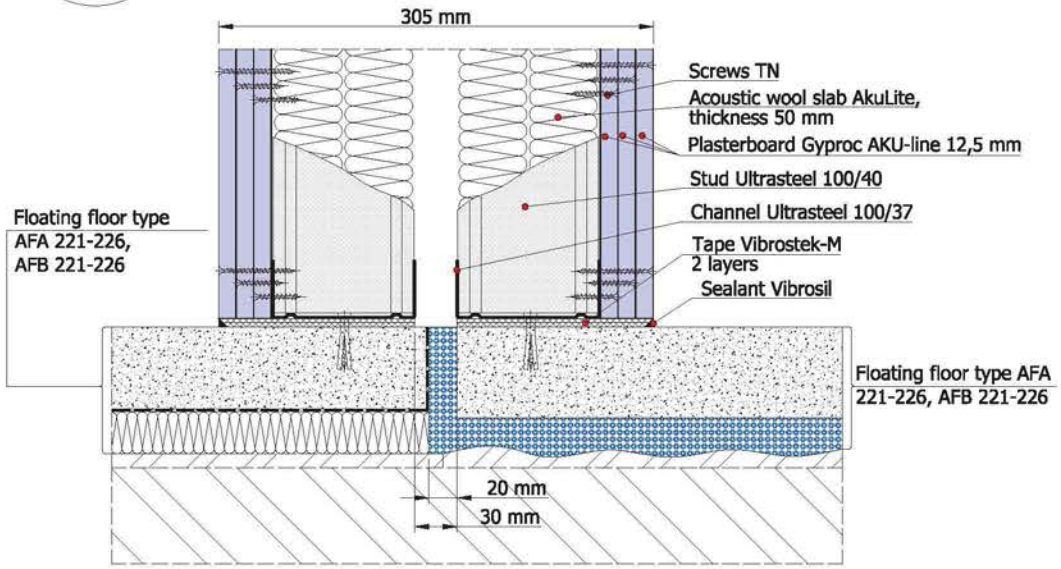


Sheet 1.23

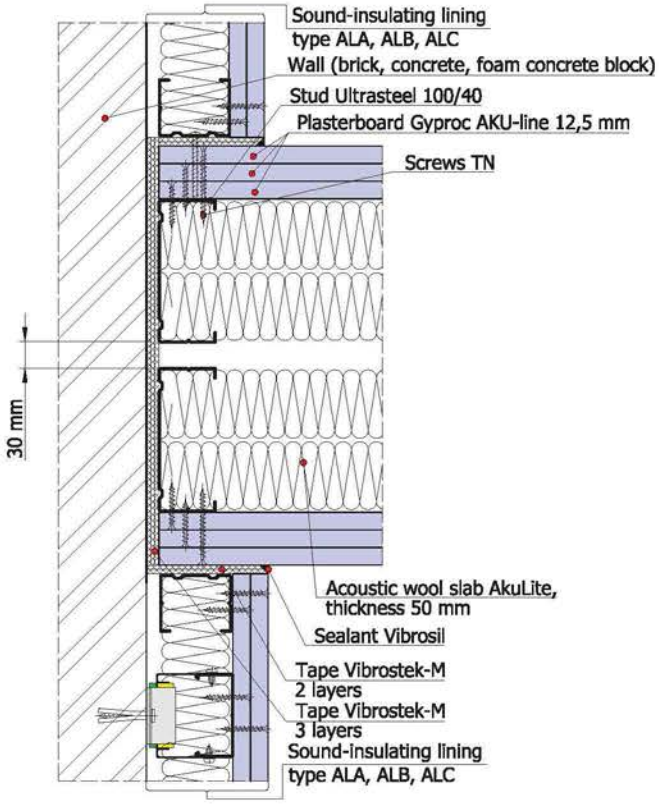
Design of 305 mm sound-insulating partition, type AW 32.46 | Rw = 68dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of partition m=83 kg**

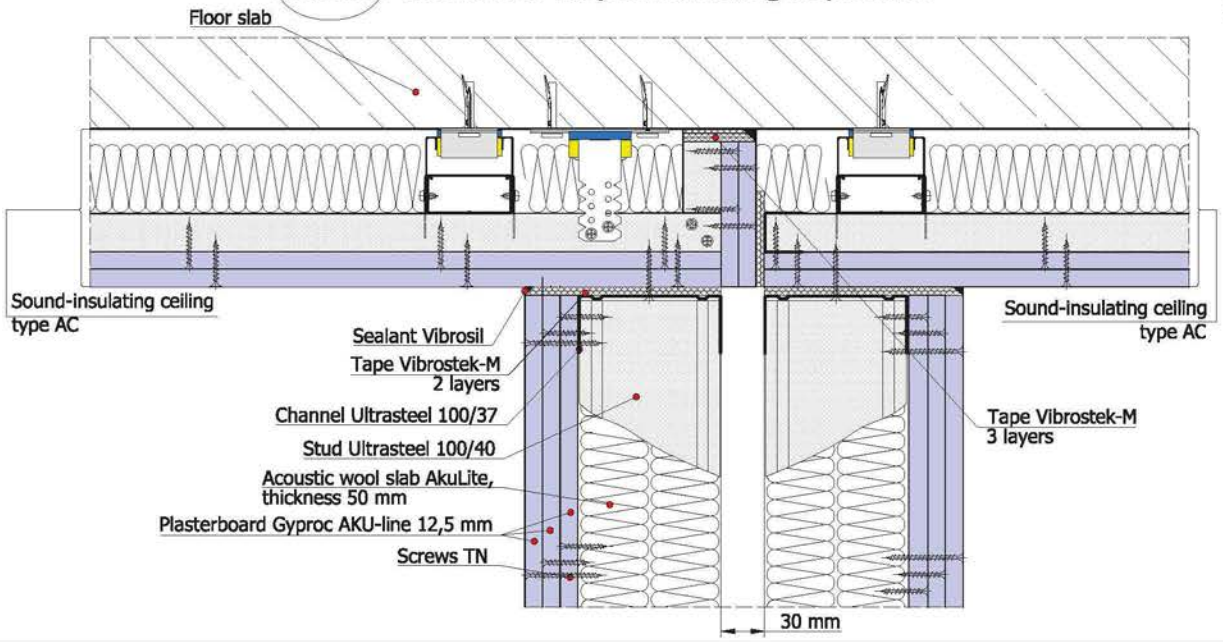
1.24.1 Junction of floating floor to partition



1.24.2 Junction of wall lining to partition



1.24.3 Junction of suspended ceiling to partition

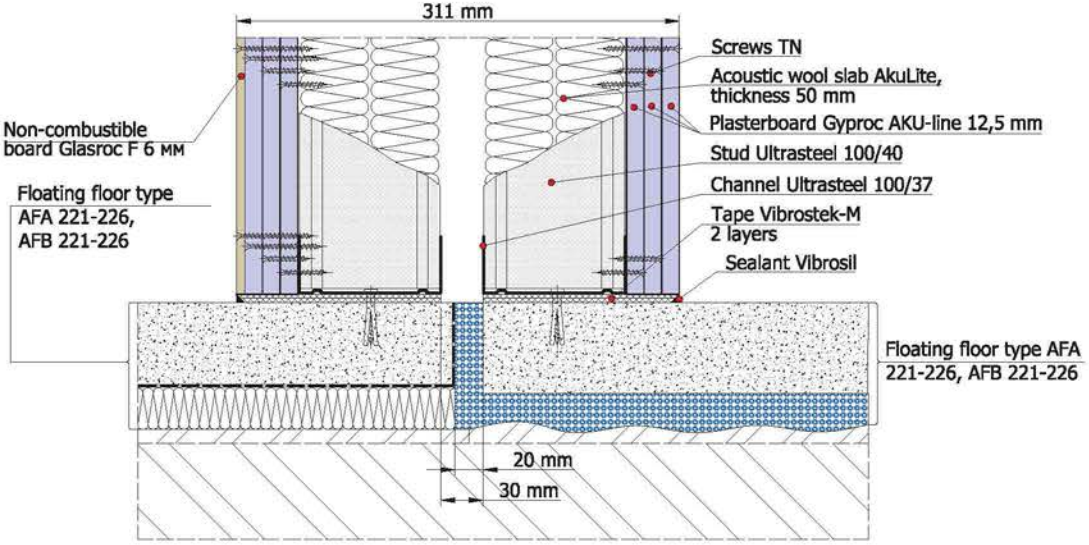


Sheet 1.24

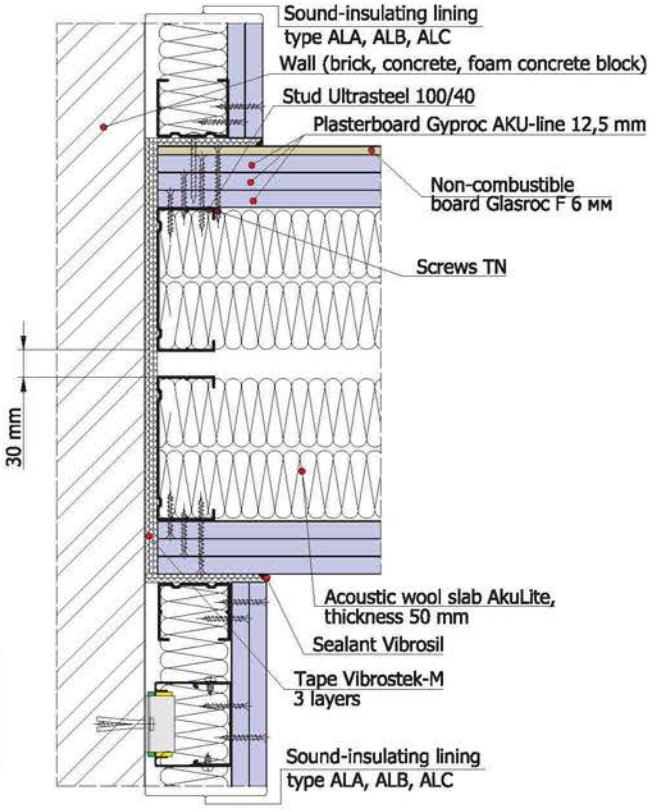
Design of 311 mm sound-insulating partition, type AW 32.47NC | Rw = 68dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of partition m=89 kg**

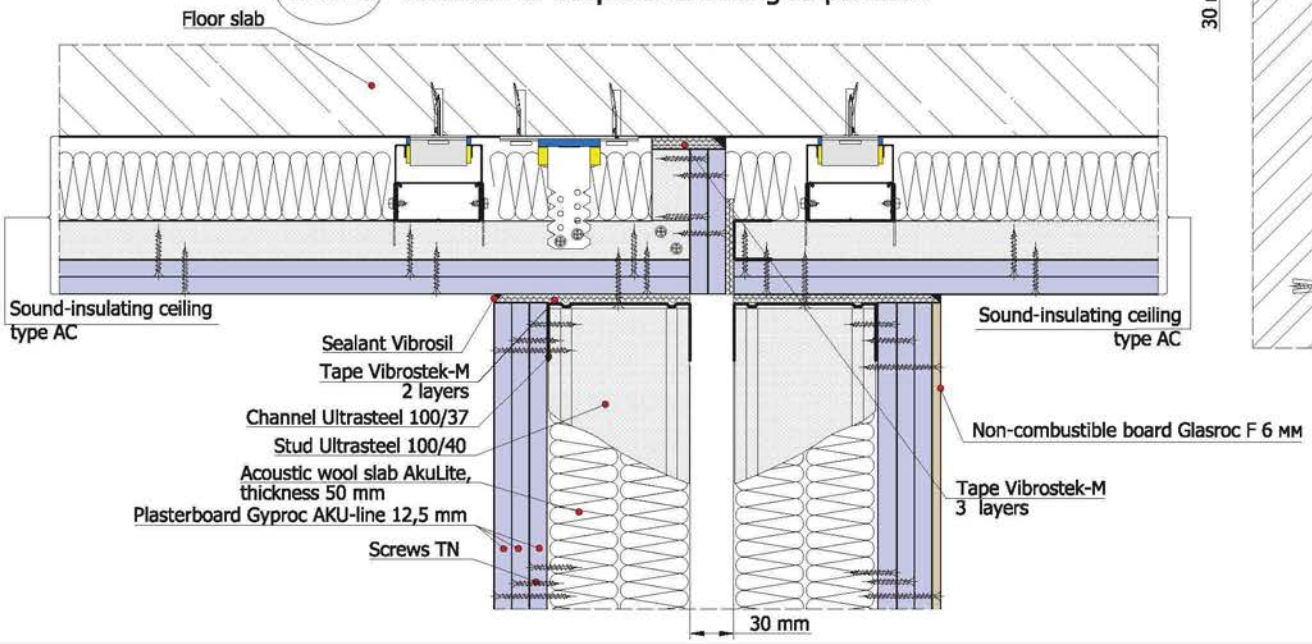
1.25.1 Junction of floating floor to partition



1.25.2 Junction of wall lining to partition



1.25.3 Junction of suspended ceiling to partition

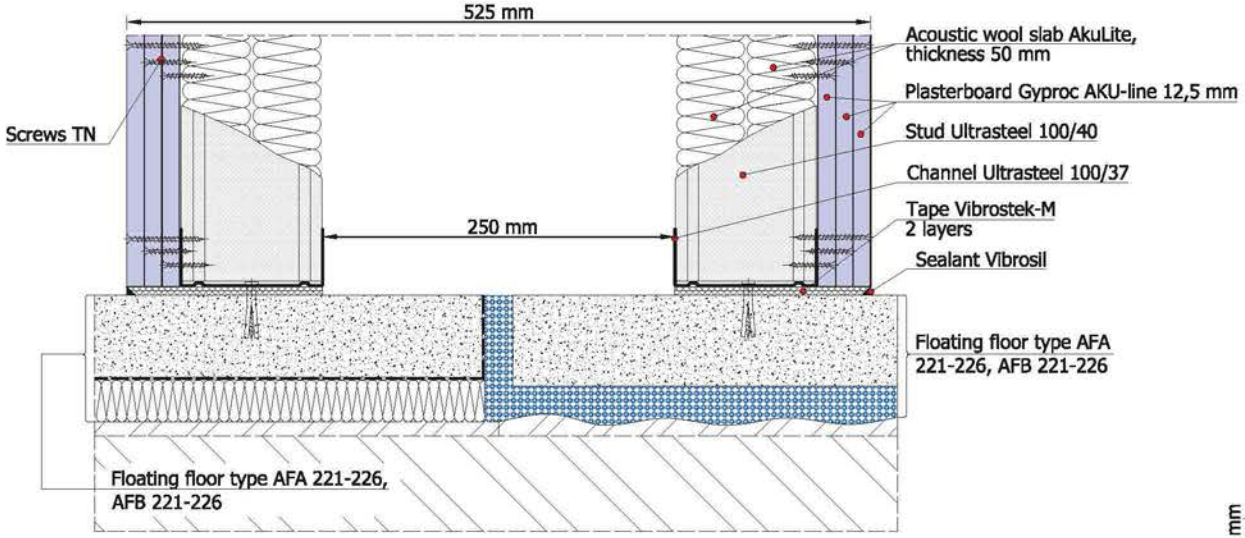


Sheet 1.25

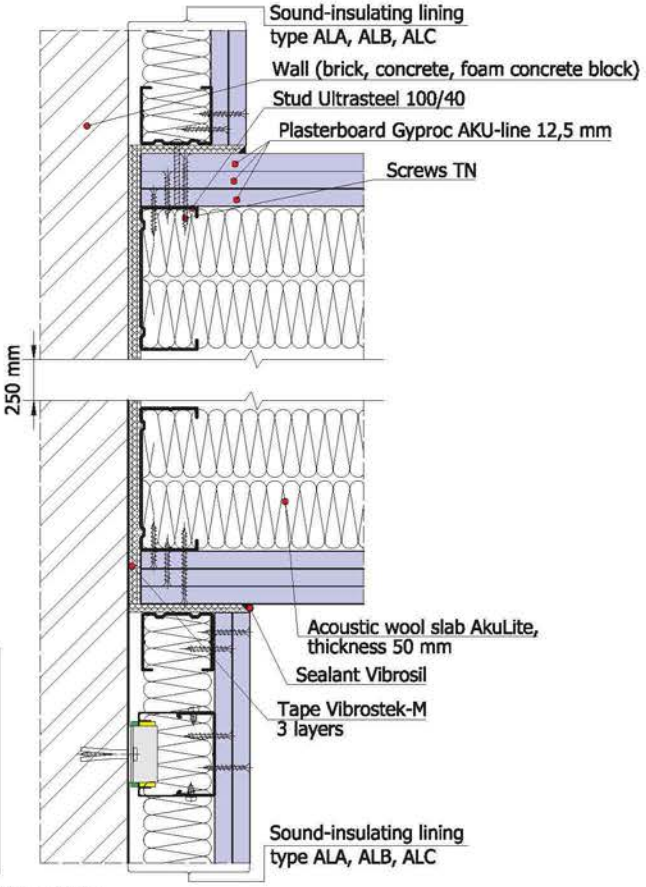
Design of 525 mm sound-insulating partition, type AW 42.46 | Rw = 70dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of partition m=83 kg**

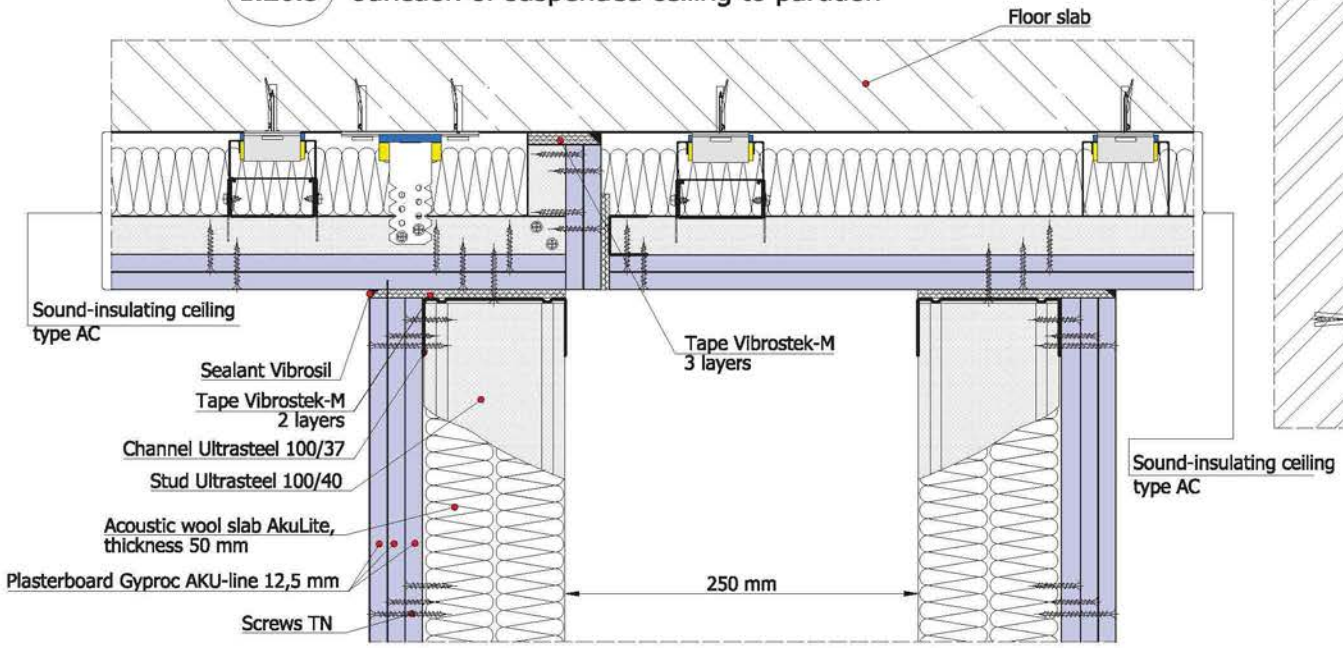
1.26.1 Junction of floating floor to partition



1.26.2 Junction of wall lining to partition



1.26.3 Junction of suspended ceiling to partition



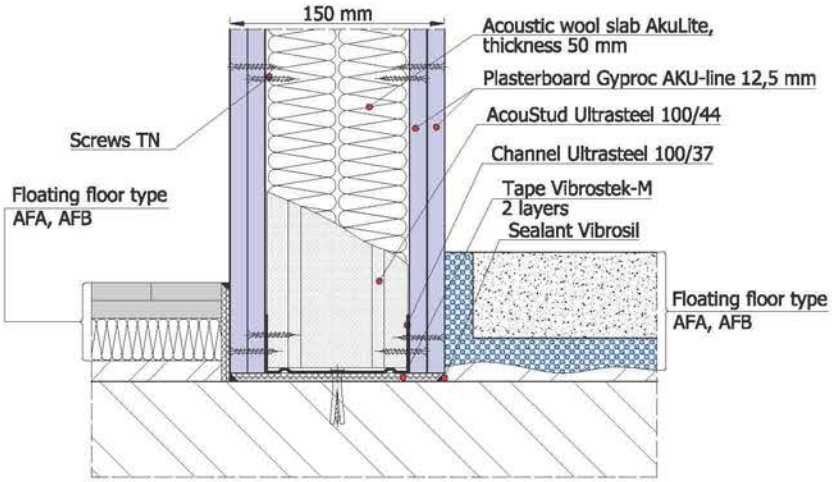
Sheet 1.26

Design of 150 mm sound-insulating partition, type AW 15.24

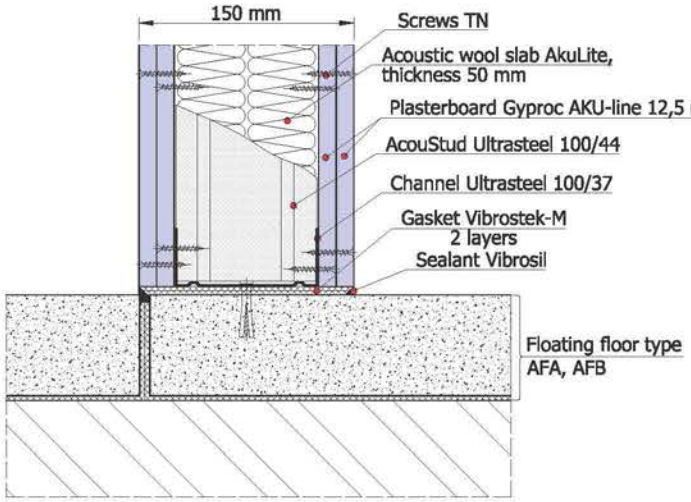
Rw = 56dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=6,5 m**
- **1 m^2 mass of partition m=54 kg**

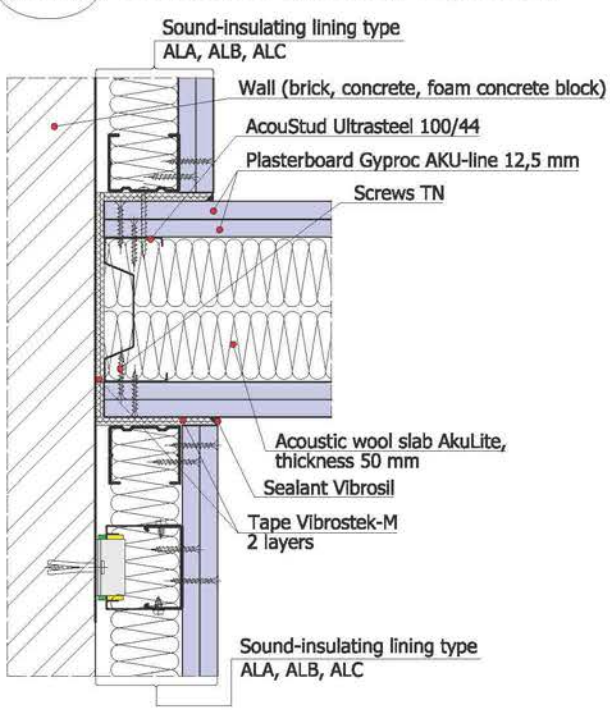
1.27.1 Junction of floating floor to partition



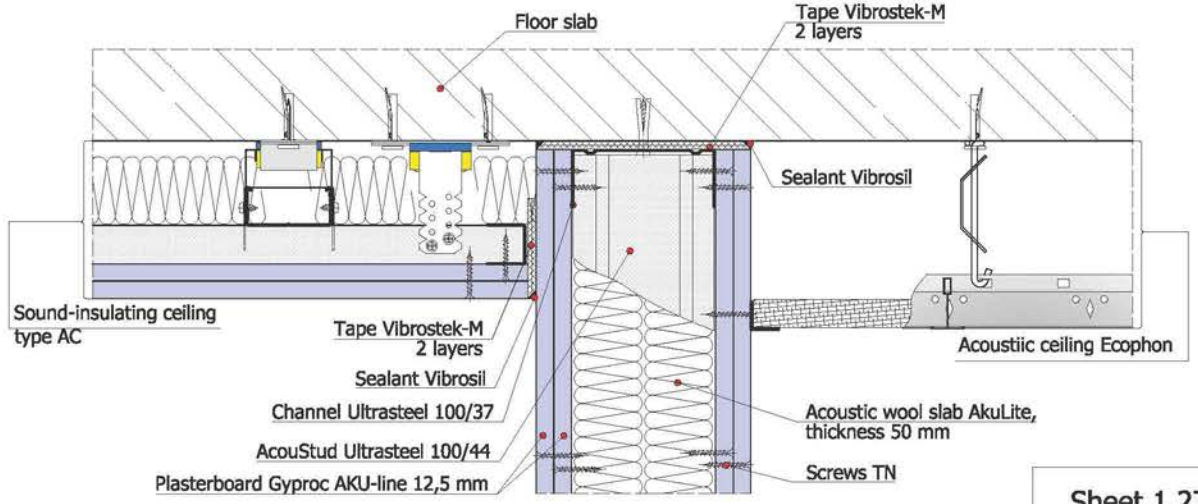
1.27.2 Junction of partition to floating floor



1.27.3 Junction of wall lining to partition



1.27.4 Junction of suspended ceiling to partition

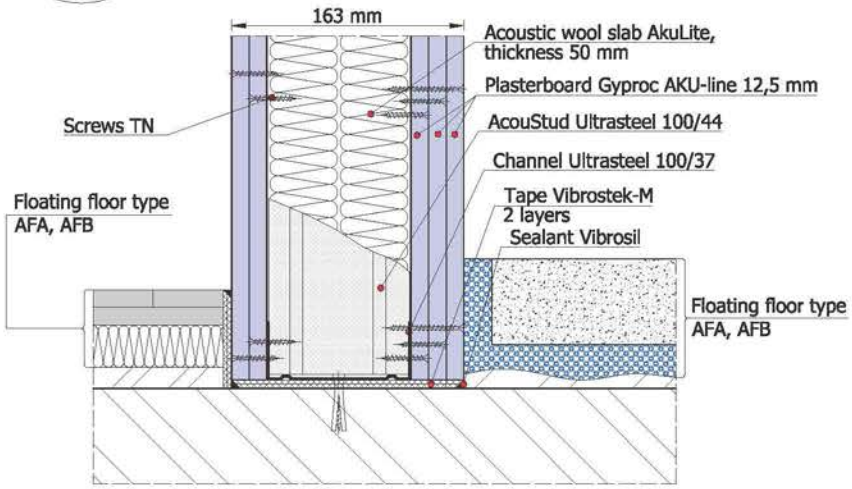


Sheet 1.27

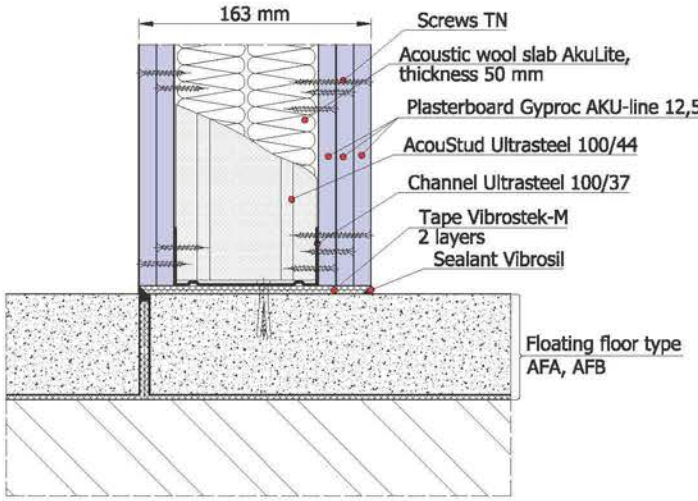
Design of 163 mm sound-insulating partition, type AW 15.25 | Rw = 58dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=6.5 m**
- **1 m^2 mass of partition m=66 kg**

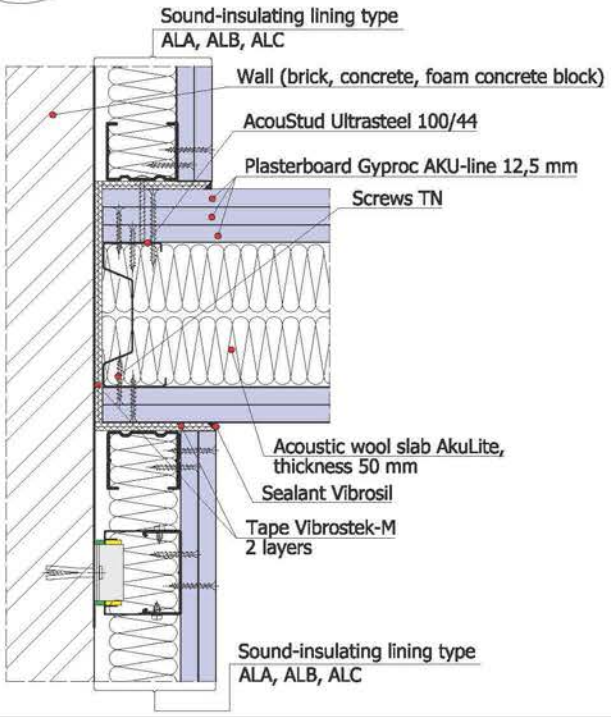
1.28.1 Junction of floating floor to partition



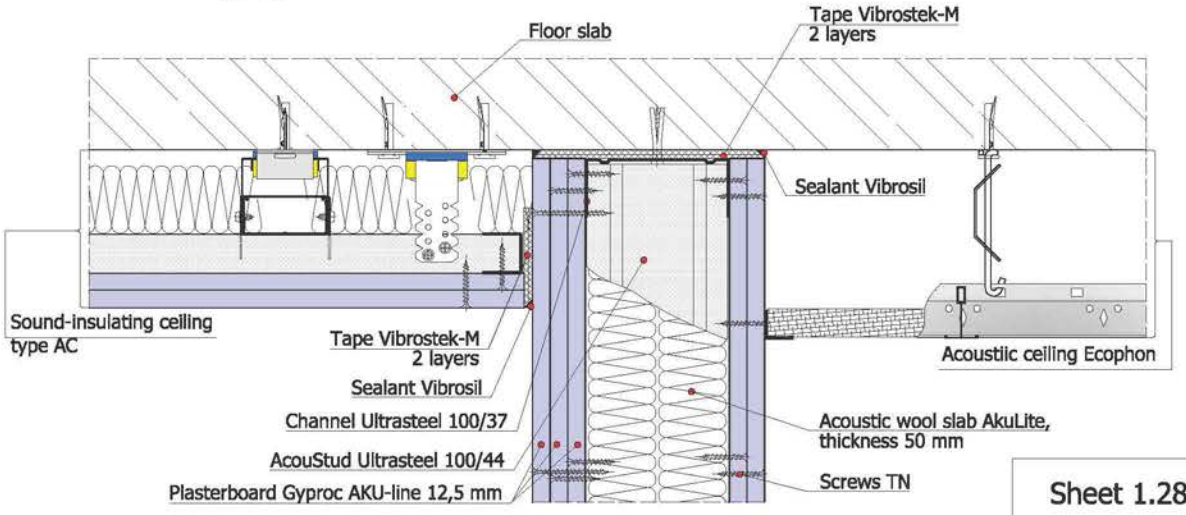
1.28.2 Junction of partition to floating floor



1.28.3 Junction of wall lining to partition



1.28.4 Junction of suspended ceiling to partition

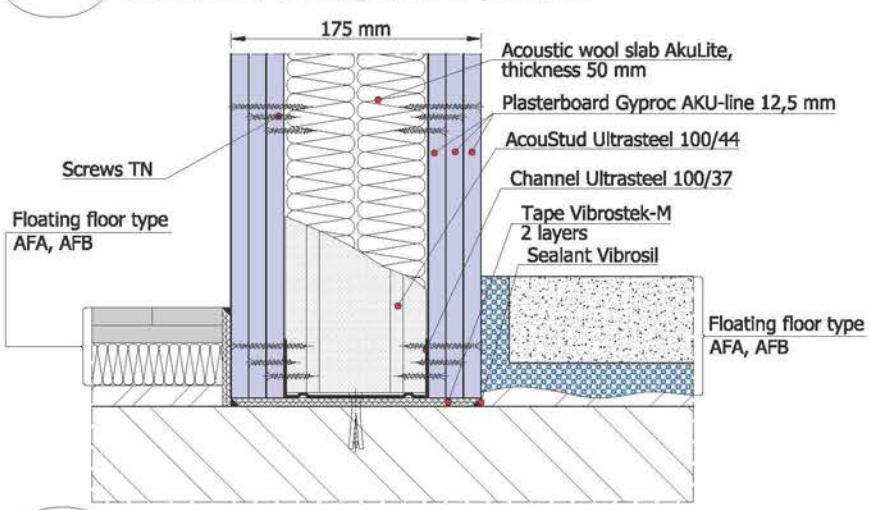


Sheet 1.28

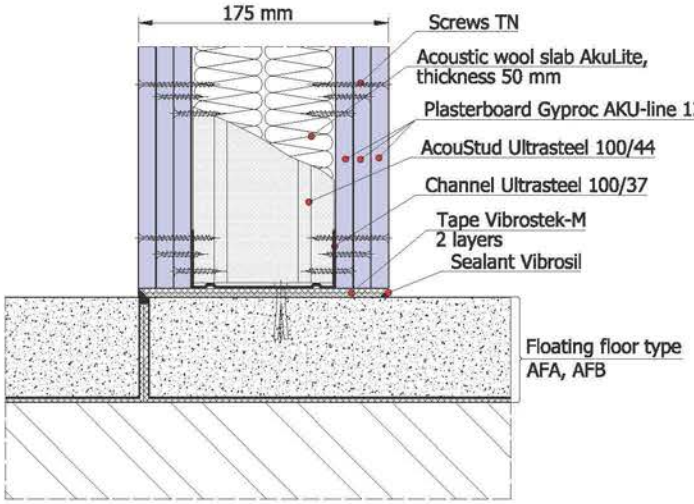
Design of 3175 mm sound-insulating partition, type AW 15.26 | Rw = 60dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=7 m**
- **1 m^2 mass of partition m=78 kg**

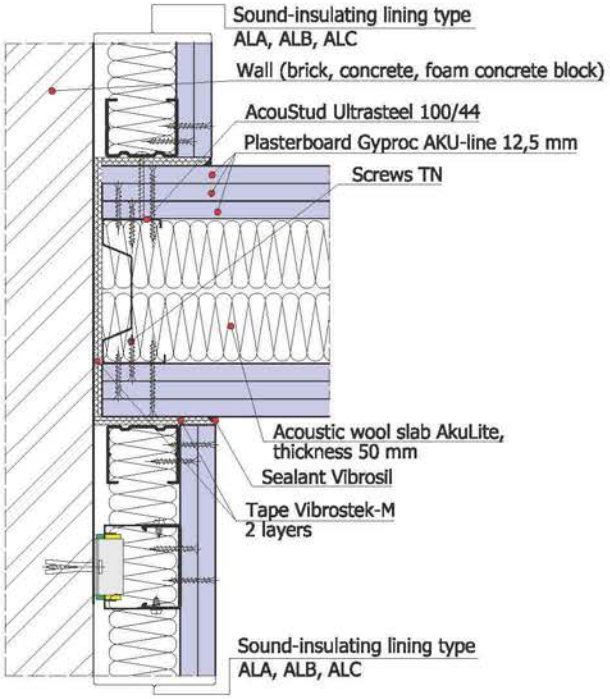
1.29.1 Junction of floating floor to partition



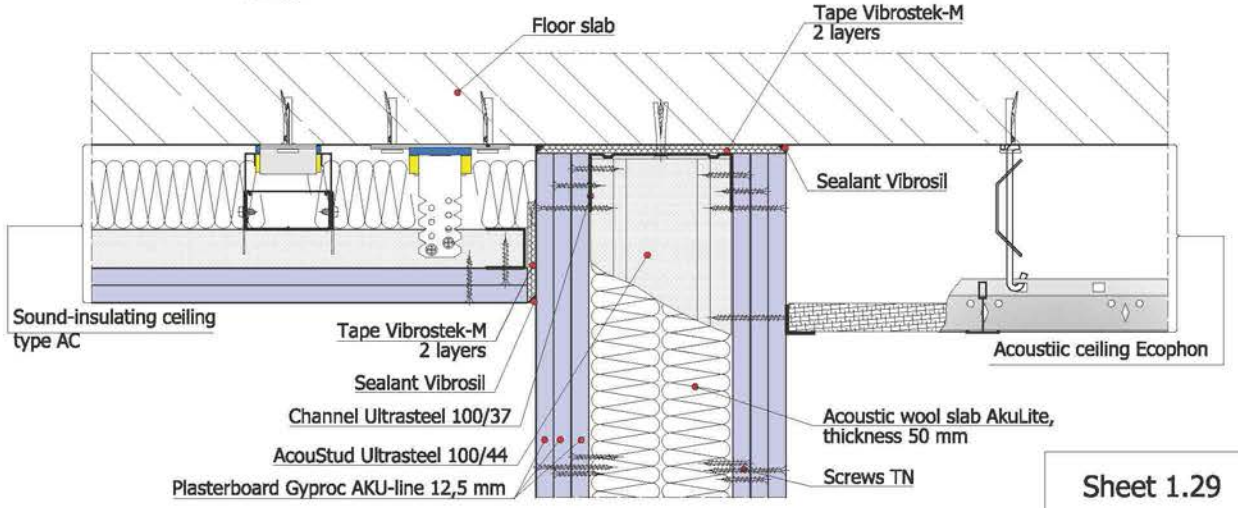
1.29.2 Junction of partition to floating floor



1.29.3 Junction of wall lining to partition



1.29.4 Junction of suspended ceiling to partition

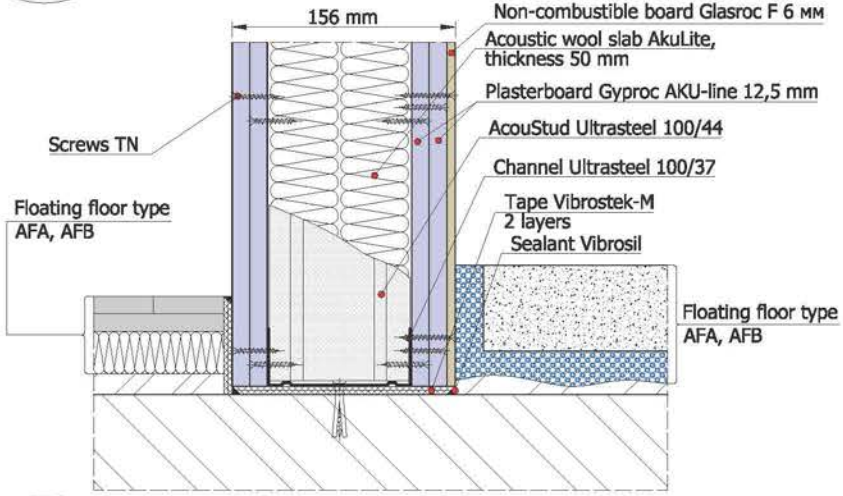


Sheet 1.29

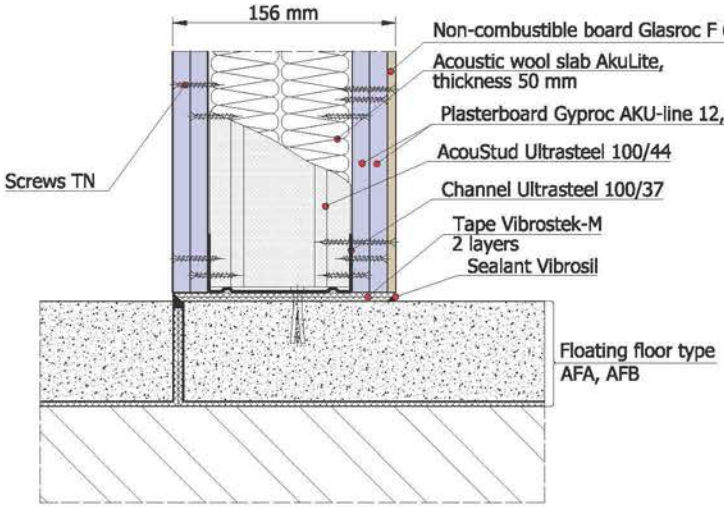
Design of 153 mm sound-insulating partition, type AW 15.25NC | Rw = 58dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=6.5 m**
- **1 m^2 mass of partition m=60 kg**

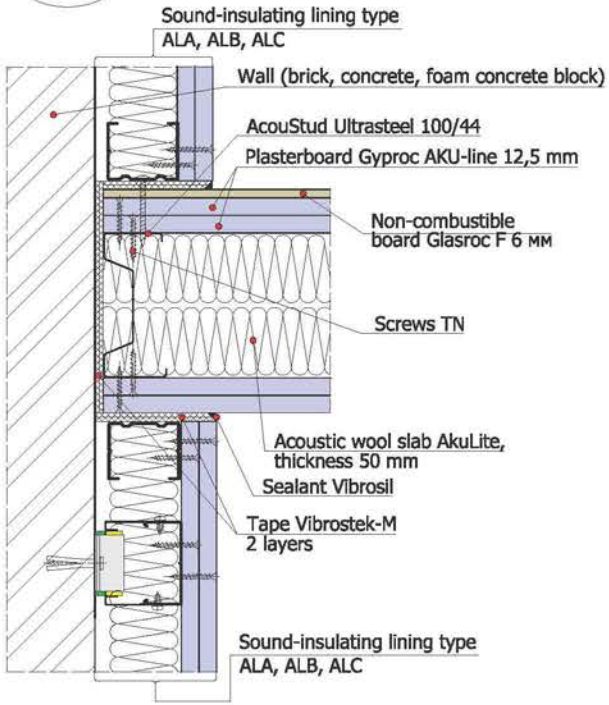
1.30.1 Junction of floating floor to partition



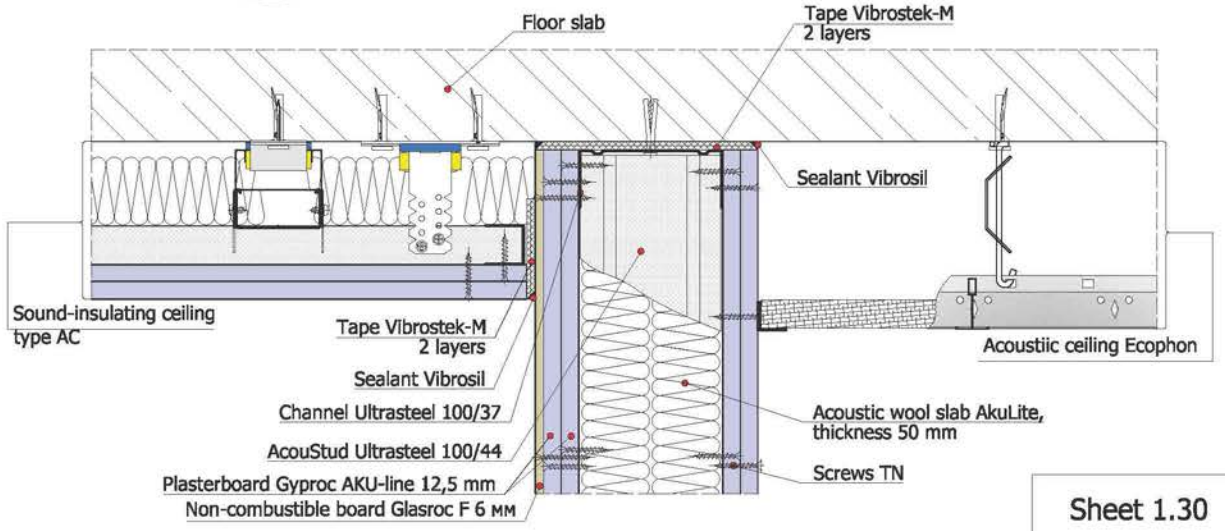
1.30.2 Junction of partition to floating floor



1.30.3 Junction of wall lining to partition



1.30.4 Junction of suspended ceiling to partition

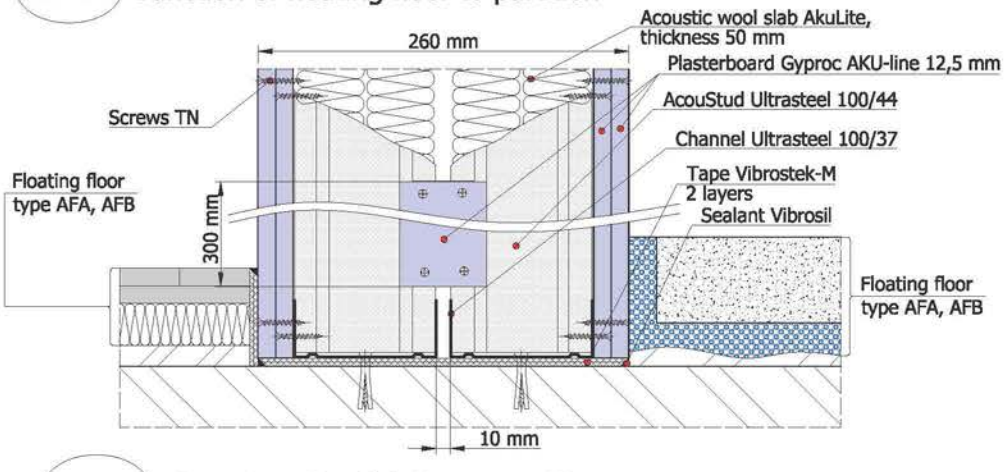


Sheet 1.30

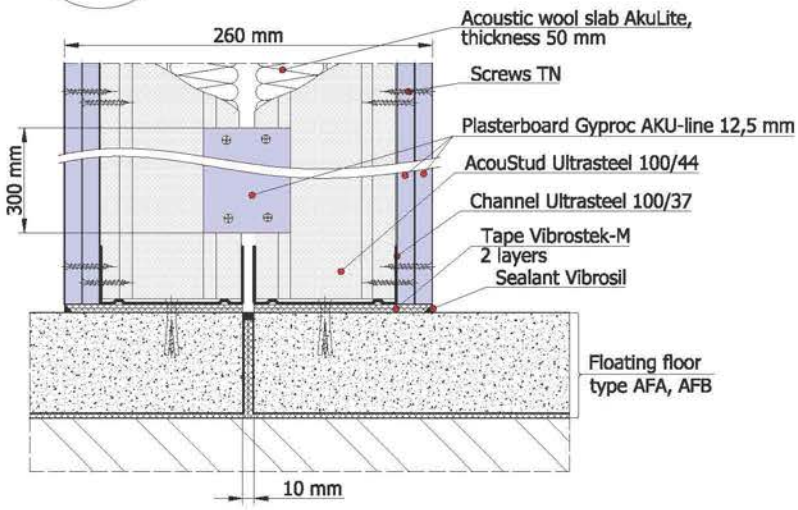
Design of 260 mm sound-insulating partition, type AW 25.44 | Rw = 65dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=10 m**
- **1 m^2 mass of partition m=61 kg**

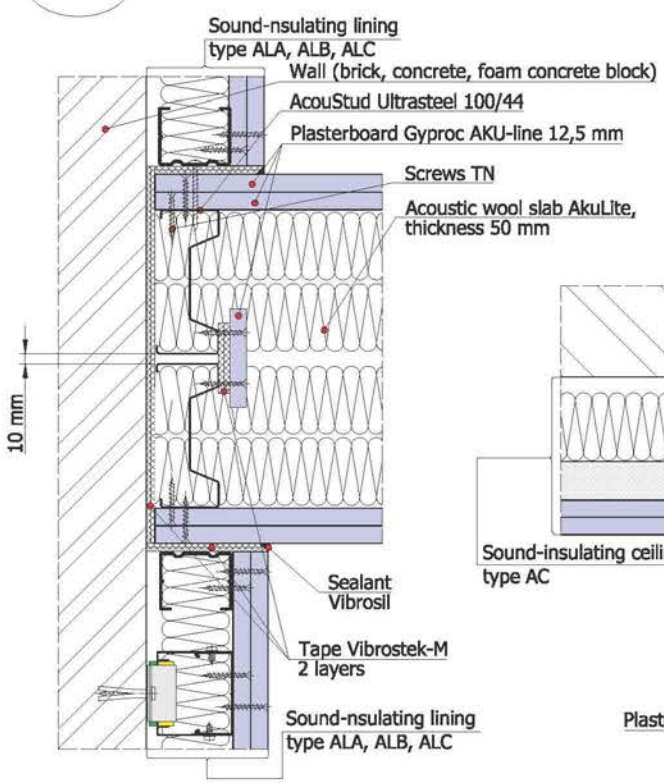
1.31.1 Junction of floating floor to partition



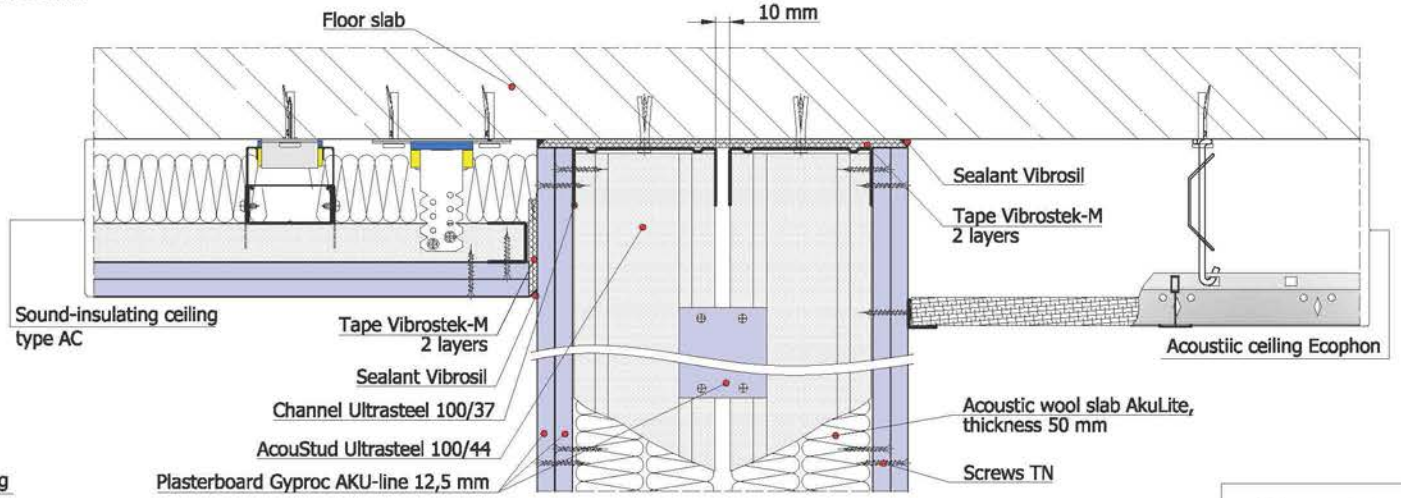
1.31.2 Junction of partition to floating floor



1.31.3 Junction of wall lining to partition



1.31.4 Junction of suspended ceiling to partition

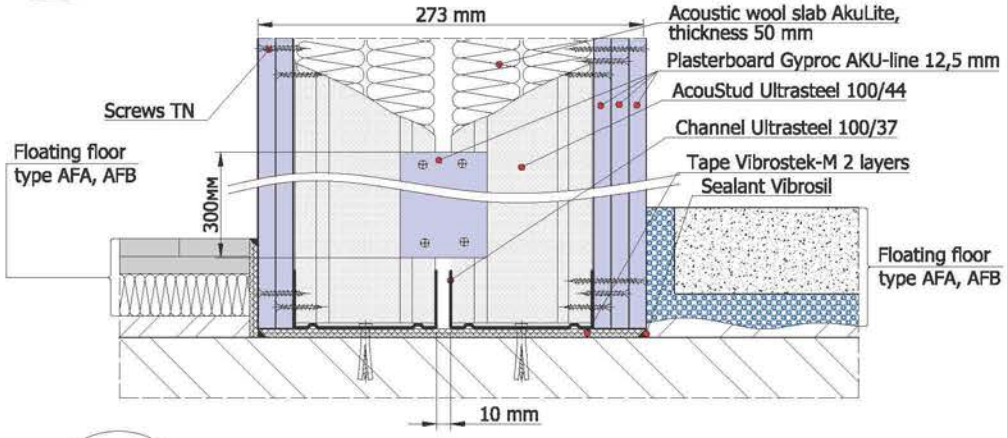


Sheet 1.31

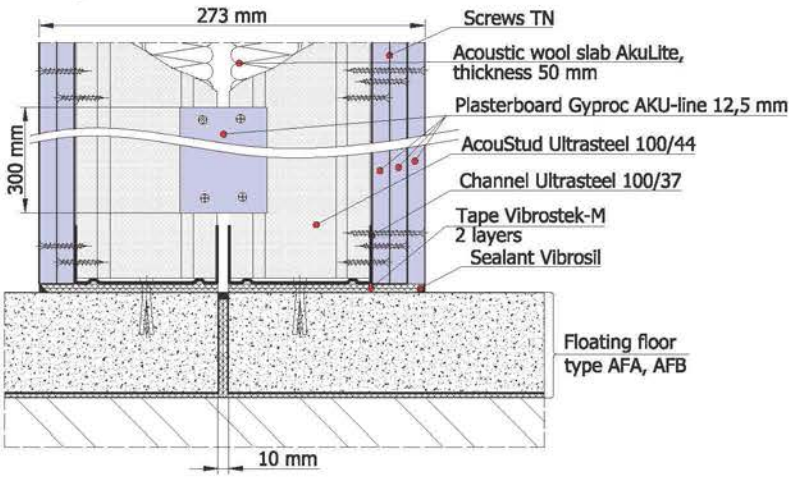
Design of 273 mm sound-insulating partition, type AW 25.45 | Rw = 66dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=10 m**
- **1 m^2 mass of partition m=73 kg**

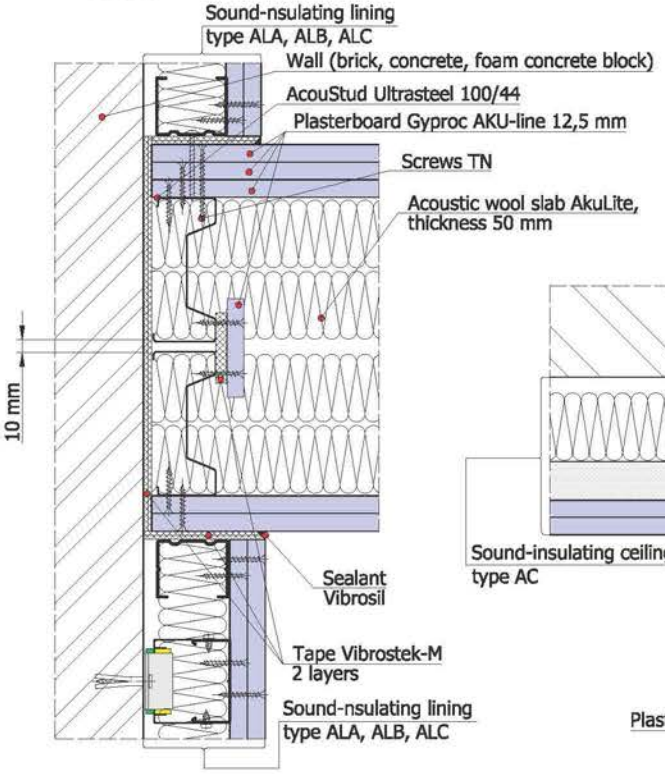
1.32.1 Junction of floating floor to partition



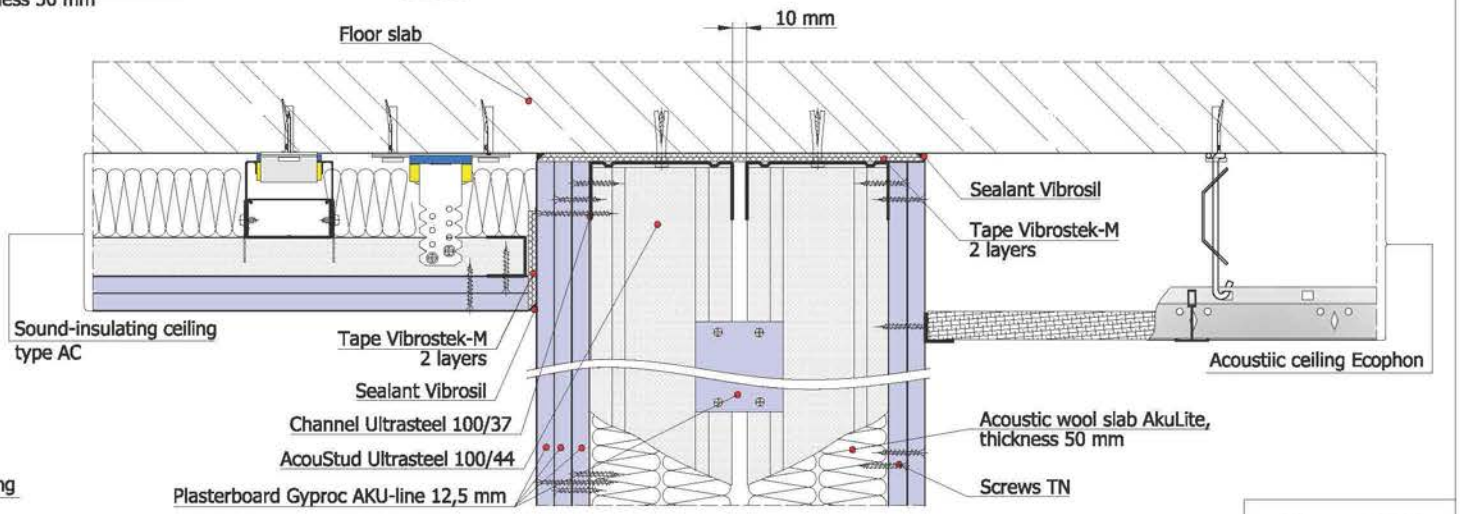
1.32.2 Junction of partition to floating floor



1.32.3 Junction of wall lining to partition



1.32.4 Junction of suspended ceiling to partition

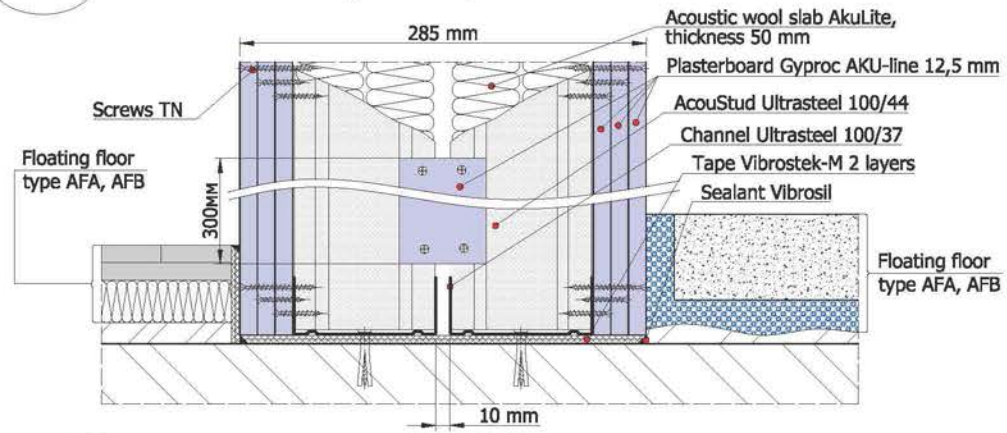


Sheet 1.32

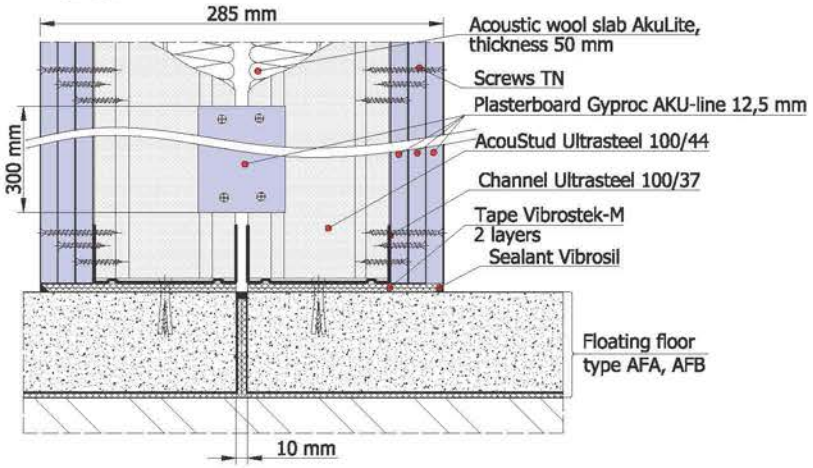
Design of 285 mm sound-insulating partition, type AW 22.46 | Rw = 66dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=10,5 m**
- **1 m^2 mass of partition m=85 kg**

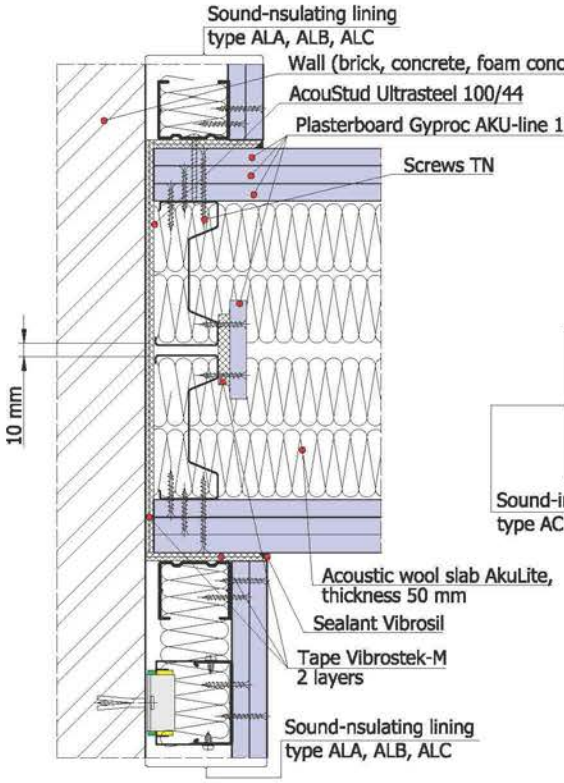
1.33.1 Junction of floating floor to partition



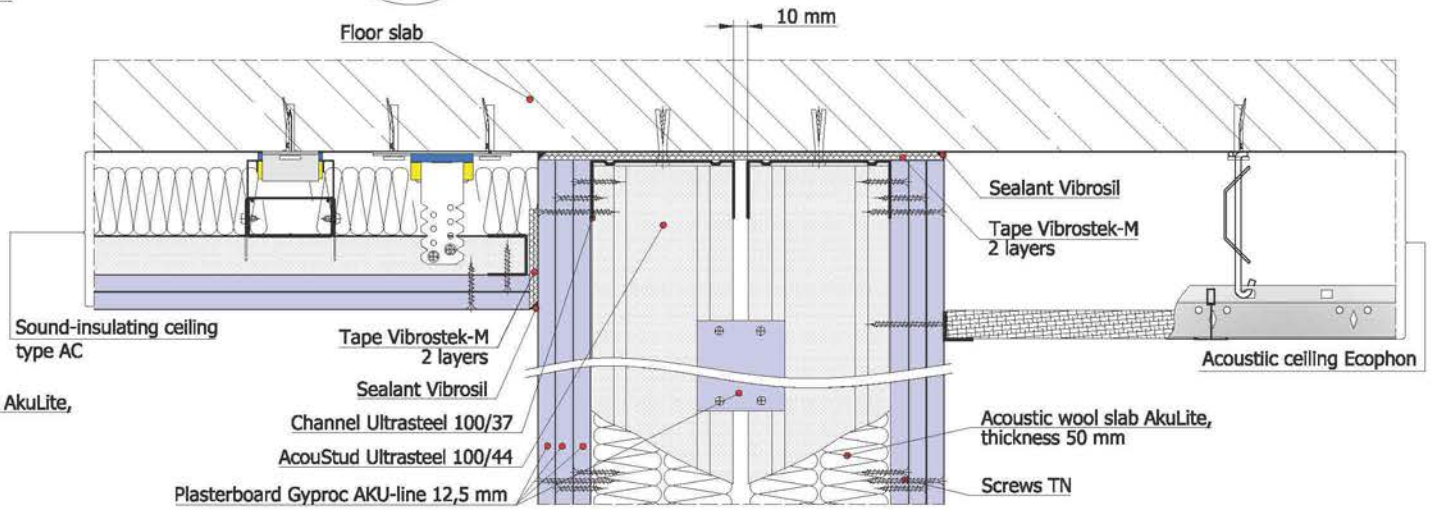
1.33.2 Junction of partition to floating floor



1.33.3 Junction of wall lining to partition



1.33.4 Junction of suspended ceiling to partition

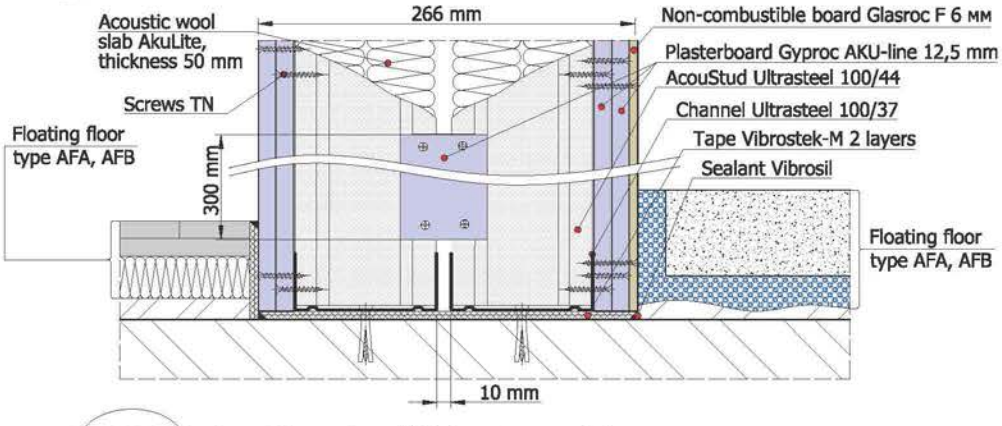


Sheet 1.33

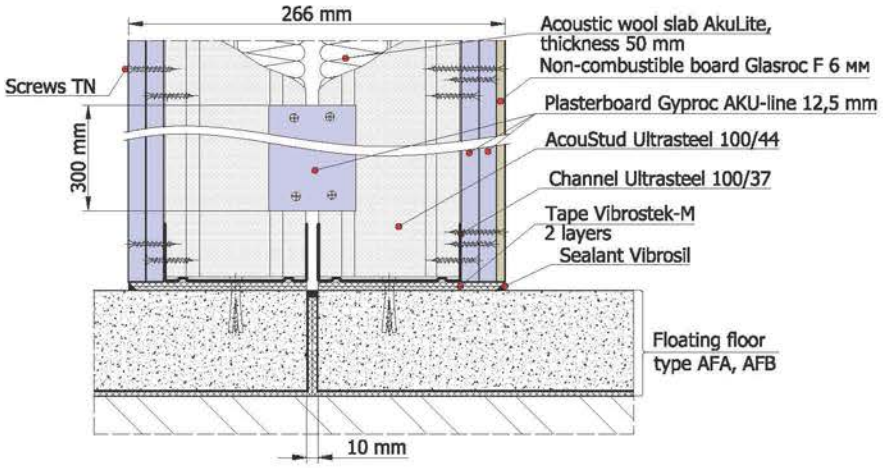
Design of 266 mm sound-insulating partition, type AW 25.45NC | Rw = 66dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=10 m**
- **1 m^2 mass of partition m=67 kg**

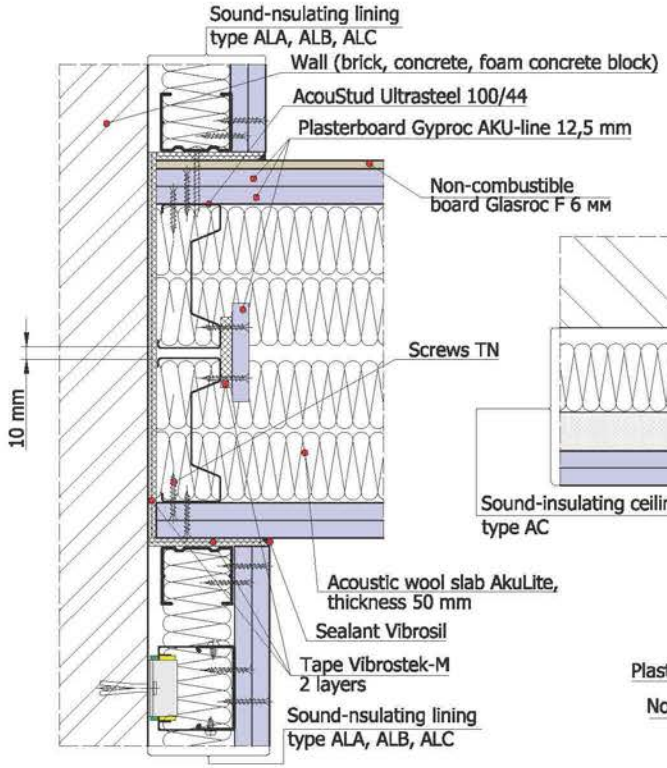
1.34.1 Junction of floating floor to partition



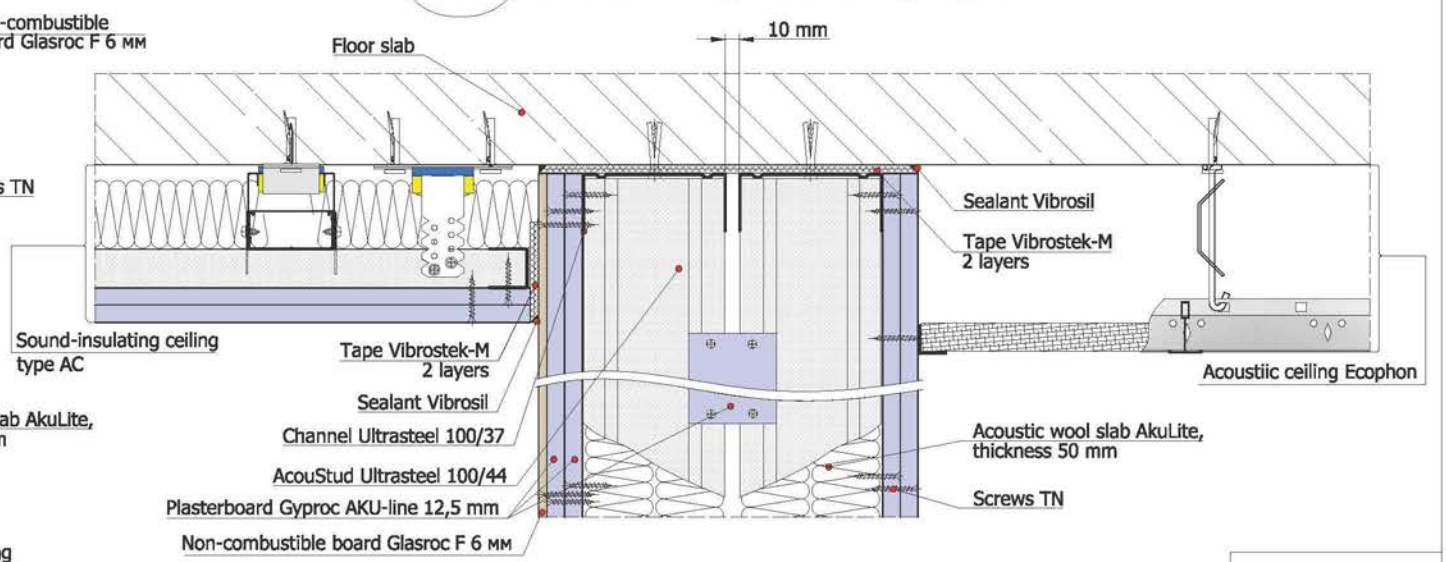
1.34.2 Junction of partition to floating floor



1.34.3 Junction of wall lining to partition



1.34.4 Junction of suspended ceiling to partition

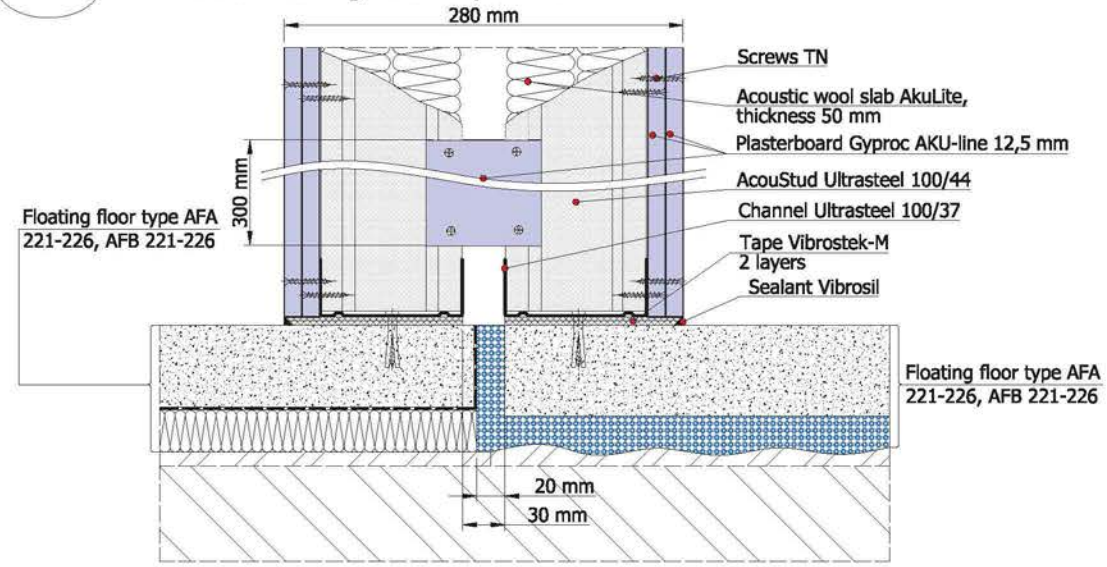


Sheet 1.34

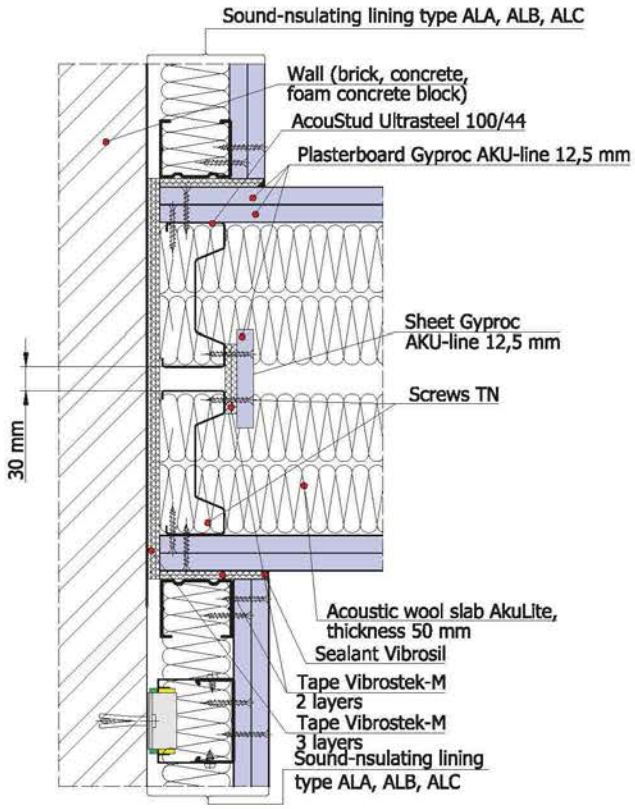
Design of 280 mm sound-insulating partition, type AW 35.44 | Rw = 67 dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=10 m**
- **1 m^2 mass of partition m=61 kg**

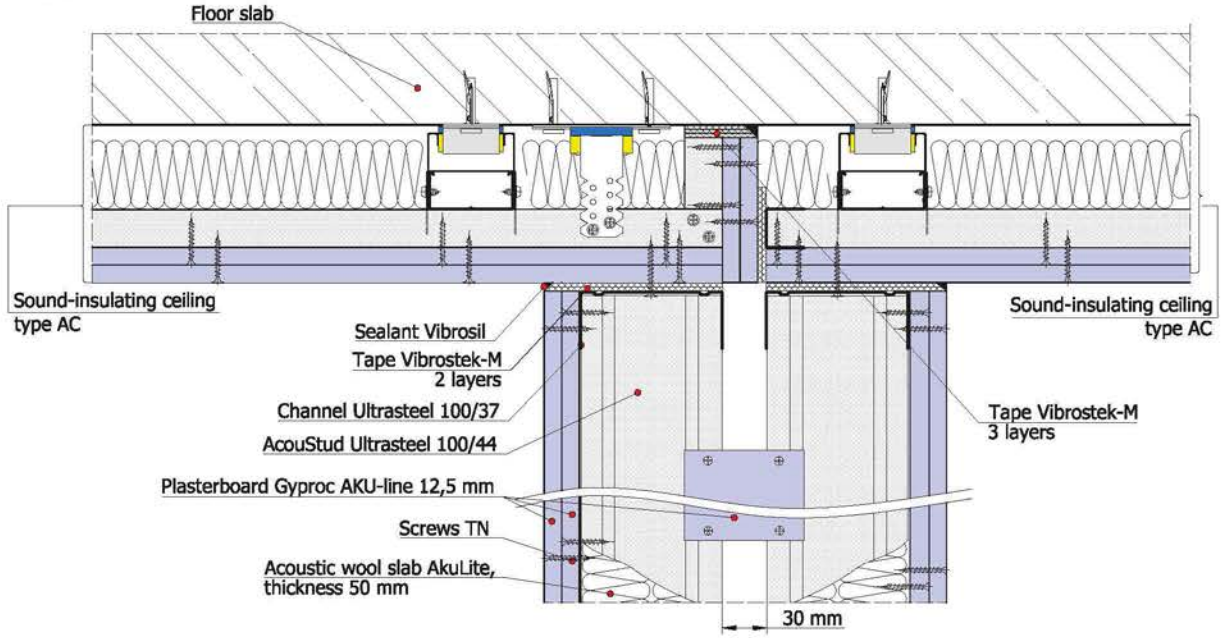
1.35.1 Junction of floating floor to partition



1.35.2 Junction of wall lining to partition



1.35.3 Junction of suspended ceiling to partition

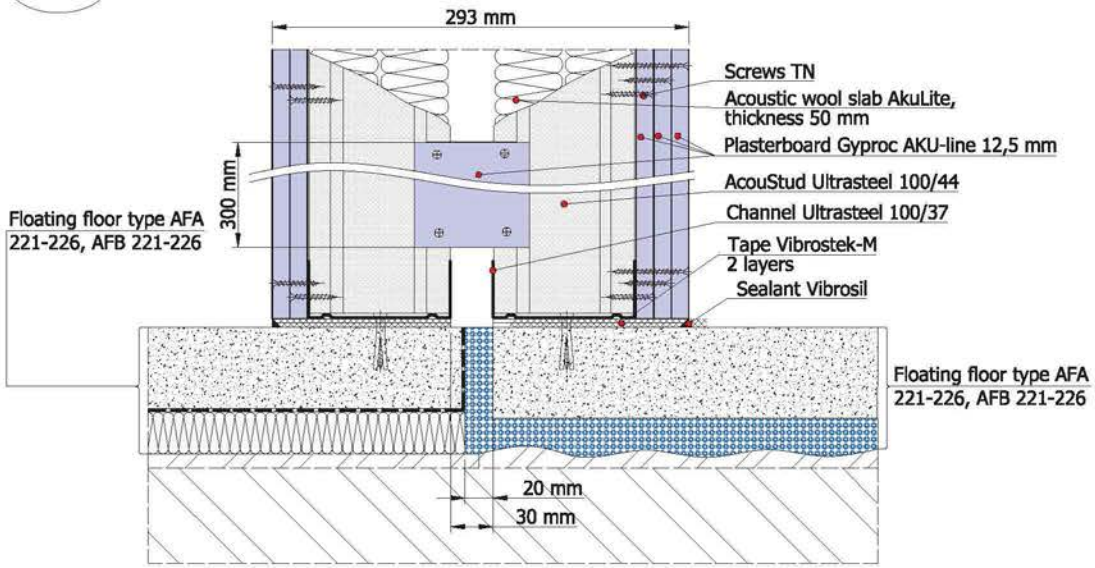


Sheet 1.35

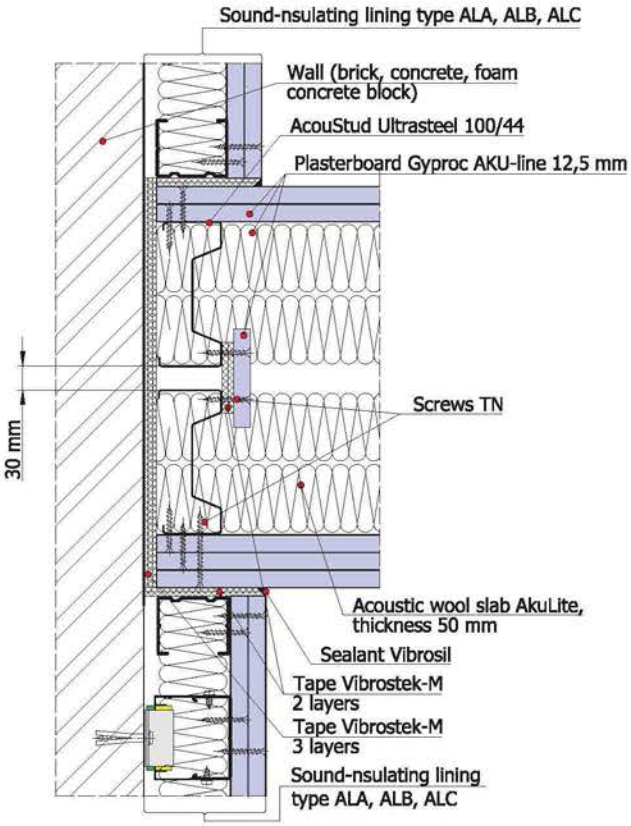
Design of 293 mm sound-insulating partition, type AW 35.45 | Rw = 68dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=10 m**
- **1 m^2 mass of partition m=73 kg**

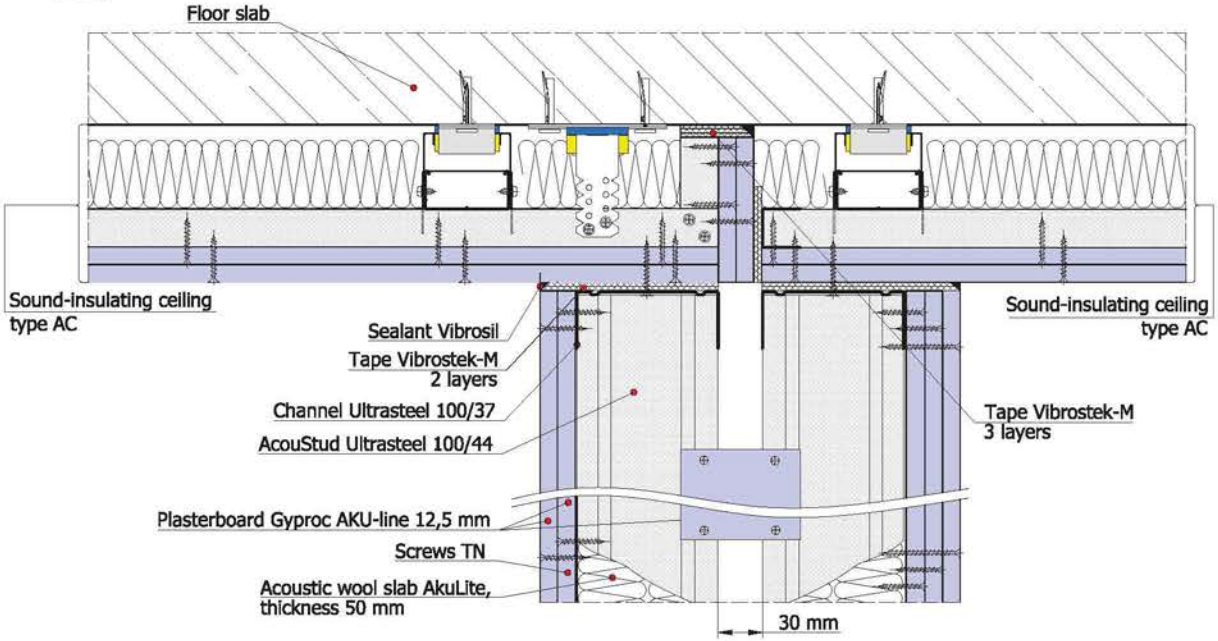
1.36.1 Junction of floating floor to partition



1.36.2 Junction of wall lining to partition



1.36.3 Junction of suspended ceiling to partition

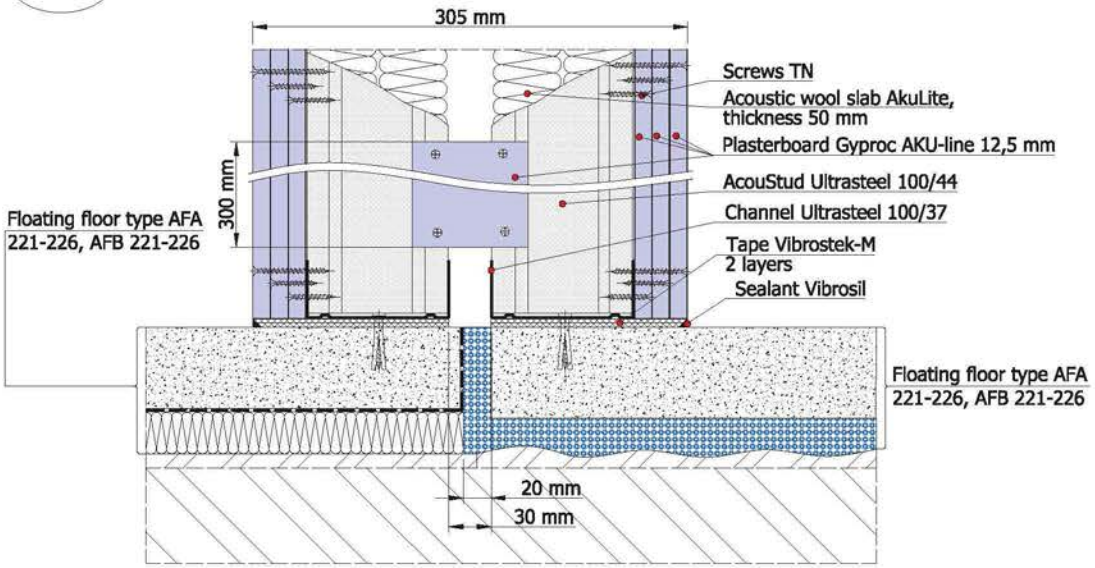


Sheet 1.36

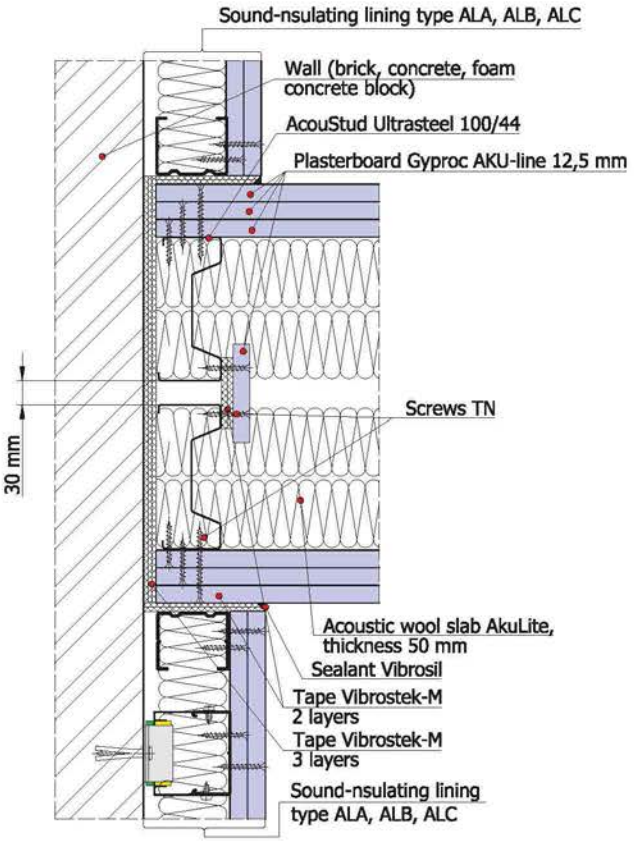
Design of 305 mm sound-insulating partition, type AW 35.46 | Rw = 69 dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=10,5 m**
- **1 m^2 mass of partition m=85 kg**

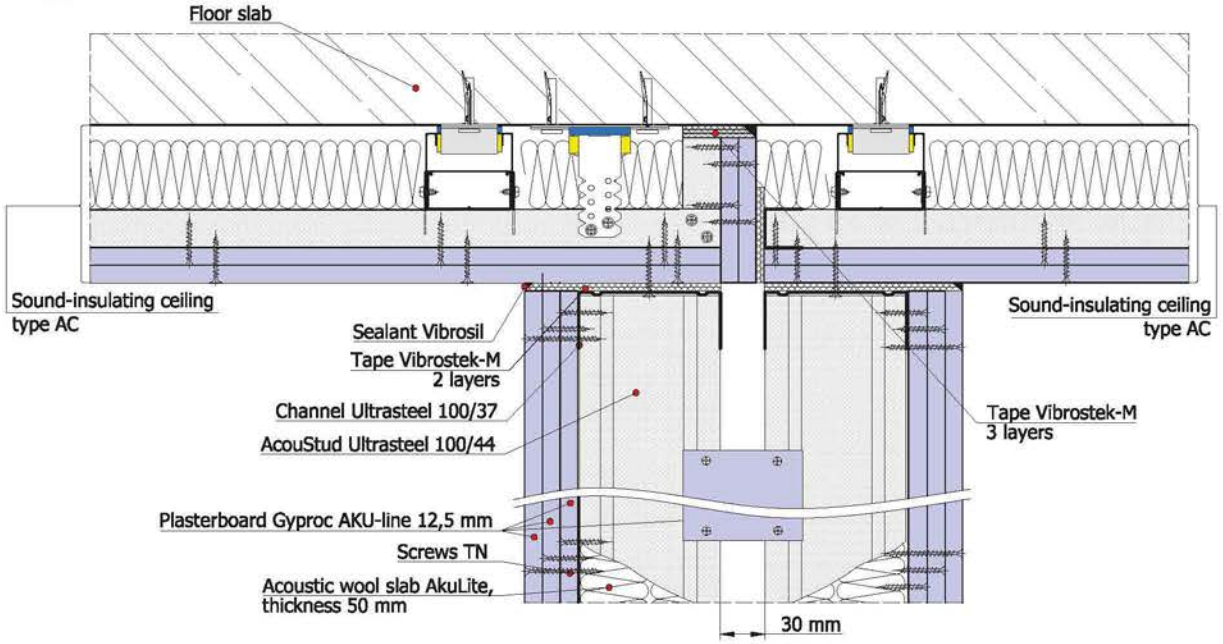
1.37.1 Junction of floating floor to partition



1.37.2 Junction of wall lining to partition



1.37.3 Junction of suspended ceiling to partition

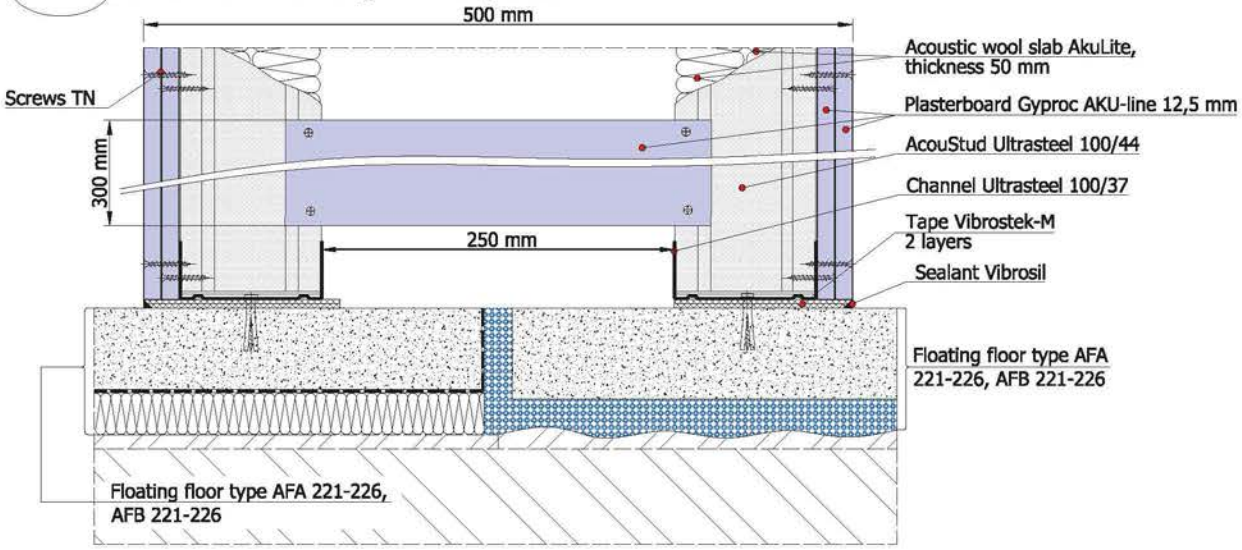


Sheet 1.37

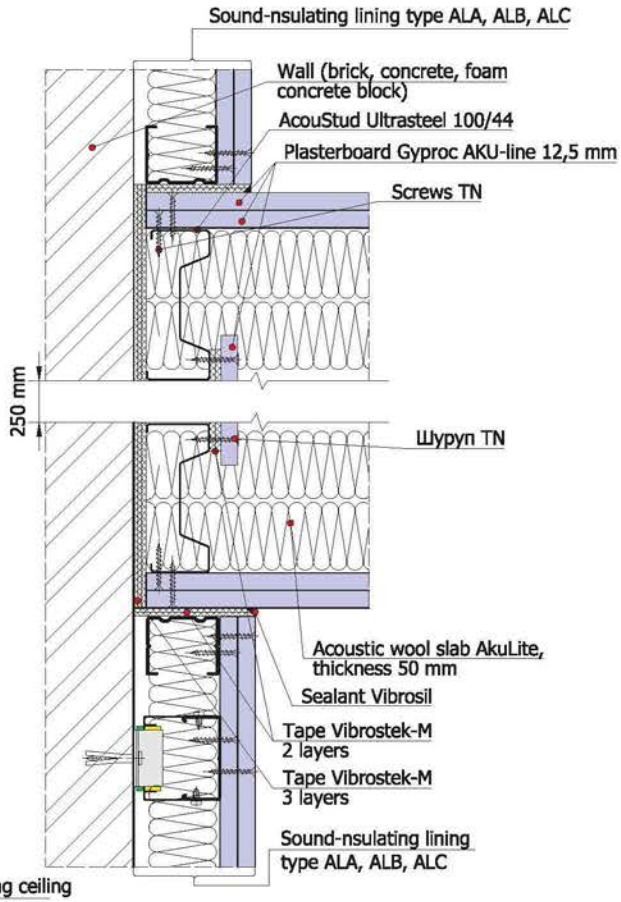
Design of 500 mm sound-insulating partition, type AW 45.44 | Rw = 70dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=11,1 m**
- **1 m^2 mass of partition m=62 kg**

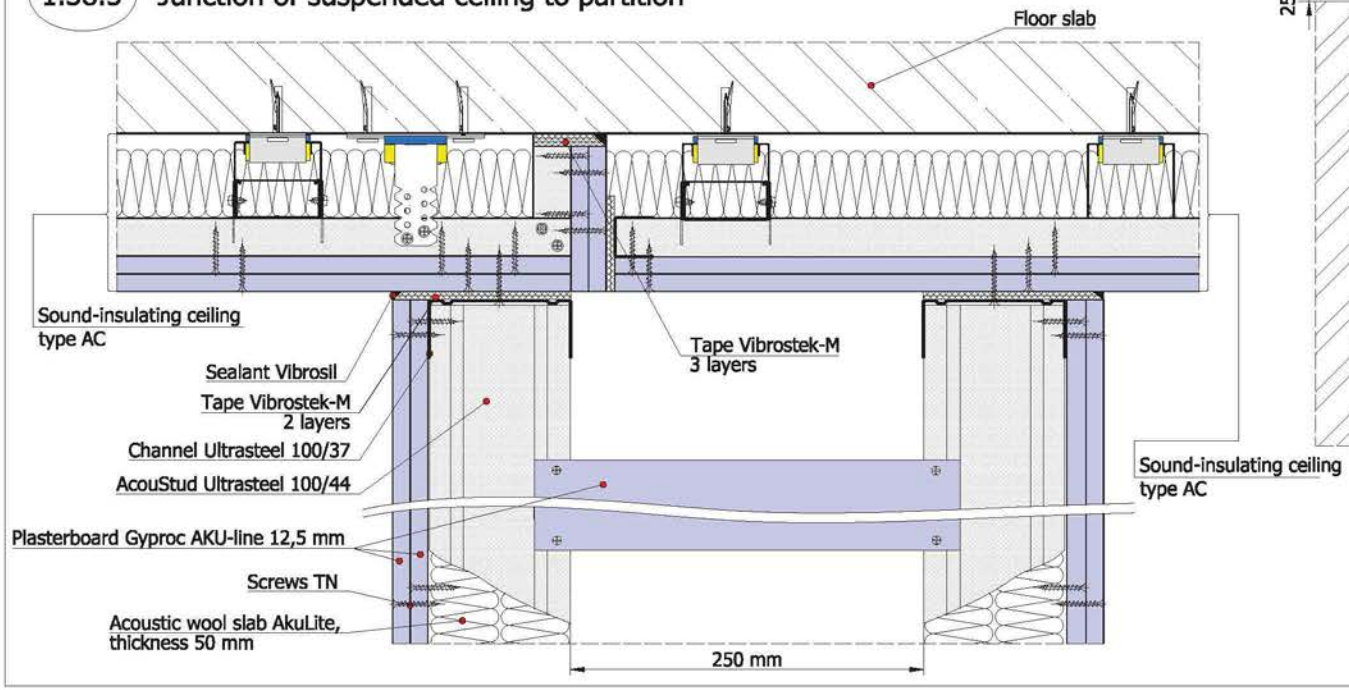
1.38.1 Junction of floating floor to partition



1.38.2 Junction of wall lining to partition



1.38.3 Junction of suspended ceiling to partition

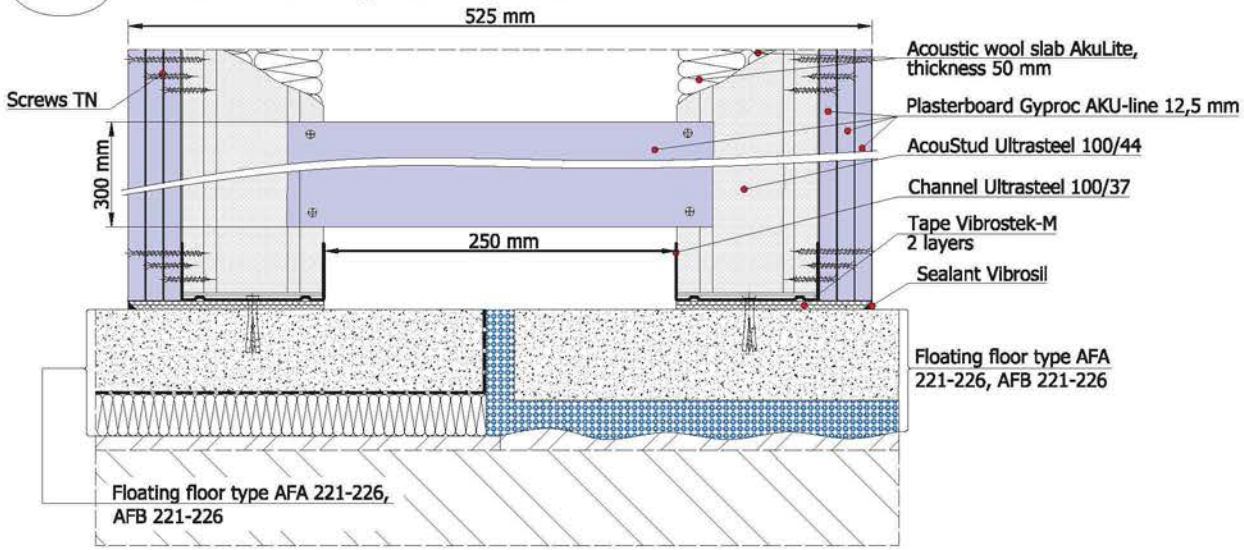


Sheet 1.38

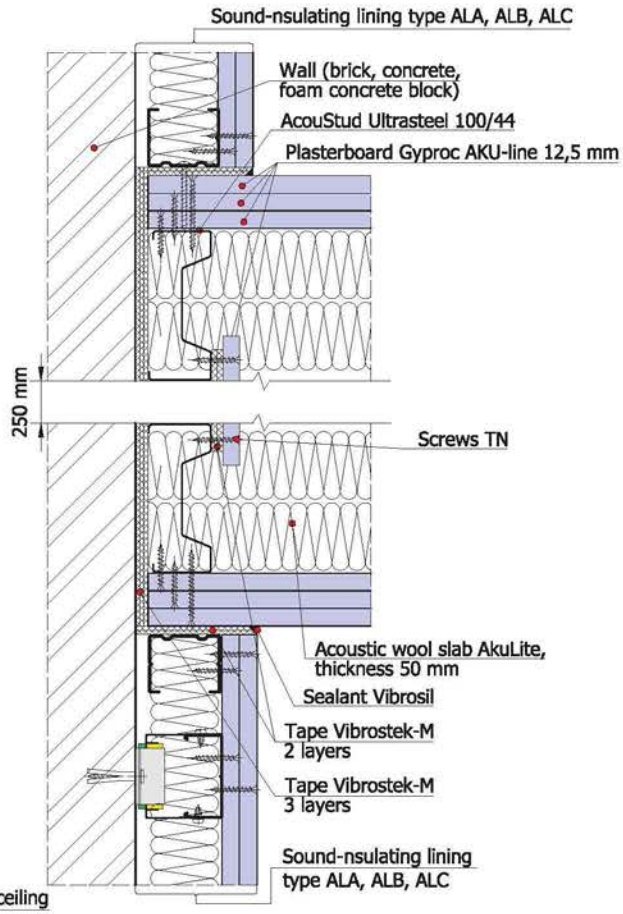
Design of 525 mm sound-insulating partition, type AW 45.46 | Rw = 71 dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=11,6 m**
- **1 m^2 mass of partition m=86 kg**

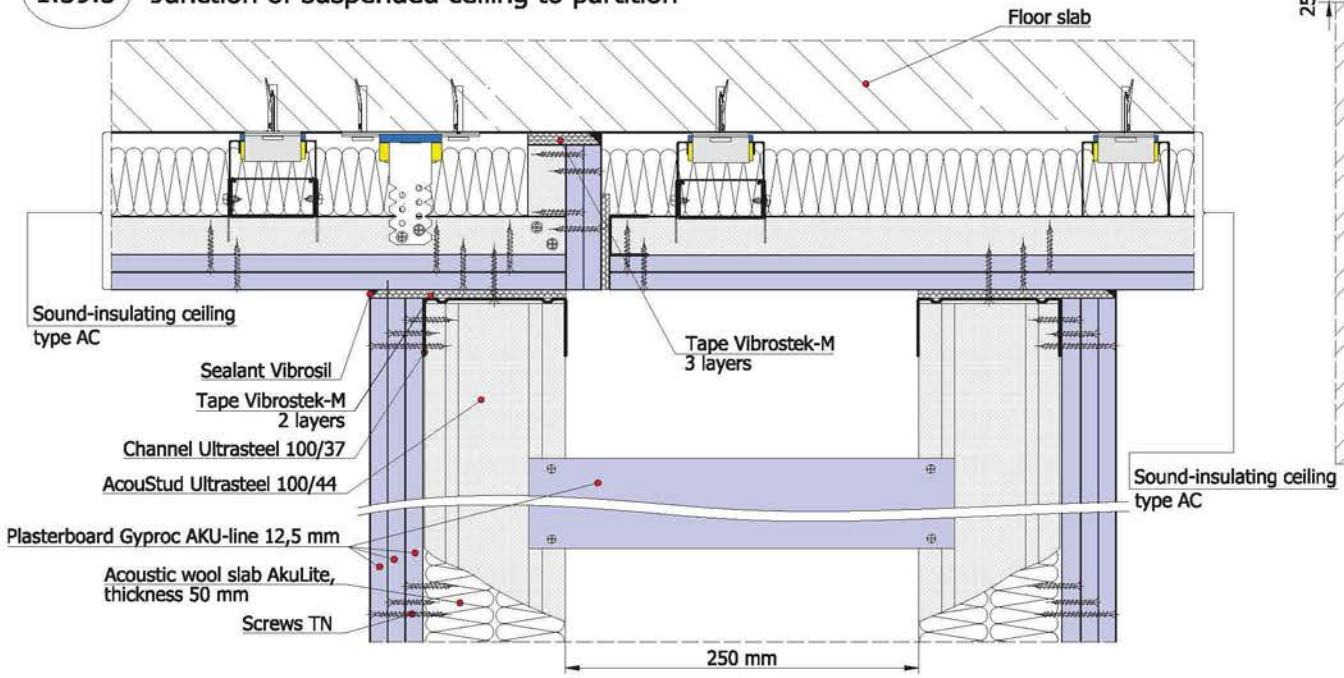
1.39.1 Junction of floating floor to partition



1.39.2 Junction of wall lining to partition



1.39.3 Junction of suspended ceiling to partition

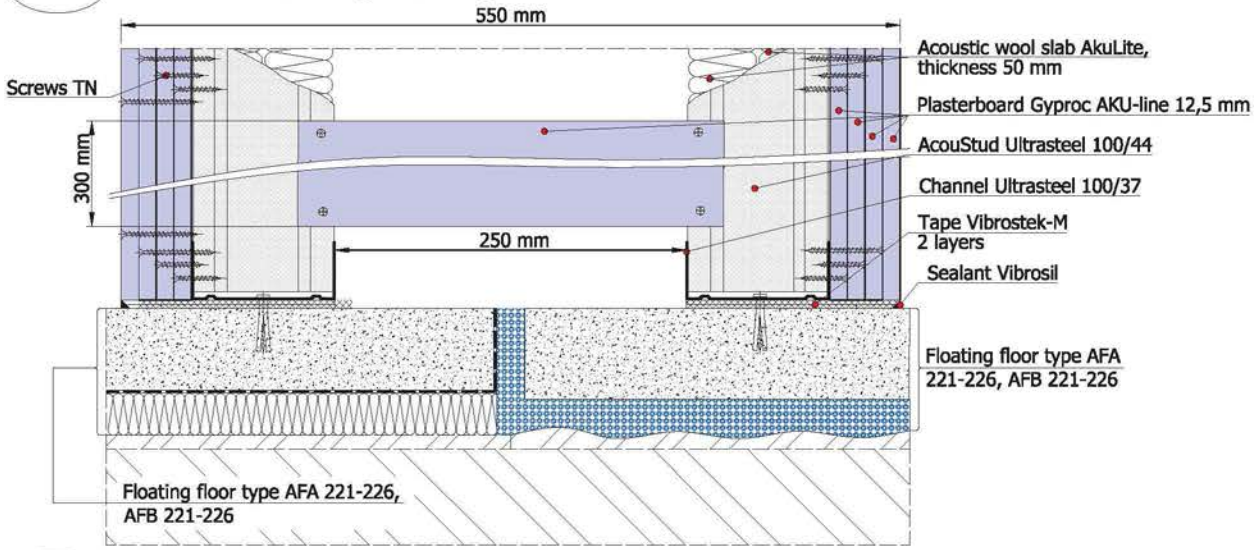


Sheet 1.39

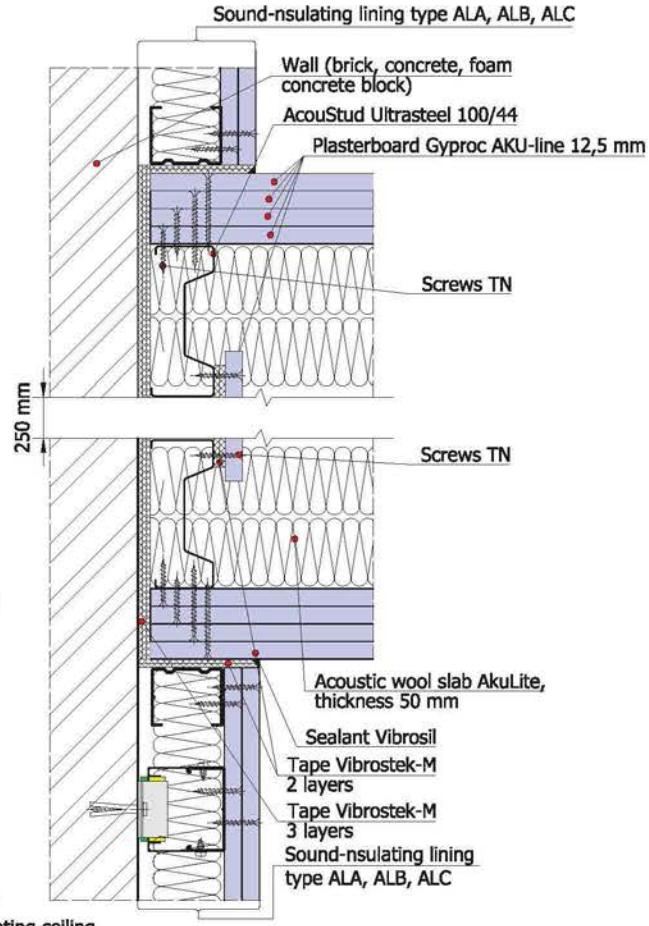
Design of 550 mm sound-insulating partition, type AW 45.48 | Rw = 72dB

- **Maximum heighth of partition with 600mm stud pace, h_{max}=12 m**
- **1 m^2 mass of partition m=110 kg**

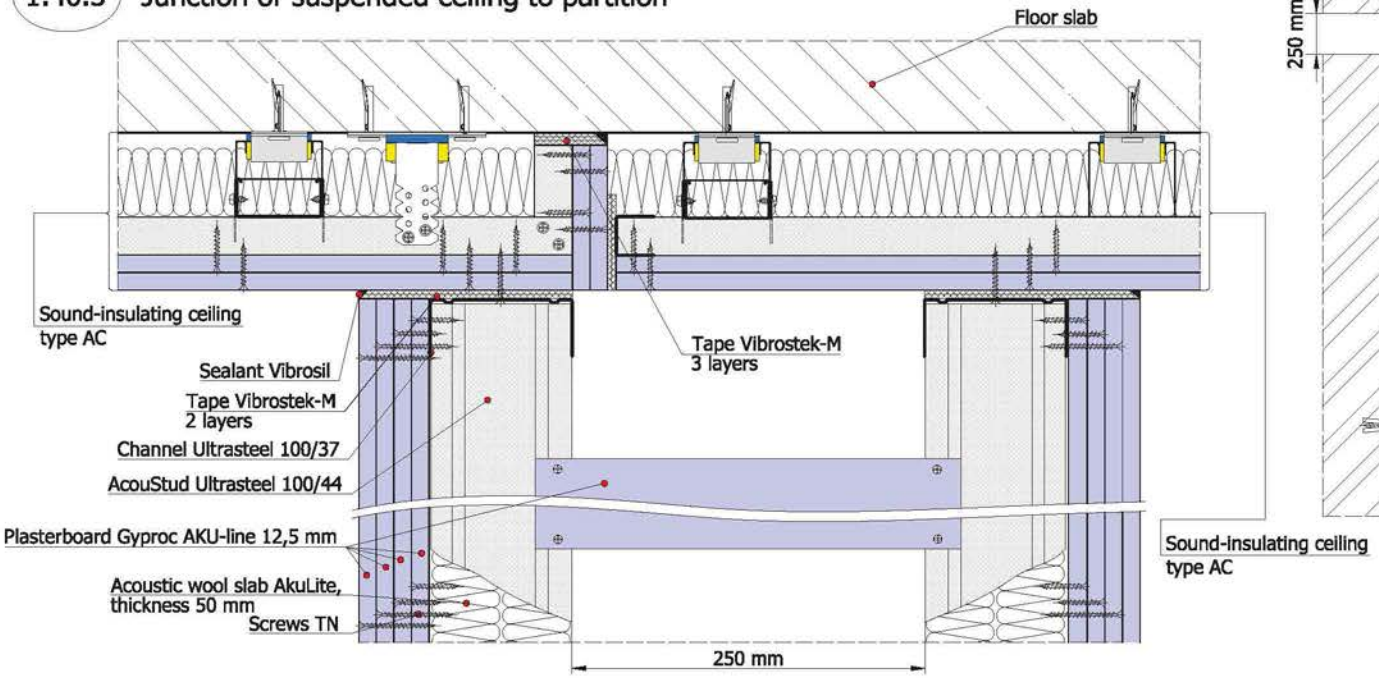
1.40.1 Junction of floating floor to partition



1.40.2 Junction of wall lining to partition



1.40.3 Junction of suspended ceiling to partition



Sheet 1.40

Table L2.01. Airborne sound insulation indexes of Gyproc plasterboards

Frame type*		Total thickness of the frame, mm	Number of layers of **AkuLite** material 50 mm	**Weighted sound reduction index of the whole partition construction, Rw, dB,** Weighted sound reduction index improvement of the partition, ΔRw, dB (figures in parentheses) and a construction code		
				Number of layers of casing material **Gyproc AKU-Line, 12.5 mm**, and non-combustible plate **Glasroc 6 mm (NC)**		
				2	**3**	**2 + 1NC**
1. TYPE A. Lining construction on a 140 mm thickness reinforced concrete wall, Rw = 50 dB						
A1.	Independent frame Gyproc Ultra 50 mm	60	1	**64** (14) ALA 11.12 sheet 2.02	**65** (15) ALA 11.13 sheet 2.03	**65** (15) ALA 11.13NC sheet 2.04
A2.	Frame Gyproc Ultra 60/27 on a **Vibroflex-Connect PP** acoustic hanger	60	1	**65** (15) ALA 54.12 sheet 2.05	**66** (16) ALA 54.13 sheet 2.06	**66** (16) ALA 54.13NC sheet 2.07
A3.	Frame Gyproc Ultra 60/27 on a **Vibroflex-Connect PP** acoustic hanger	110	2	**66** (16) ALA 72.22 sheet 2.08	**67** (17) ALA 72.23 sheet 2.09	**66** (16) ALA 72.23NC sheet 2.10
2. TYPE B. Lining construction on a 140 mm thickness half a brick wall, plastered on one side, Rw = 47 dB						
B1.	Independent frame Gyproc Ultra 50 mm	60	1	**61** (14) ALB 11.12 sheet 2.02	**62** (15) ALB 11.13 sheet 2.03	**62** (15) ALB 11.13NC sheet 2.04
B2.	Frame Gyproc Ultra 60/27 on a **Vibroflex-Connect PP** acoustic hanger	60	1	**62** (15) ALB 54.12 sheet 2.05	**63** (16) ALB 54.13 sheet 2.06	**63** (16) ALB 54.13NC sheet 2.07
B3.	Independent frame Gyproc Ultra 100 mm	110	2	**63** (16) ALB 72.22 sheet 2.08	**64** (17) ALB 72.23 heet 2.09	**63** (16) ALB 72.23NC sheet 2.10
3. TYPE C. Lining construction on a 200 mm thickness D500 foam concrete blocks wall, Rw = 43 dB						
C1.	Independent frame Gyproc Ultra 50 mm	60	1	**57** (14) ALC 11.12 sheet 2.02	**58** (15) ALC 11.13 sheet 2.03	**58** (15) ALC 11.13NC sheet 2.04
C2.	Frame Gyproc Ultra 60/27 on a **Vibroflex-Connect PP** acoustic hanger	60	1	**58** (15) ALC 54.12 лsheet 2.05	**59** (16) ALC 54.13 sheet 2.06	**59** (16) ALC 54.13NC sheet 2.07
C3.	Independent frame Gyproc Ultra 100 mm	110	2	**59** (16) ALC 72.22 sheet 2.08	**60** (17) ALC 72.23 sheet 2.09	**59** (16) ALC 72.23NC sheet 2.10

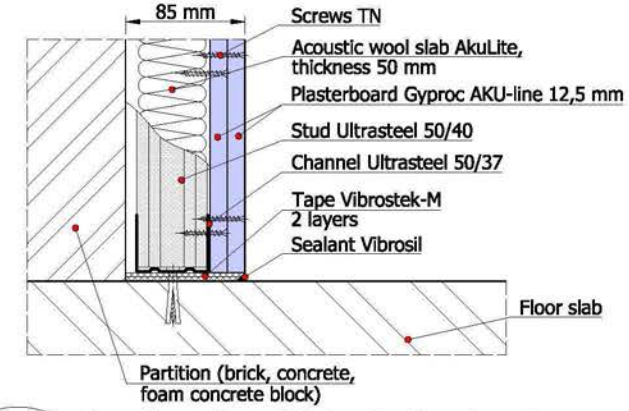
**** - Limit heights of structures of soundproof partition walls are indicated on sheets 2.02 - 2.10.**

Results of measurements given in Table **L2.01** were performed by the Acoustics Laboratory of NNGASU (Nizhny Novgorod) under laboratory conditions in the absence of indirect noise transmission paths.

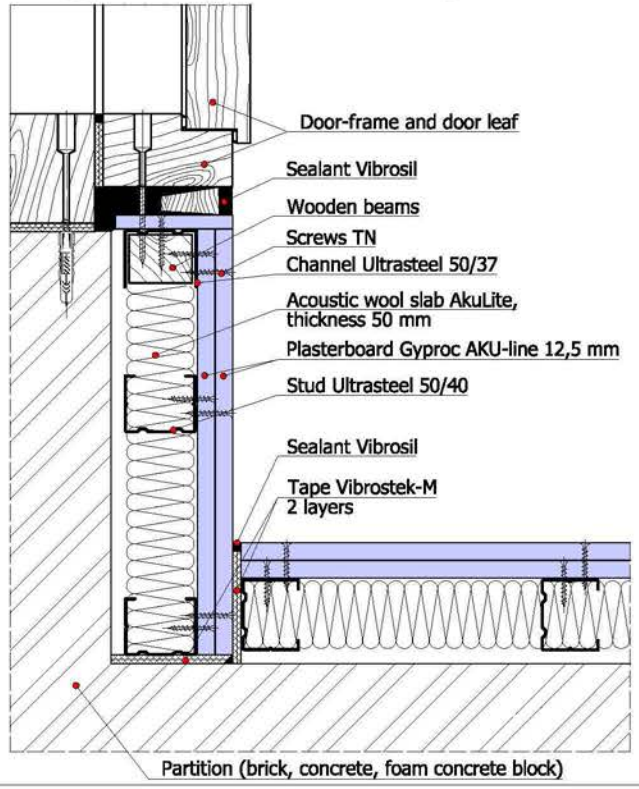
Design of 85 mm wall lining, type ALA, ALB, ALC 11.12

- **Maximum heighth of lining with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of lining m=27 kg**

2.02.1 Junction of wall lining to the floor/ceiling



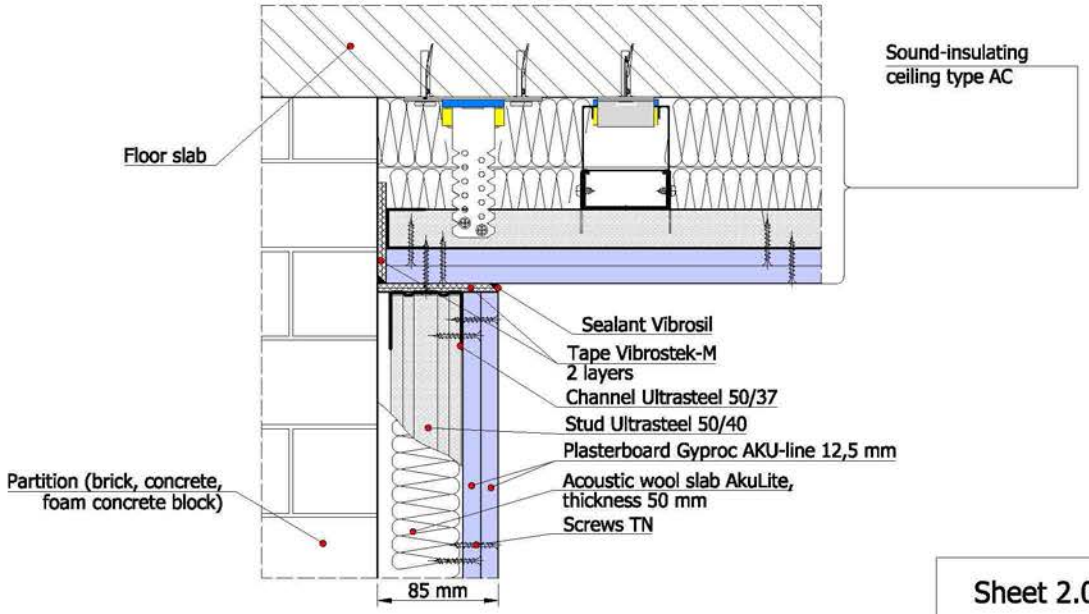
2.02.2 Junction of wall lining to the door-frame. Designe of included angle



Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 11.12	140 mm reinforced concrete wall (type A)	50	14	**64**
ALB 11.12	Solid brik wall plastered on one side, 140 mm (type B)	47	14	**61**
ALC 11.12	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	14	**57**

2.02.3 Junction of wall lining to the suspended ceiling

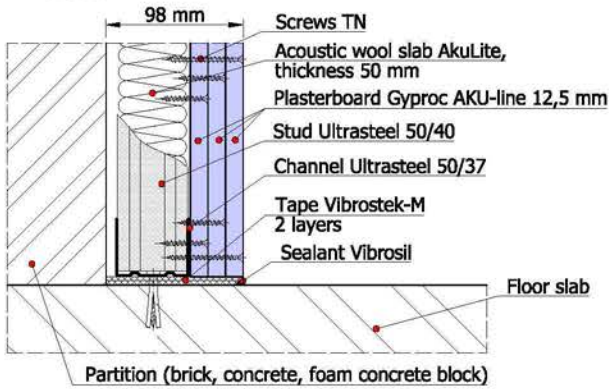


Sheet 2.02

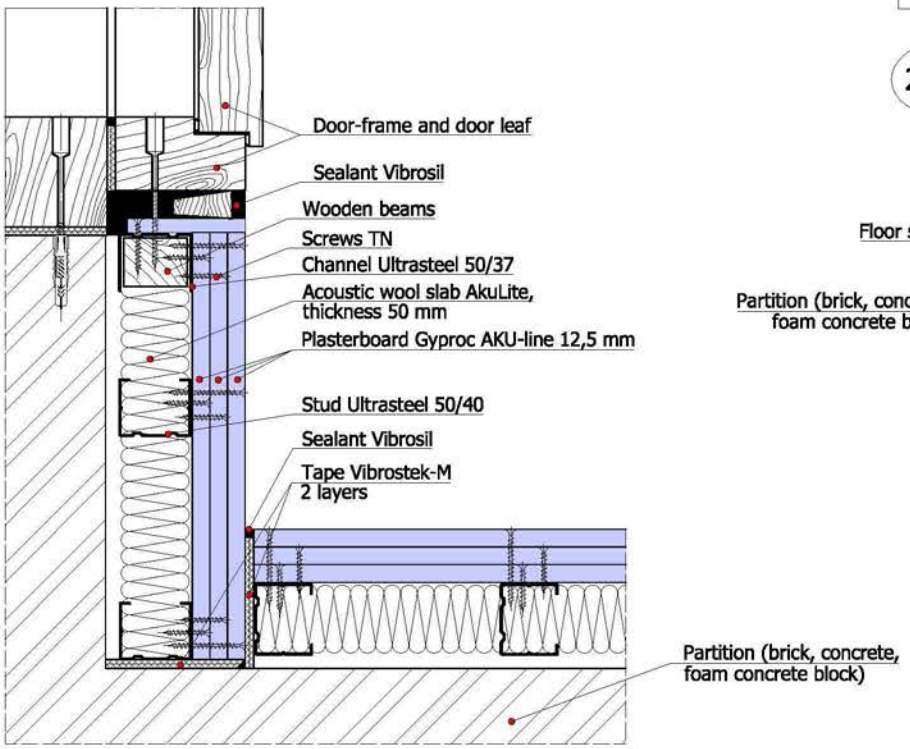
Design of 98 mm wall lining, type ALA, ALB, ALC 11.13

- **Maximum heighth of lining with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of lining m=39 kg**

2.03.1 Junction of wall lining to the floor/ceiling



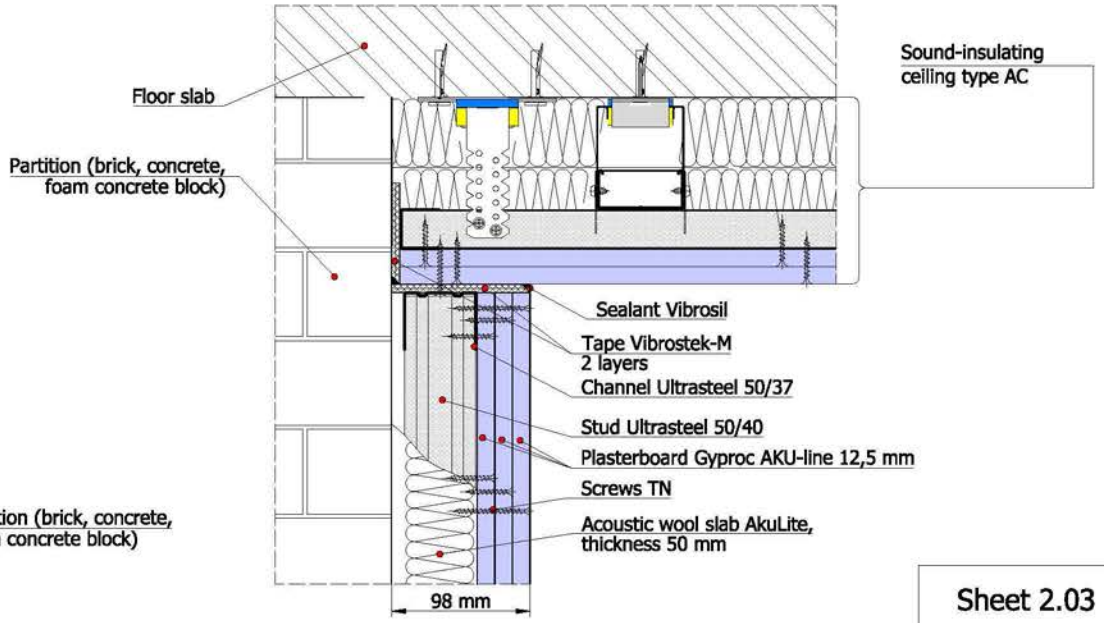
2.03.2 Junction of wall lining to the door-frame. Designe of included angle



Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 11.13	140 mm reinforced concrete wall (type A)	50	15	**65**
ALB 11.13	Solid brik wall plastered on one side, 140 mm (type B)	47	15	**62**
ALC 11.13	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	15	**58**

2.03.3 Junction of wall lining to the suspended ceiling

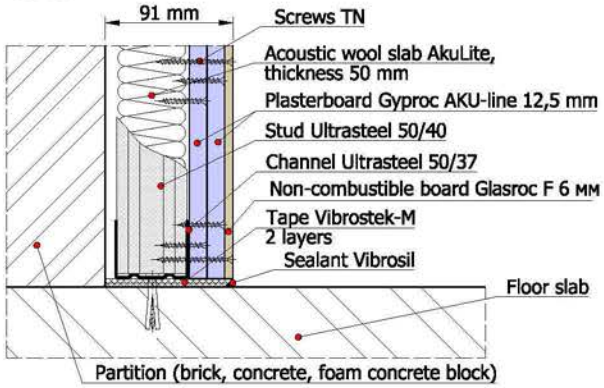


Sheet 2.03

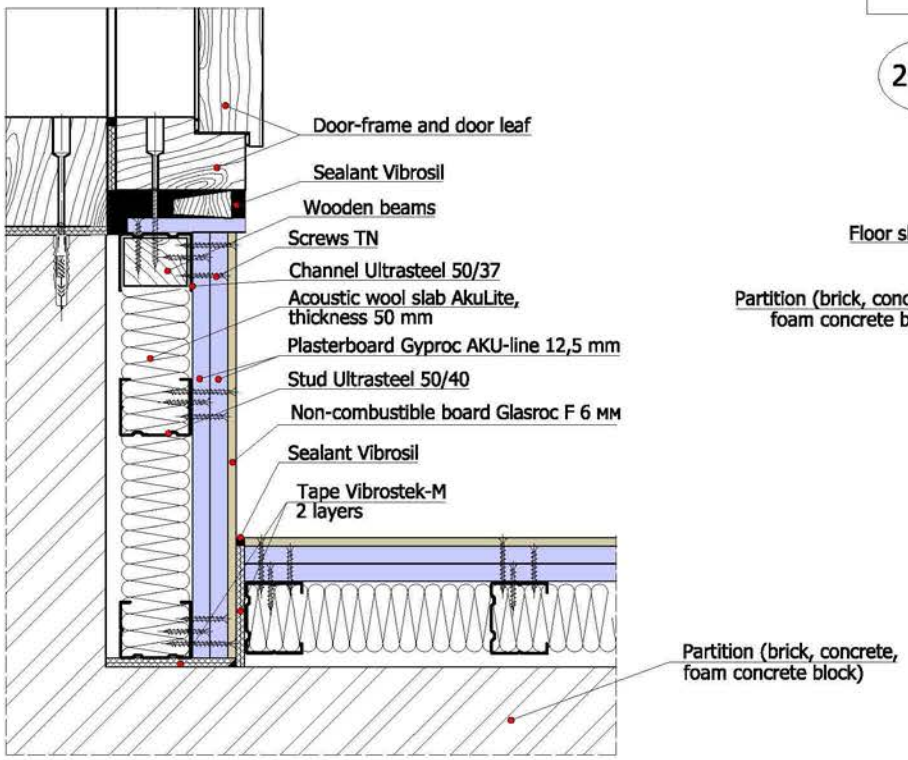
Design of 91 mm wall lining, type ALA, ALB, ALC 11.13NC

- **Maximum heighth of lining with 600mm stud pace, h_{max}=3 m**
- **1 m^2 mass of lining m=33 kg**

2.04.1 Junction of wall lining to the floor/ceiling



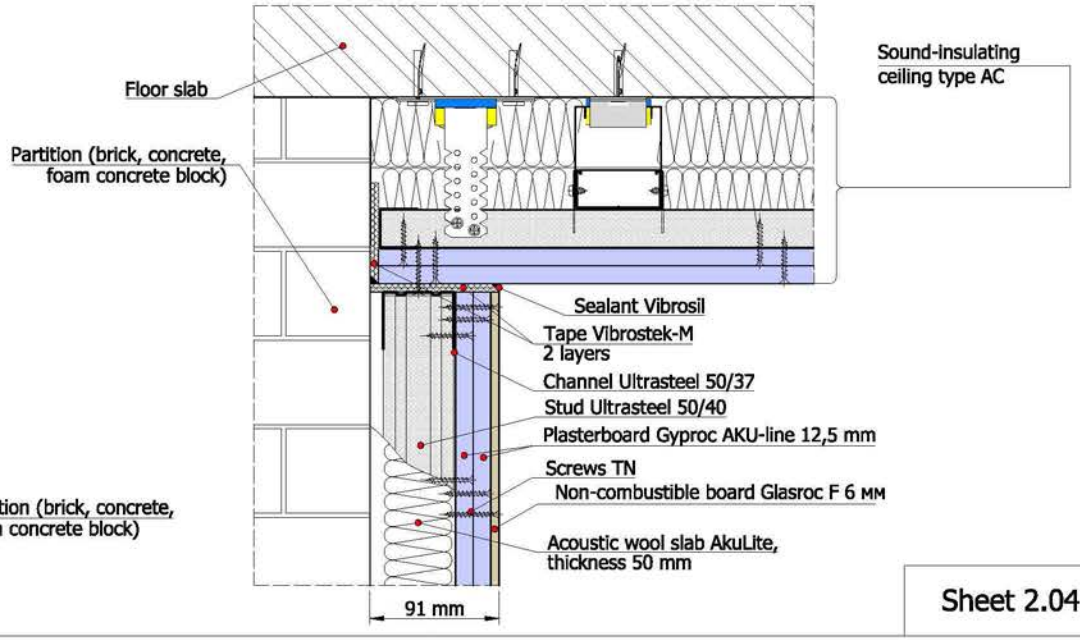
2.04.2 Junction of wall lining to the door-frame. Designe of included angle



Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 11.13NC	140 mm reinforced concrete wall (type A)	50	15	**65**
ALB 11.13NC	Solid brik wall plastered on one side, 140 mm (type B)	47	15	**62**
ALC 11.13NC	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	15	**58**

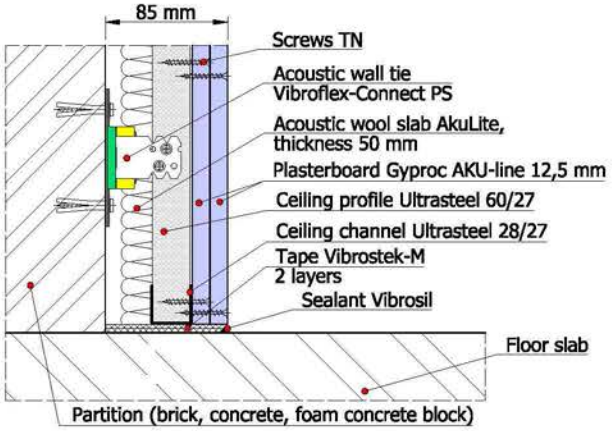
2.04.3 Junction of wall lining to the suspended ceiling



Design of 85 mm wall lining, type ALA, ALB, ALC 54.12

- **Maximum heighth of lining h_{max}=10 m**
- **1 m^2 mass of lining m=28 kg**

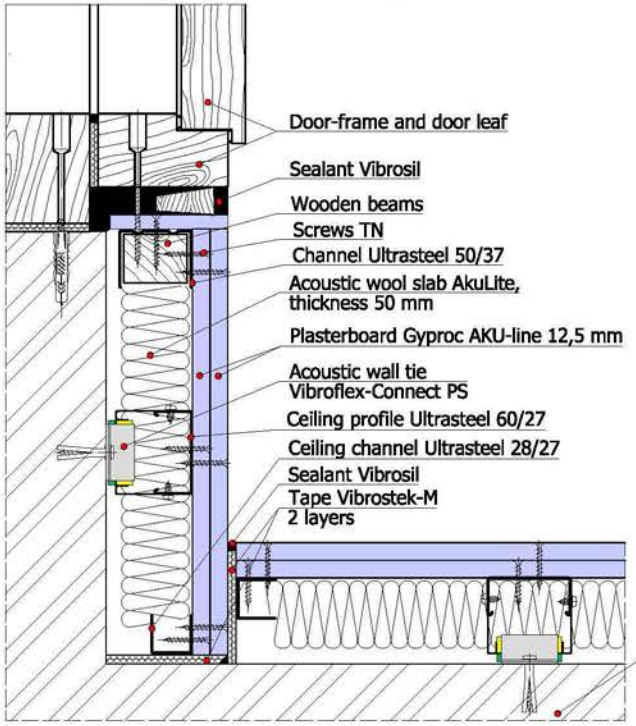
2.05.1 Junction of wall lining to the floor/ceiling



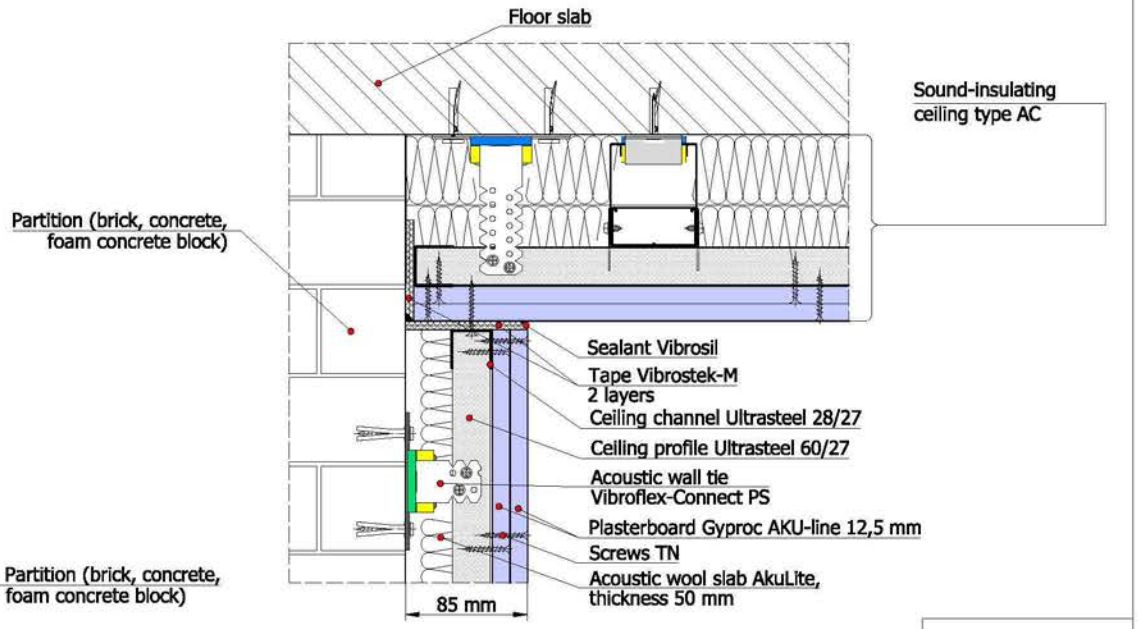
Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 54.12	140 mm reinforced concrete wall (type A)	50	15	**65**
ALB 54.12	Solid brik wall plastered on one side, 140 mm (type B)	47	15	**62**
ALC 54.12	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	15	**58**

2.05.2 Junction of wall lining to the door-frame. Designe of included angle



2.05.3 Junction of wall lining to the suspended ceiling

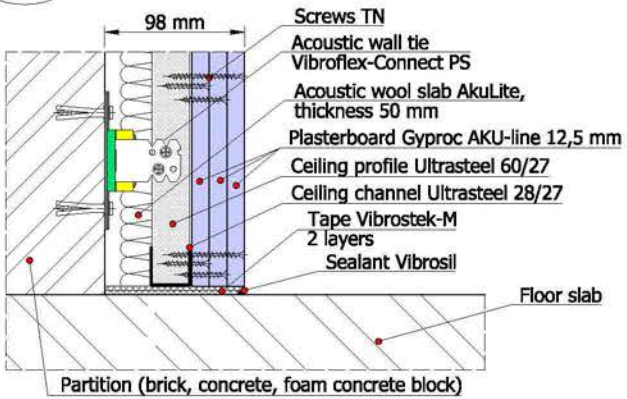


Sheet 2.05

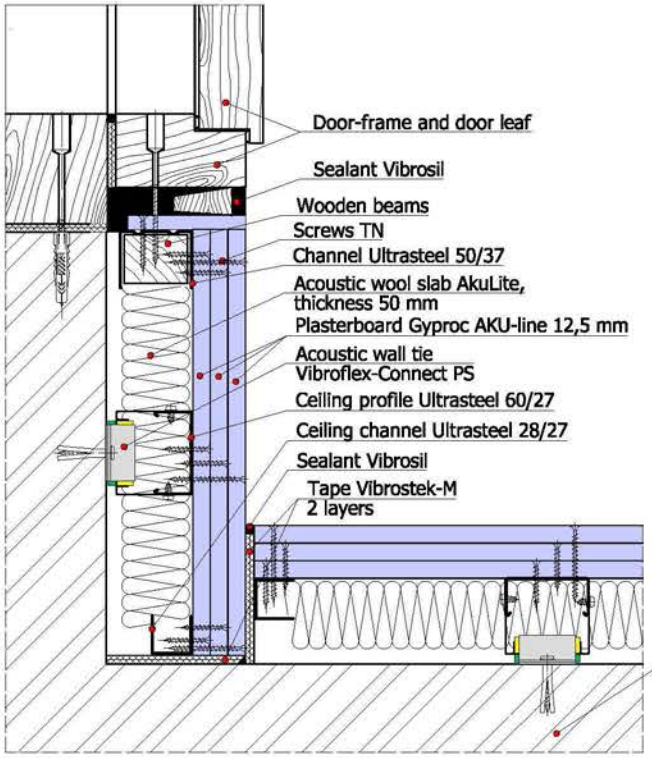
Design of 98 mm wall lining, type ALA, ALB, ALC 54.13

- **Maximum heighth of lining h_{max}=10 m**
- **1 m^2 mass of lining m=28 kg**

2.06.1 Junction of wall lining to the floor/ceiling



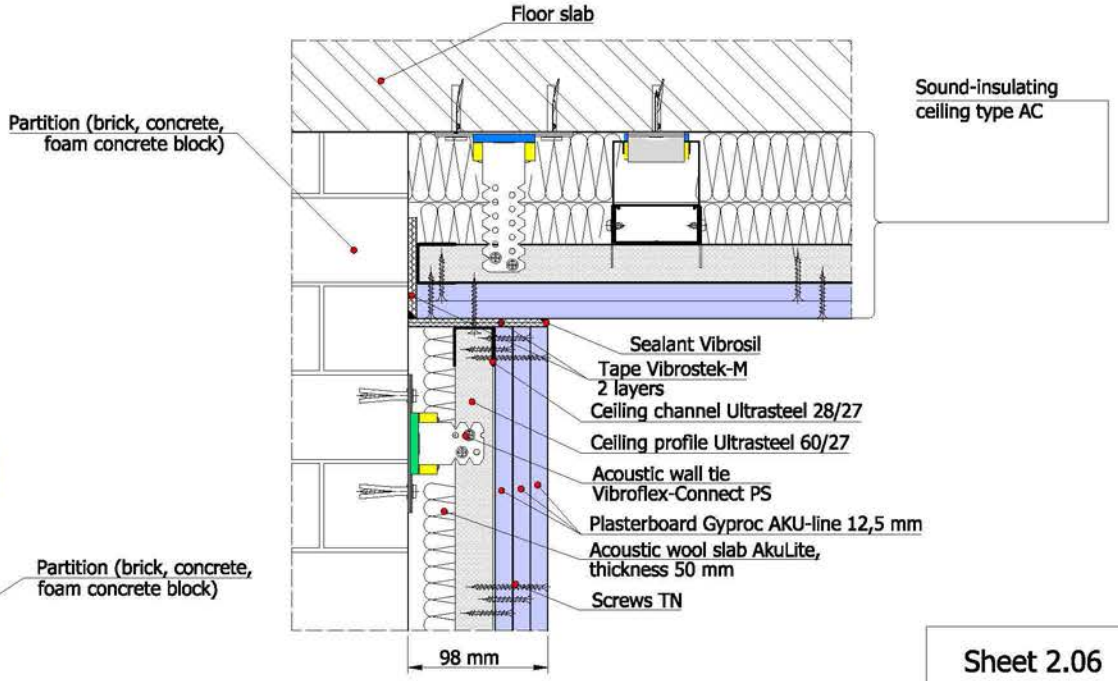
2.06.2 Junction of wall lining to the door-frame. Designe of included angle



Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 54.13	140 mm reinforced concrete wall (type A)	50	16	**66**
ALB 54.13	Solid brik wall plastered on one side, 140 mm (type B)	47	16	**63**
ALC 54.13	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	16	**59**

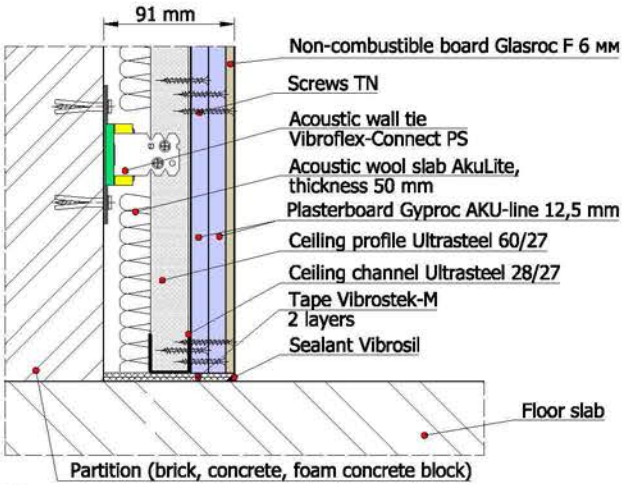
2.06.3 Junction of wall lining to the suspended ceiling



Design of 91 mm wall lining, type ALA, ALB, ALC 54.13NC

- **Maximum heighth of lining h_{max}=10 m**
- **1 m^2 mass of lining m=34 kg**

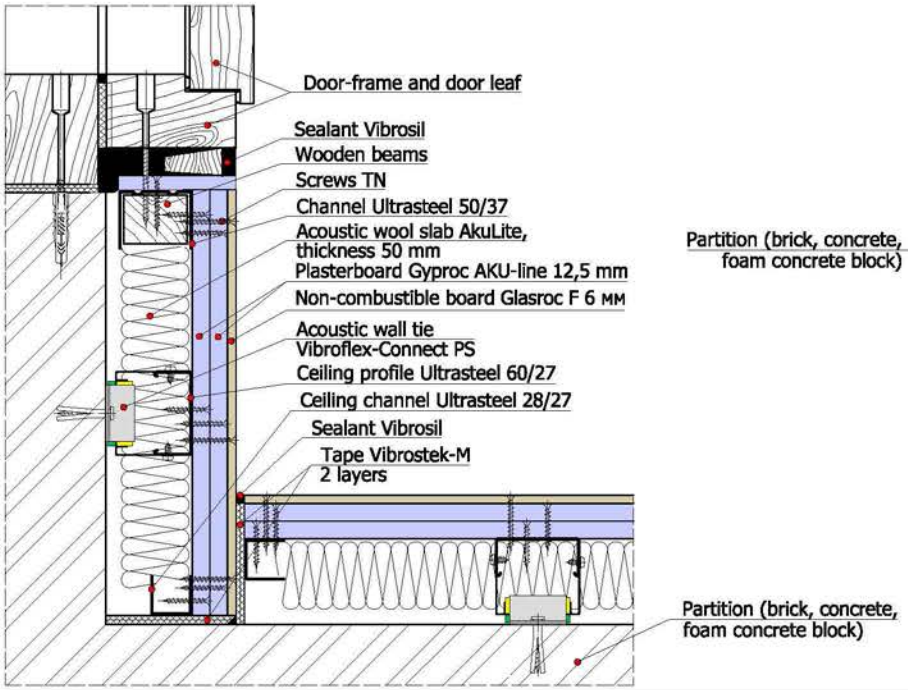
2.07.1 Junction of wall lining to the floor/ceiling



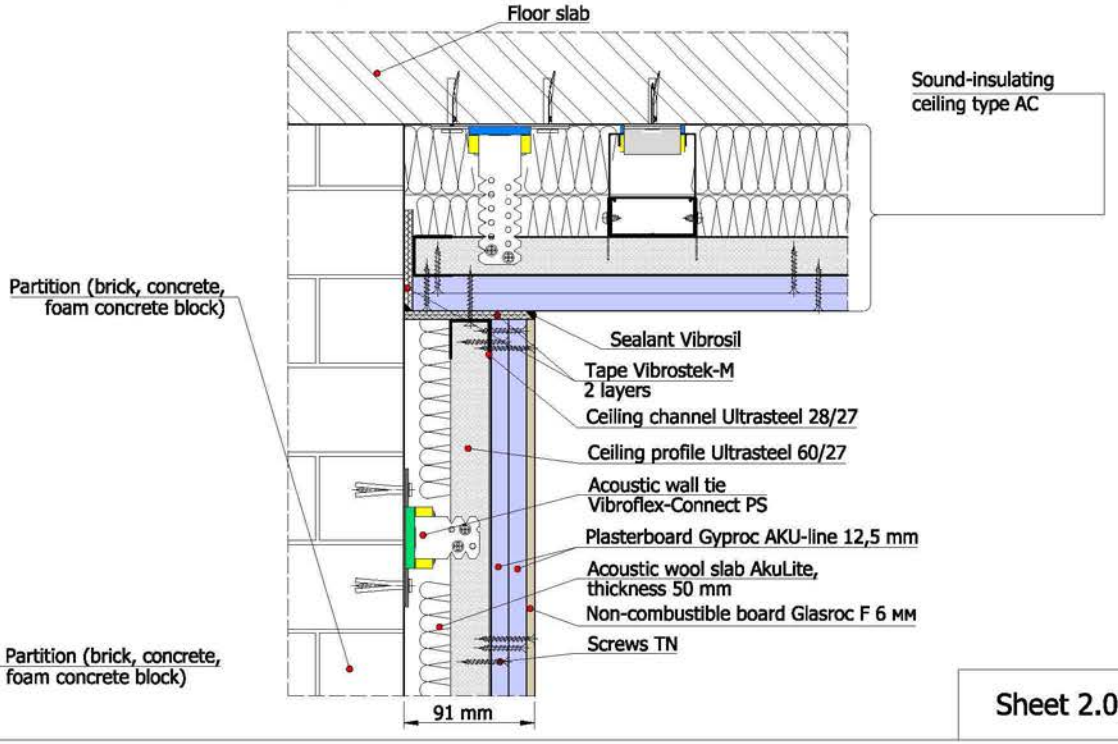
Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 54.13NC	140 mm reinforced concrete wall (type A)	50	16	**66**
ALB 54.13NC	Solid brik wall plastered on one side, 140 mm (type B)	47	16	**63**
ALC 54.13NC	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	16	**59**

2.07.2 Junction of wall lining to the door-frame. Designe of included angle



2.07.3 Junction of wall lining to the suspended ceiling

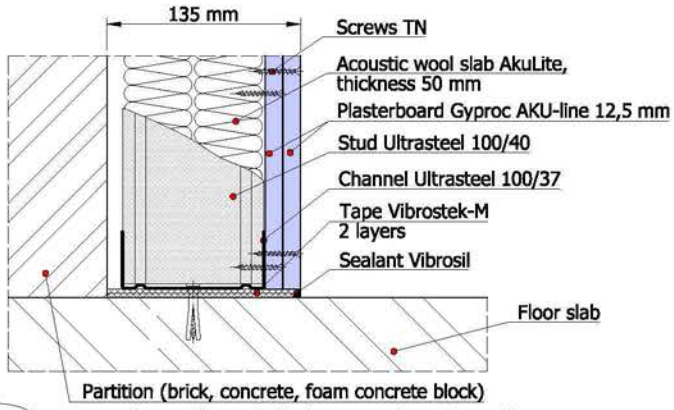


Sheet 2.07

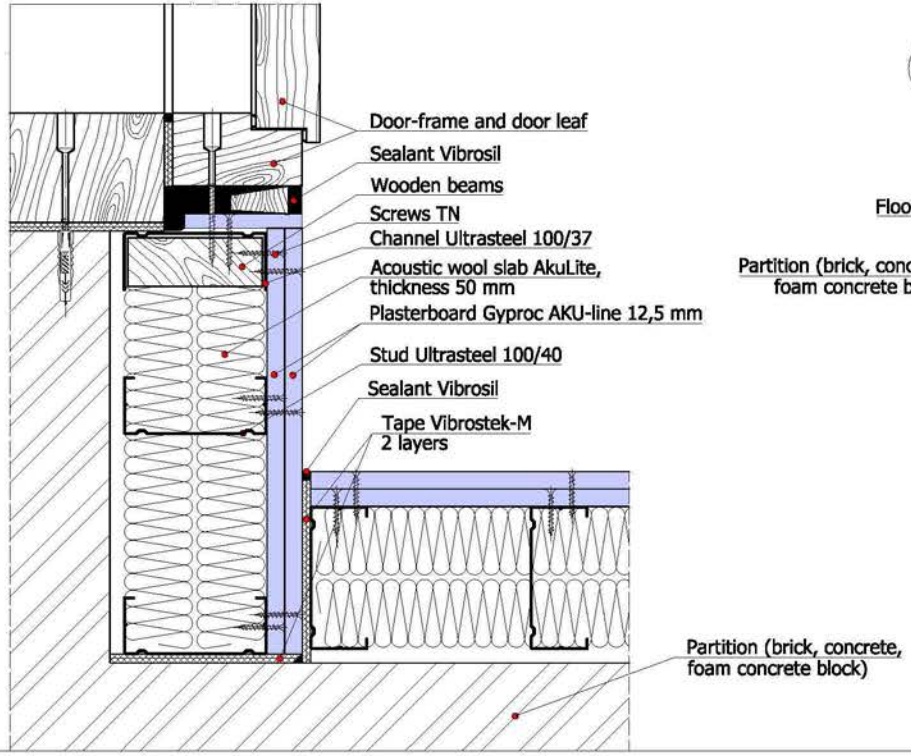
Design of 135 mm wall lining, type ALA, ALB, ALC 72.22

- **Maximum heighth of lining with 600mm stud pace, h_{max}=5,7 m**
- **1 m^2 mass of lining m=29 kg**

2.08.1 Junction of wall lining to the floor/ceiling



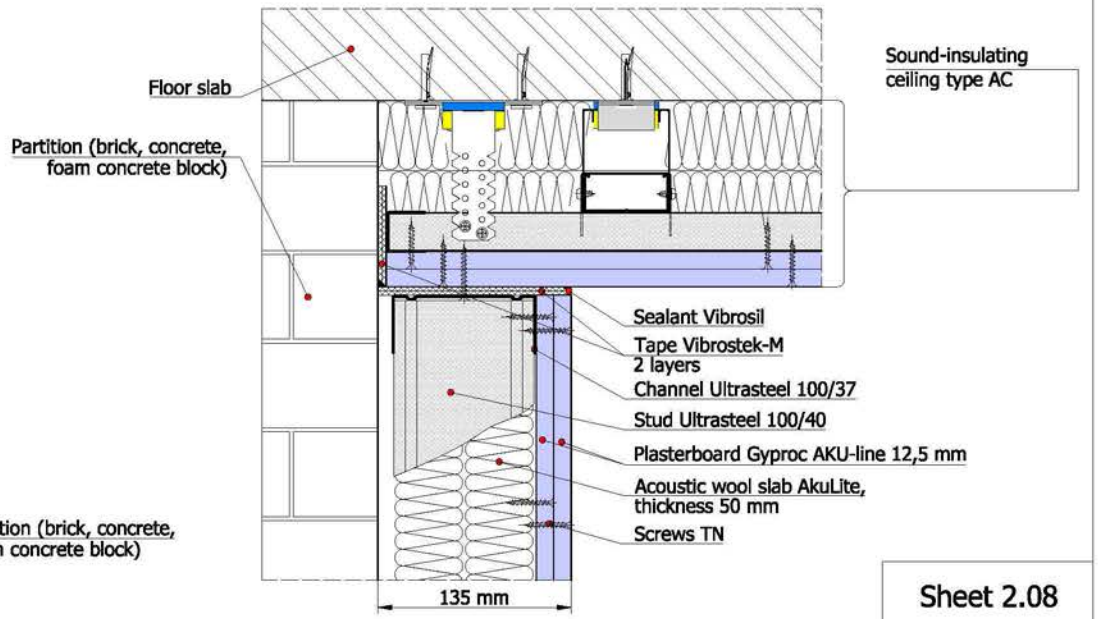
2.08.2 Junction of wall lining to the door-frame. Designe of included angle



Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 72.22	140 mm reinforced concrete wall (type A)	50	16	**66**
ALB 72.22	Solid brik wall plastered on one side, 140 mm (type B)	47	16	**63**
ALC 72.22	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	16	**59**

2.08.3 Junction of wall lining to the suspended ceiling

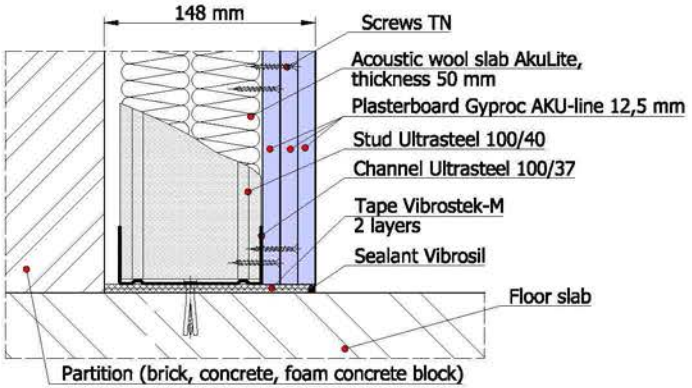


Sheet 2.08

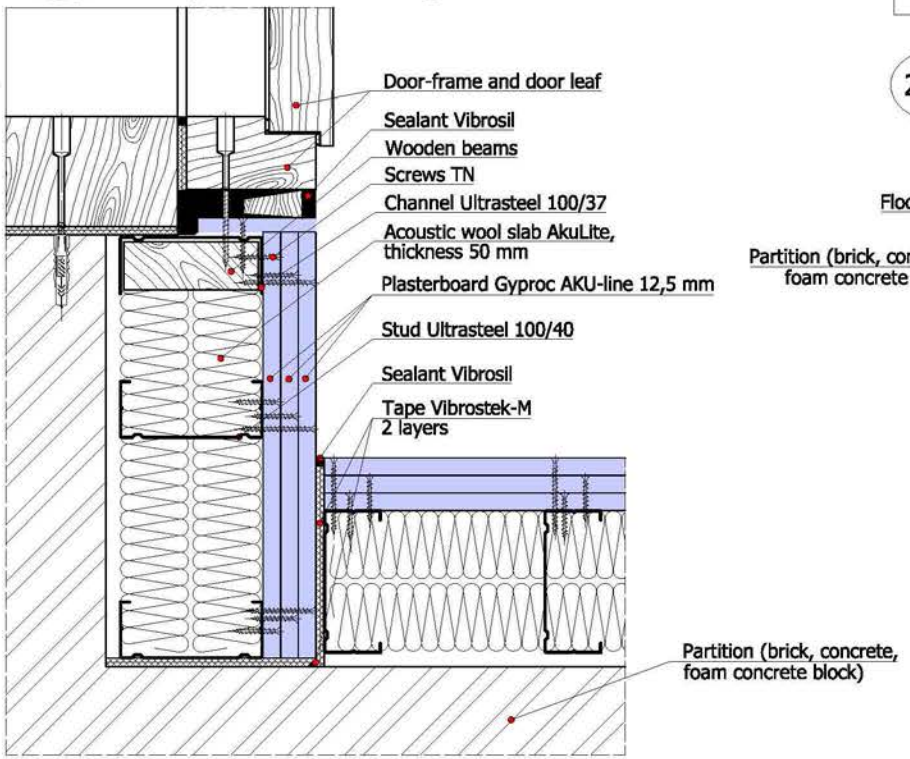
Design of 148 mm wall lining, type ALA, ALB, ALC 72.23

- **Maximum heighth of lining with 600mm stud pace, h=5,7 m**
- **1 m^2 mass of lining m=41 kg**

2.09.1 Junction of wall lining to the floor/ceiling



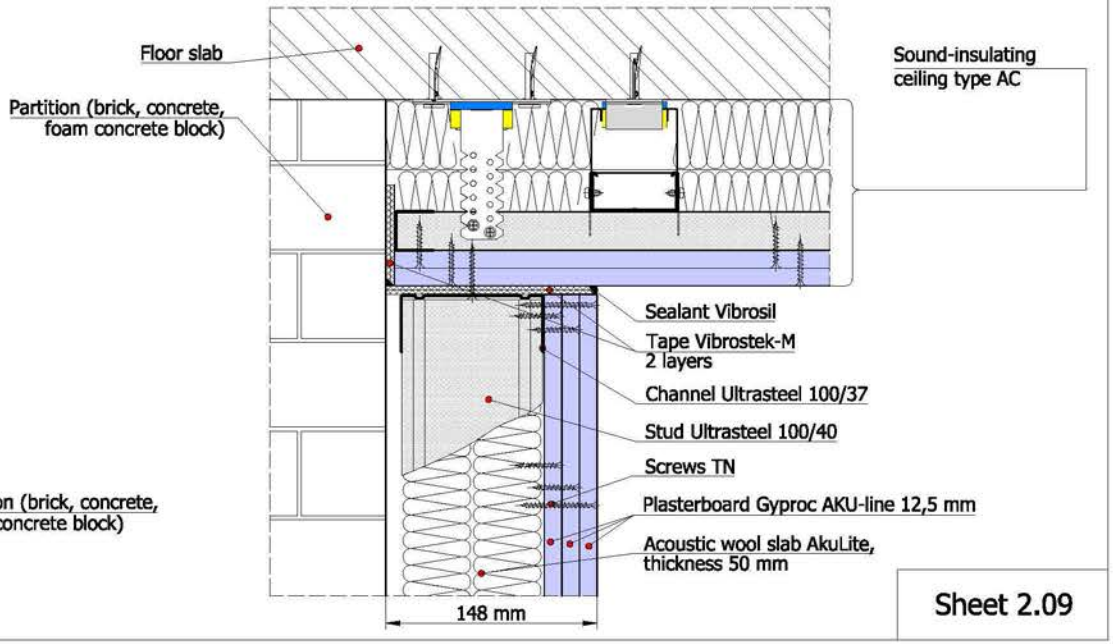
2.09.2 Junction of wall lining to the door-frame. Designe of included angle



Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 72.23	140 mm reinforced concrete wall (type A)	50	17	**67**
ALB 72.23	Solid brik wall plastered on one side, 140 mm (type B)	47	17	**64**
ALC 72.23	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	17	**60**

2.09.3 Junction of wall lining to the suspended ceiling

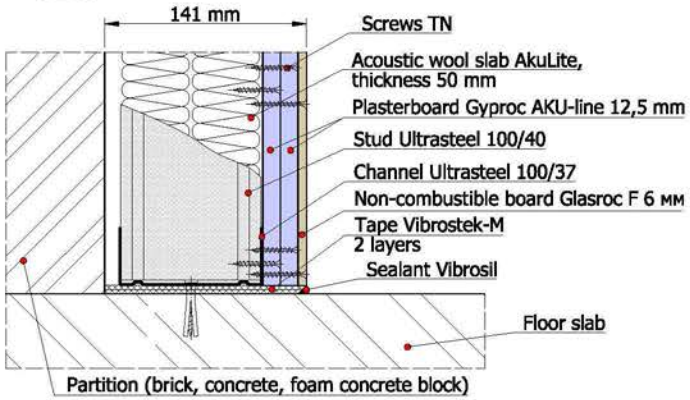


Sheet 2.09

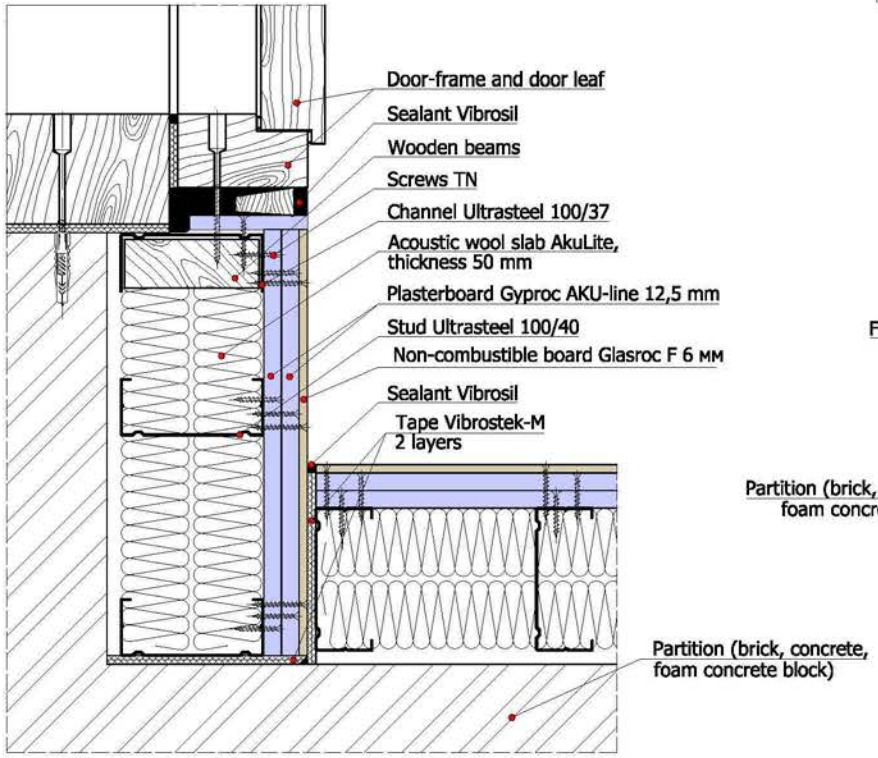
Design of 141 mm wall lining, type ALA, ALB, ALC 72.23NC

- **Maximum heighth of lining with 600mm stud pace, h=5,7 m**
- **1 m² mass of lining m=35 kg**

2.10.1 Junction of wall lining to the floor/ceiling



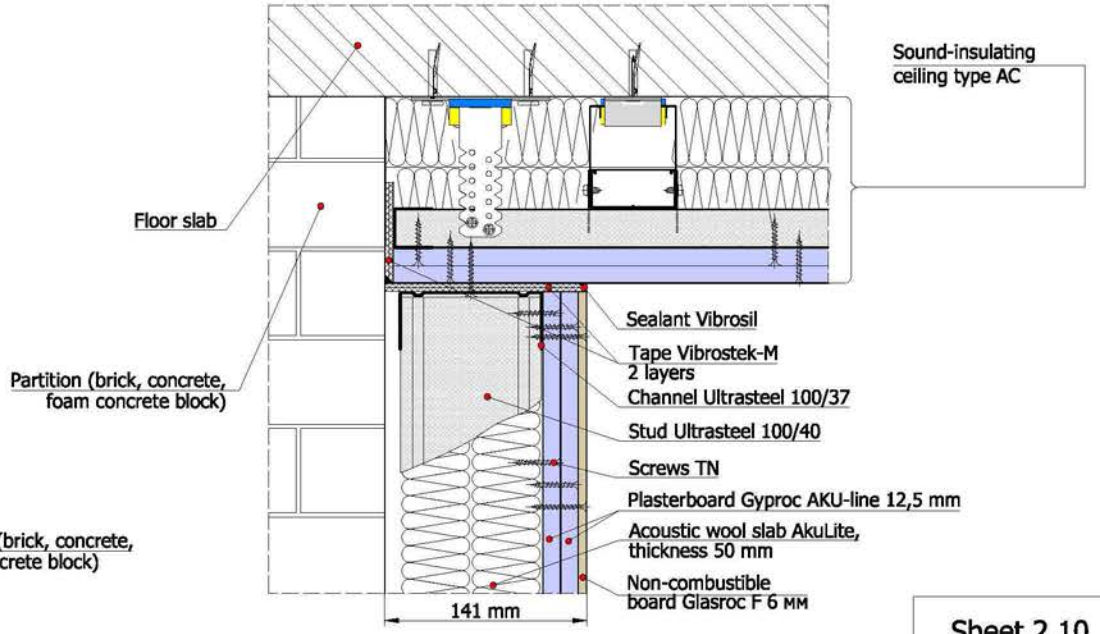
2.10.2 Junction of wall lining to the door-frame. Designe of included angle



Weighted sound reduction index of lining

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of bearing wall, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
ALA 72.23NC	140 mm reinforced concrete wall (type A)	50	16	**66**
ALB 72.23NC	Solid brik wall plastered on one side, 140 mm (type B)	47	16	**63**
ALC 72.23NC	200 mm foam concrete block wall, 500 kg/m3 density (type C)	43	16	**59**

2.10.3 Junction of wall lining to the suspended ceiling



Sheet 2.10

Table L3.01. Weighted sound reduction index of a floor slab with suspended sound-insulating ceiling Gyproc

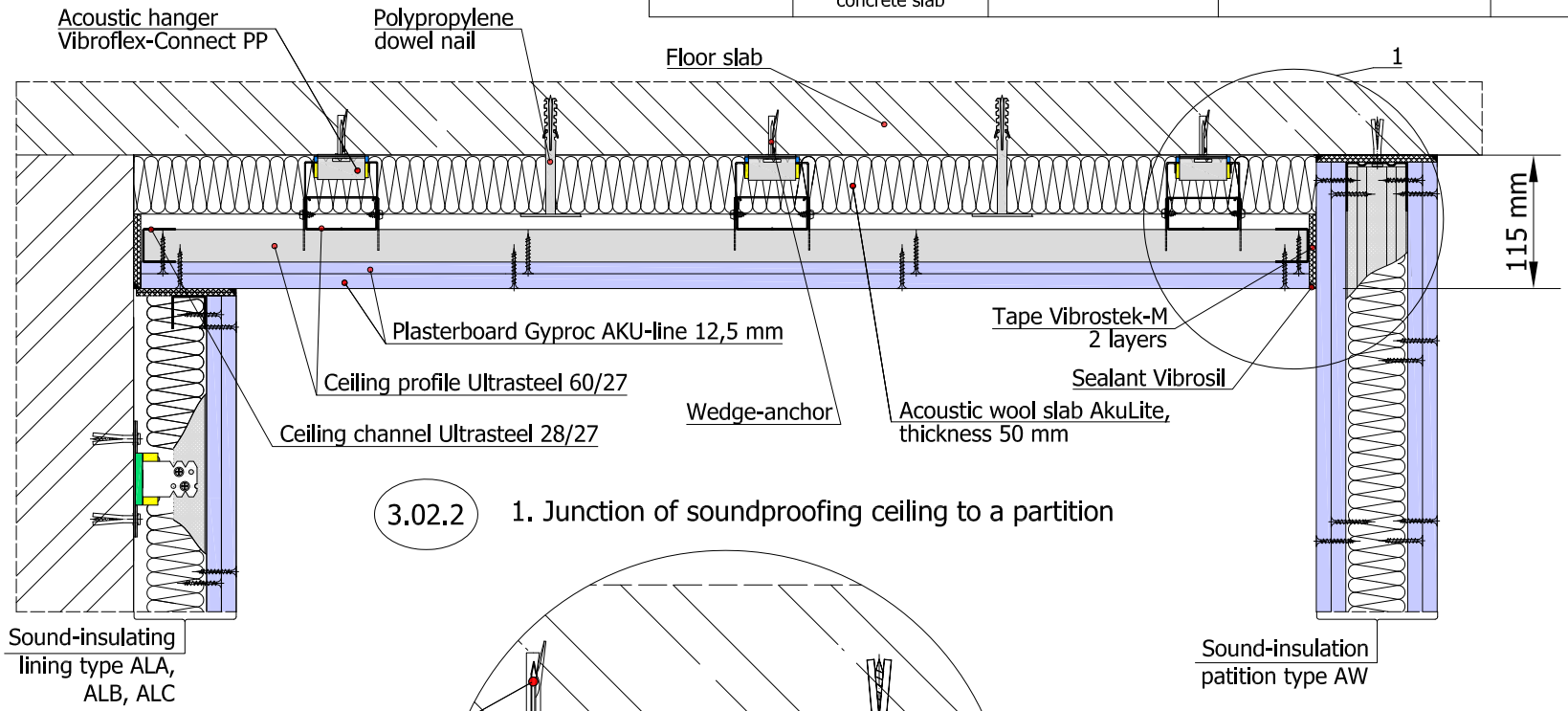
№	Frame type	Total thickness of the suspended ceiling, mm	Total thickness of a frame with a hanger, mm	Amount of **AkuLite** sound absorbing boards 50 mm	**Floor slab 140 mm, Rw = 49 dB** 2 layers of **Gyproc AKU-line** 12,5 mm frame lining **Weighted sound reduction index of the whole slab construction, Rw, dB,** Weighted sound reduction index improvement of the suspended sound-insulating ceiling construction (figures in parentheses), ΔRw, dB and a construction code
1.	Ceiling profile Gyproc Ultra 60/27 on a **Vibroflex-Connect PP** acoustic hanger	115	90	1	**67** (18) AC 64.12 sheet 3.02
2.	Ceiling profile Gyproc Ultra 60/27 on a **Vibroflex-Connect PP** acoustic hanger	175	150	2	**69** (20) AC 64.22 sheet 3.03
3.	Ceiling profile Gyproc Ultra 60/27 on a **Vibroflex-Connect PP** acoustic hanger	225	200	3	**71** (22) AC 64.32 sheet 3.04

Results of measurements given in Table **L3.01**, were performed by the Acoustics Laboratory of NIISF RAASN (Moscow) under field conditions in the absence of indirect noise transmission paths.

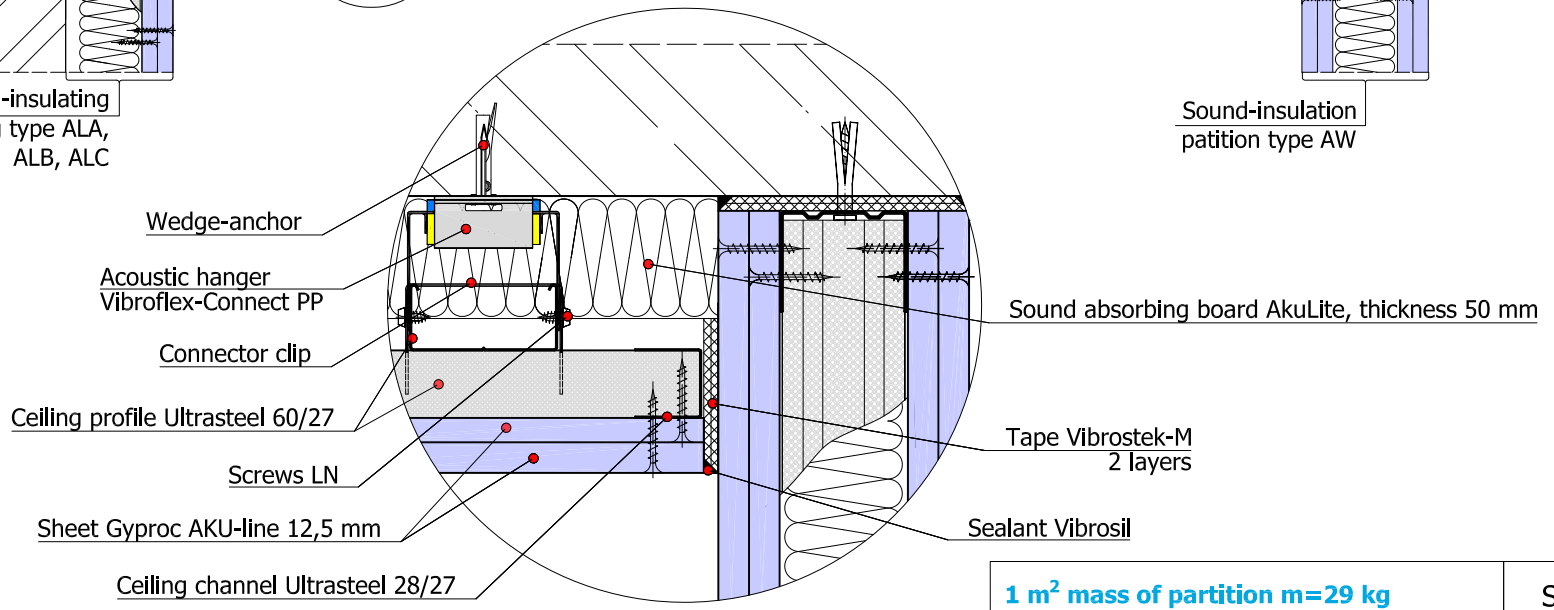
Design of soundproofing ceiling, type AC 64.12

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of floor slab, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
AC 64.12	140 mm reinforced concrete slab	49	18	**67**

3.02.1 Suspended ceiling with Acoustic hanger Vibroflex-Connect PP. Overall thickness of construction is 115mm.



3.02.2 1. Junction of soundproofing ceiling to a partition



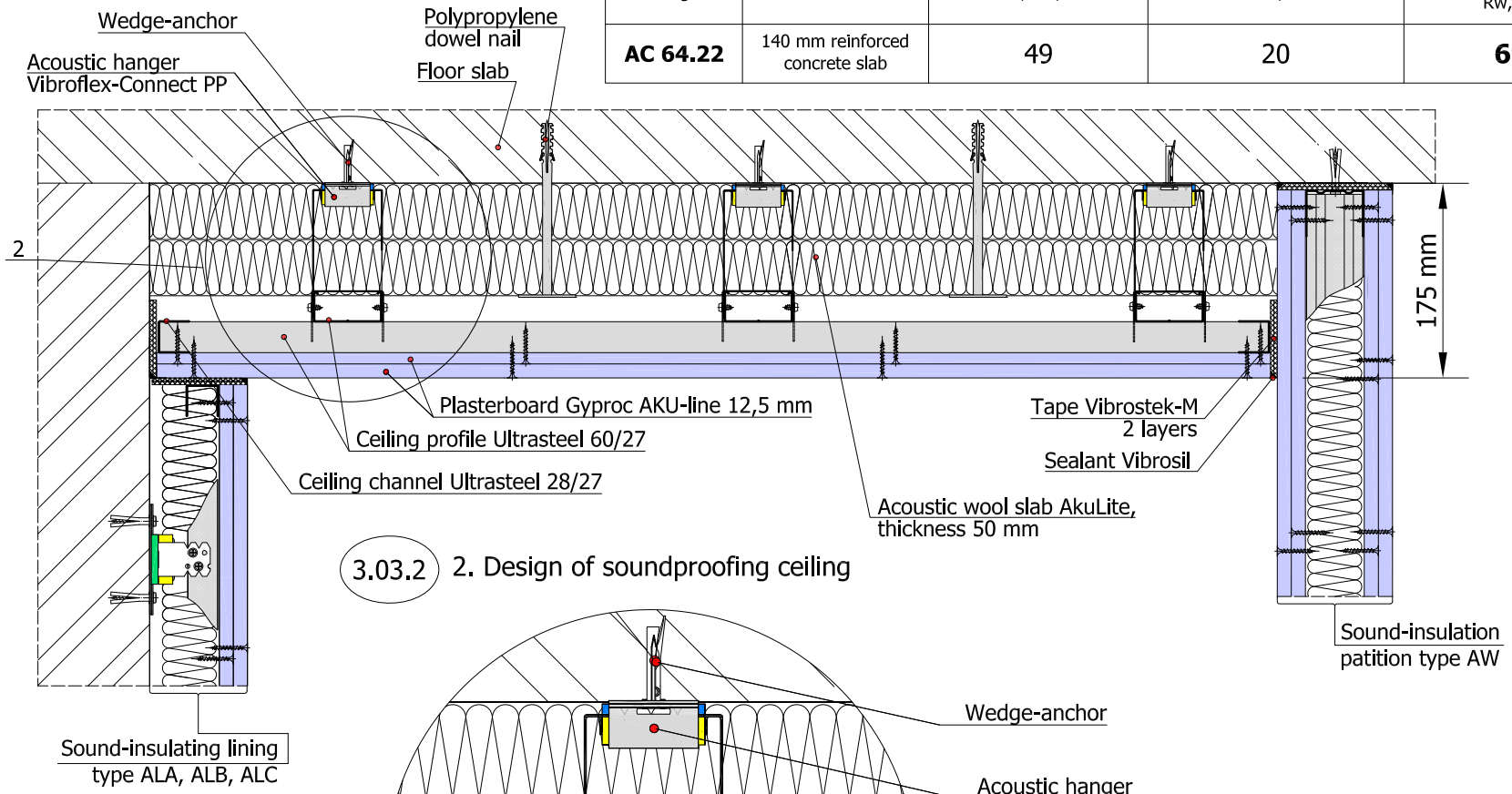
1 m² mass of partition m=29 kg

Sheet 3.02

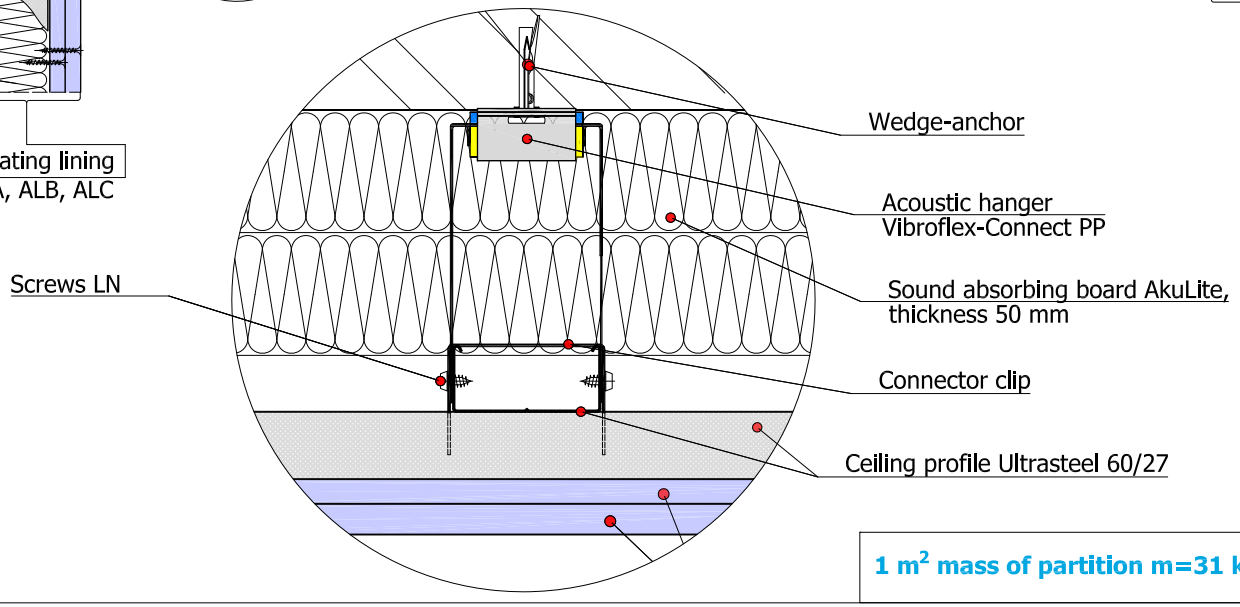
Design of soundproofing ceiling, type AC 64.22

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of floor slab, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
AC 64.22	140 mm reinforced concrete slab	49	20	**69**

3.03.1 Suspended ceiling with Acoustic hanger Vibroflex-Connect PP. Overall thickness of construction is 175mm.



3.03.2 2. Design of soundproofing ceiling



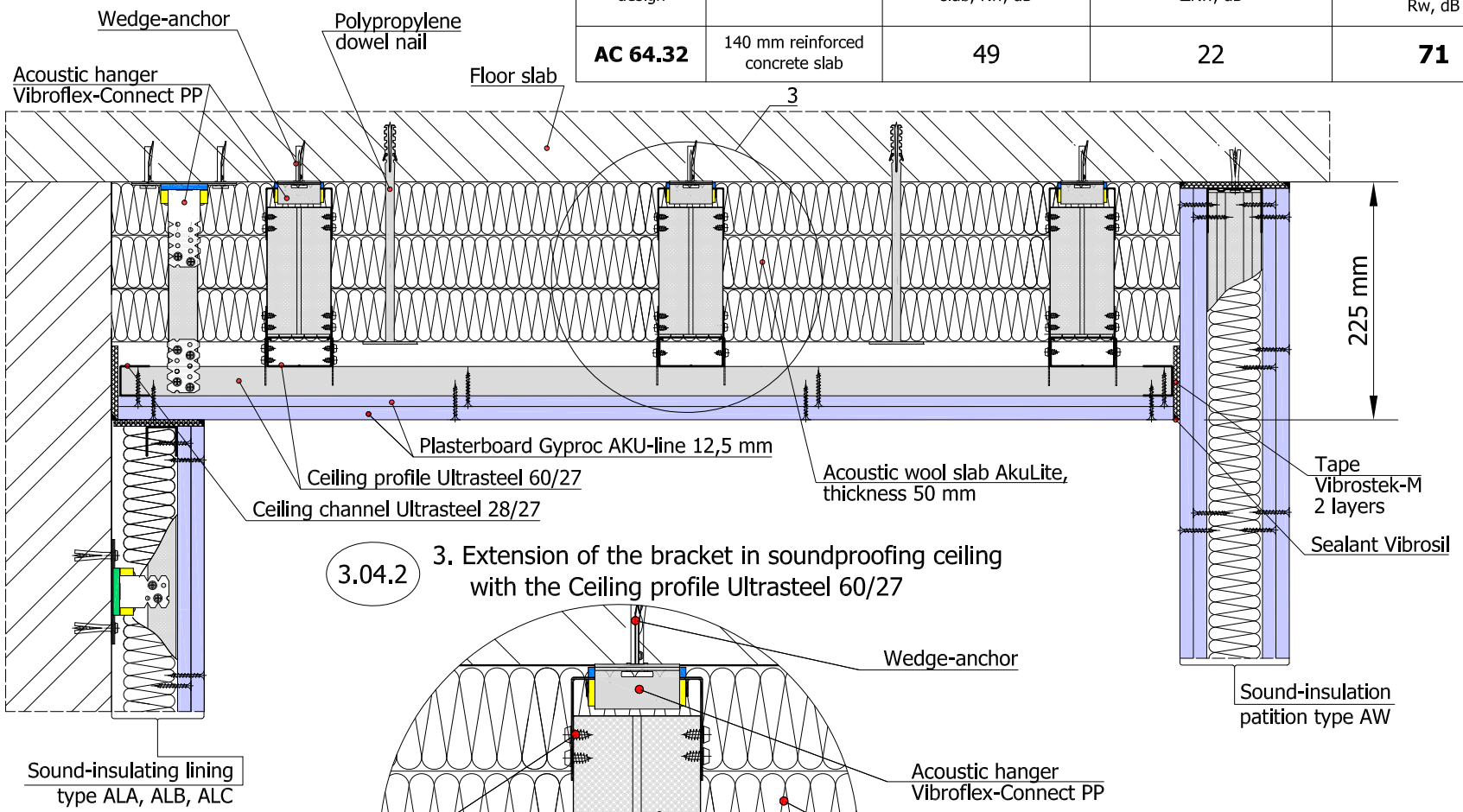
1 m² mass of partition m=31 kg

Sheet 3.03

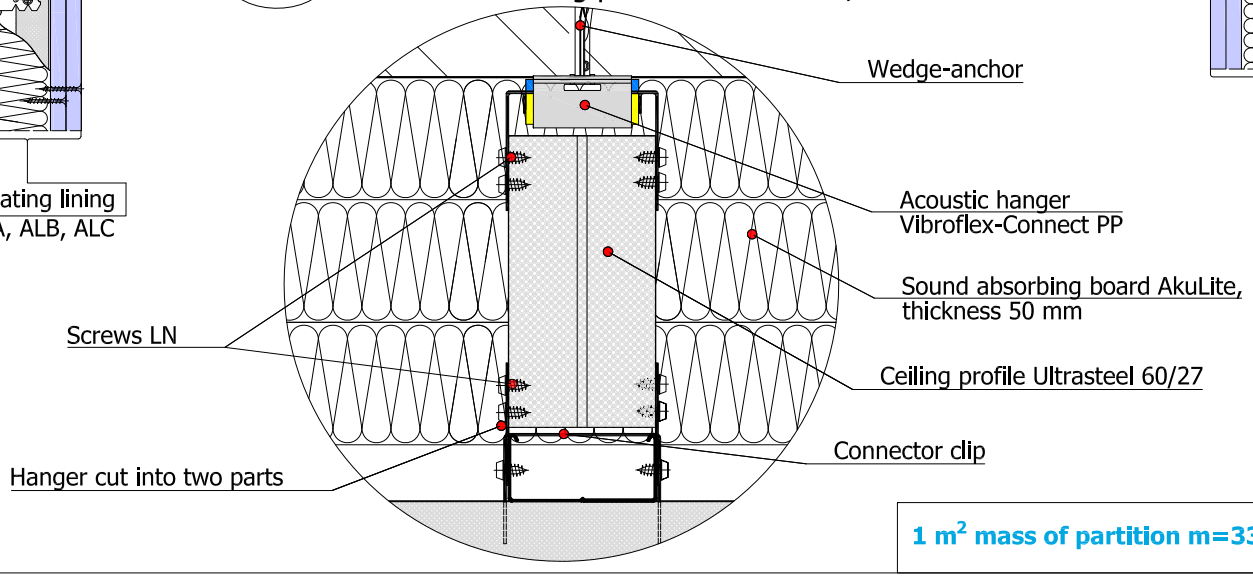
3.04.1 Suspended ceiling with Acoustic hanger Vibroflex-Connect PP. Overall thickness of construction is 225mm.

Design of soundproofing ceiling, type AC 64.32

Tipe of cladding design	Tipe and thickness of bearing wall	Weighted sound reduction index of floor slab, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
AC 64.32	140 mm reinforced concrete slab	49	22	**71**



3.04.2 3. Extension of the bracket in soundproofing ceiling with the Ceiling profile Ultrasteel 60/27



1 m² mass of partition m=33 kg

Sheet 3.04

Table Л4.01. Sound reduction indexes of Gyproc floating floor construction

№	Type of leveling base	Total thickness of sound-insulating floating floor, mm	Sound-insulating layer material	thickness of sound-insulating layer, mm	**Values of weighted normalized impact sound pressure level of sound-insulating floor Ln,w, dB,** Weighted normalized impact sound pressure level reduction of a sound-insulating floor, ΔLnw, dB and a construction code of a sound-insulating floor on a slab:		**Values of weighted sound reduction index of sound-insulating floor Rw, dB**, weighted sound reduction index improvement of a sound-insulating floor, ΔRw, dB (figures in parentheses) and a construction code of a sound-insulating floor on a slab:	
					Reinforced concrete floor slab **140 – 180 mm**	Reinforced concrete floor slab **200 – 250 mm**	Reinforced concrete floor slab **140 – 180 mm**	Reinforced concrete floor slab **200 – 250 mm**
1.	Assembly base **Rigidur** 25 mm floor elements	29	Multilayered fiberglass **Vibrostek-V300**, **1 layer**	4	**64 – 61**/ 16 AFB 111 sheet 4.02	**60 – 57**/ 16 AFA 111 sheet 4.02	-	-
2.		33	Multilayered fiberglass **Vibrostek-V300**, **2 layers**	8	**62 – 59**/ 18 AFB 112 sheet 4.03	**58 – 55**/ 18 AFA 112 sheet 4.03	no data	no data
3.		55	Mineral board **AkuFloor-B30, 1 layer**	30	**56 – 53**/ 24 AFB 121 sheet 4.04	**52 – 49**/ 24 AFA 121 sheet 4.04	no data	no data
4.	**Reinforced cement-sand screed** made of M300 sand concrete 60 mm thickness	65	Material **Shumanet-100Combi, 1 layer**	5	**55 – 52**/ 25 AFB 211 sheet 4.05	**51 – 48**/ 25 AFA 211 sheet 4.05	-	-
5.		80	**Shumoplast** levelling mixture	20	**49 – 46**/ 31 AFB 221 sheet 4.06	**45 – 42**/ 31 AFA 221 sheet 4.06	**58 – 62** (9*) AFB 221 sheet 4.06	**63 – 65** (9*) AFA 221 sheet 4.06
6.		90	Acoustic wool slab **AkuFloor-B30, 1 layer**	30	**49 – 46**/ 31 AFB 222 sheet 4.07	**45 – 42**/ 31 AFA 222 sheet 4.07	**59 – 63** (10*) AFB 222 sheet 4.07	**64 – 66** (10*) AFA 222 sheet 4.07
7.		120	Acoustic wool slab **AkuFloor-B30, 2 layers**	60	**44 – 41**/ 36 AFB 223 sheet 4.08	**40 – 37**/ 36 AFA 223 sheet 4.08	no data	no data
8.		80	Acoustic wool slab **AkuFloor-S20, 1 layer**	20	**44 – 41**/ 36 AFB 227 sheet 4.12	**40 – 37**/ 36 AFA 227 sheet 4.12	**59 – 63** (10*) AFB 227 sheet 4.12	**64 – 66** (10*) AFA 227 sheet 4.12
9.	**Reinforced cement-sand screed** made of M300 sand concrete 80 mm thickness	157	Polyurethane elastomer** **Sylomer SR55/AkuLite** acoustic wool slab	59	**42 – 39**/ 38 AFB 224 sheet 4.09	**38 – 35**/ 38 AFA 224 sheet 4.09	no data	no data
10.		120	Acoustic wool slab **AkuFloor-S20, 2 layer**	40	**39 – 36**/ 41 AFB 225 sheet 4.10	**35 – 32**/ 41 AFA 225 sheet 4.10	**60 – 64** (11*) AFB 225 sheet 4.10	**65 – 67** (11*) AFA 225 sheet 4.10
11.		140	Acoustic wool slab **AkuFloor-S20, 3 layer**	60	**36 – 33**/ 44 AFB 226 sheet 4.11	**32 – 29**/ 44 AFA 226 sheet 4.11	no data	no data

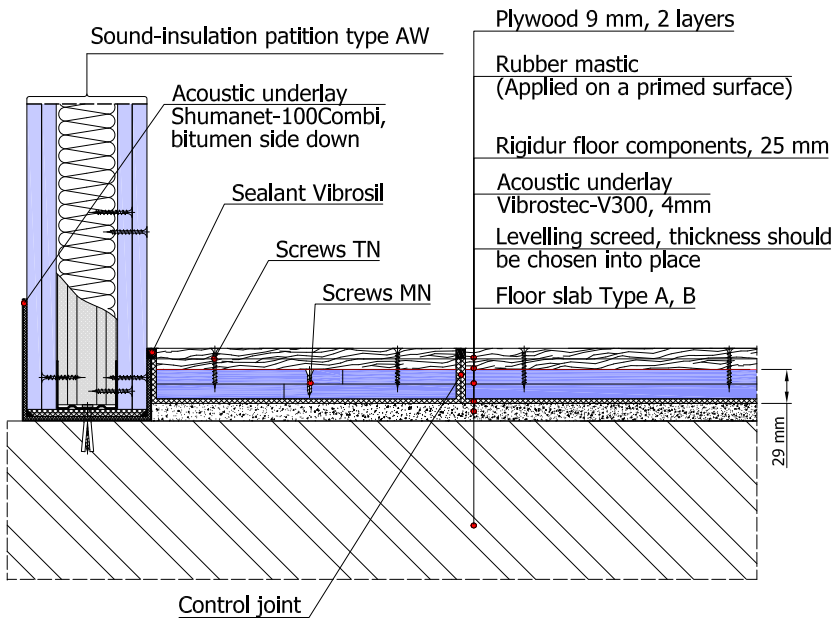
* – values, captured under field conditions in the presence of indirect noise transmission paths.
** - this construction is used in cases of strong and regular dynamic loads on a floor slab: fitness areas, service rooms etc.

Results of measurements given in Table **L4.01**, were performed by the Acoustics Laboratory of NIISF RAASN (Moscow) under laboratory conditions in the absence of indirect noise transmission paths and under field conditions in the presence of indirect noise transmission paths.

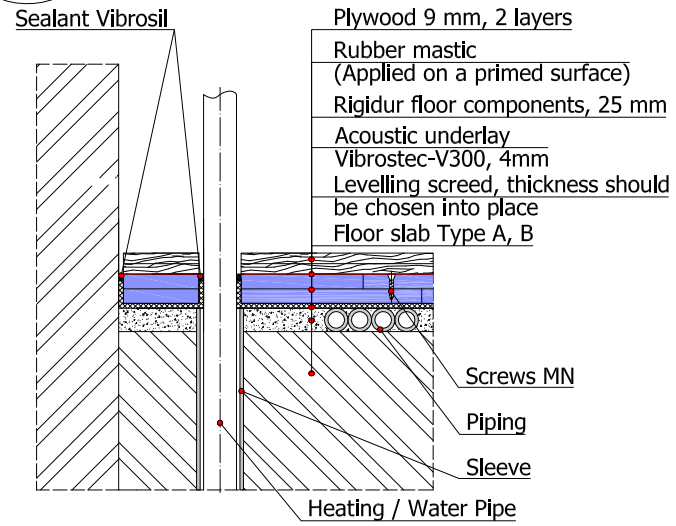
Sheet 4.01

Design of soundproofing floor, type AFA, AFB 111

4.02.1 Junction of assembled floating floor to partition. Design of control joint



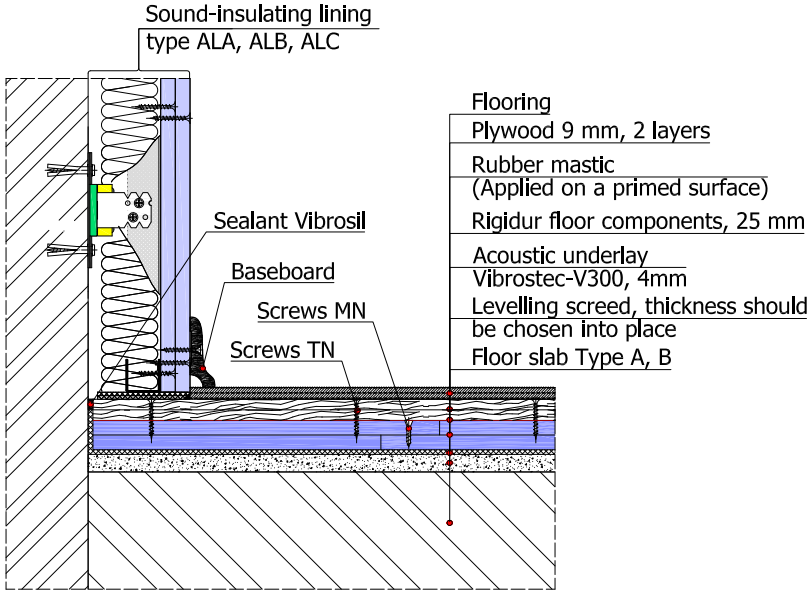
4.02.2 Junction of assembled floating floor to a wall and piping



Weighted normalized impact sound pressure level of floor design

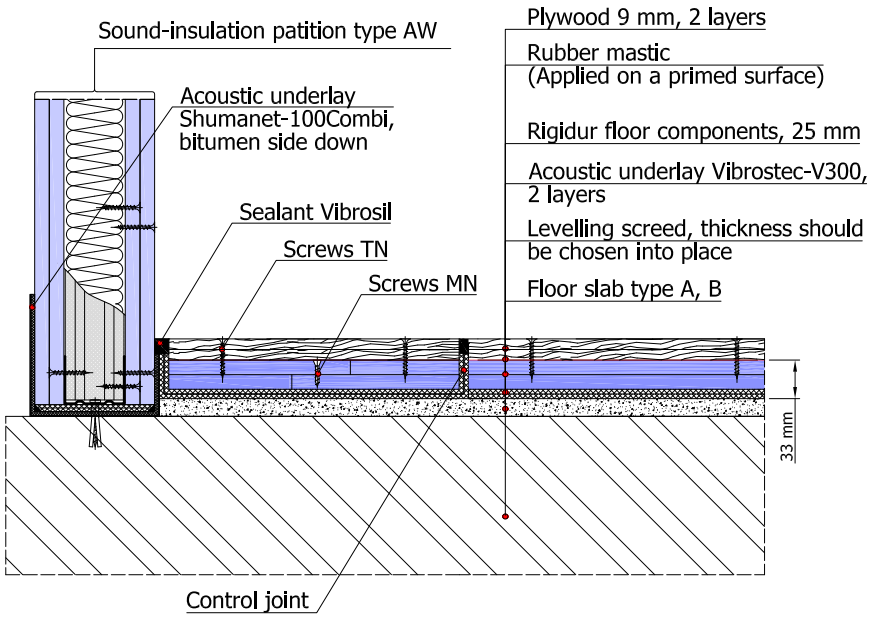
Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 111	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	16	**60 - 57**
AFB 111	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	16	**64 - 61**

4.02.3 Junction of wall lining to assembled floating floor



Design of soundproofing floor, type AFA, AFB 112

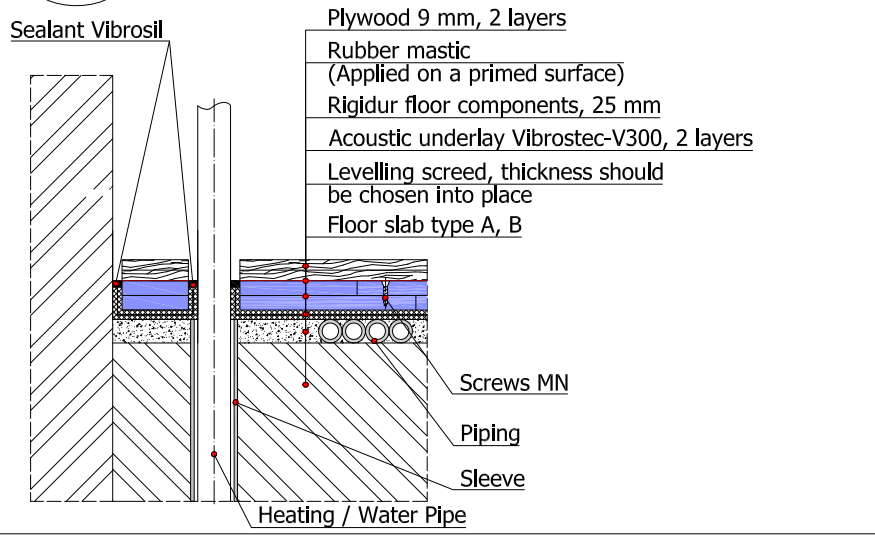
4.03.1 Junction of assembled floating floor to partition. Design of control joint



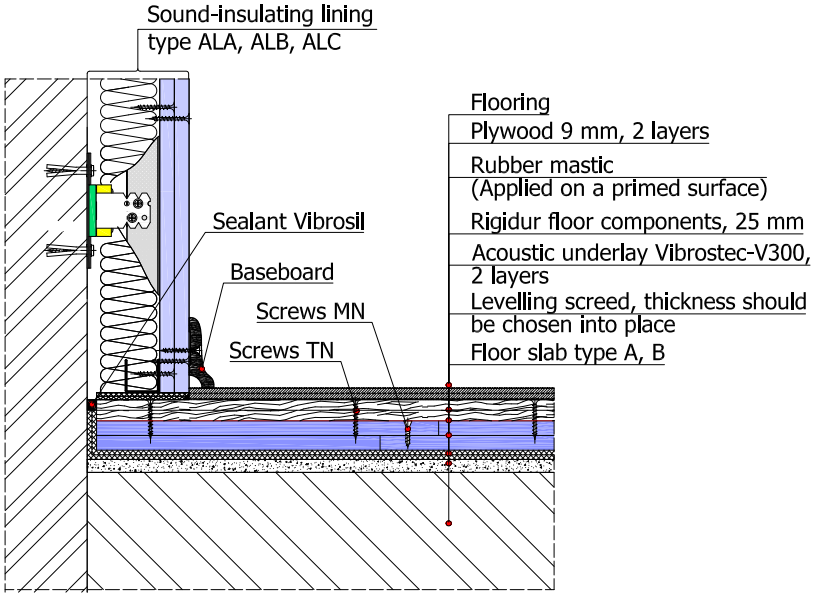
Weighted normalized impact sound pressure level of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 112	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	18	**58 - 55**
AFB 112	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	18	**62 - 59**

4.03.2 Junction of assembled floating floor to a wall and piping

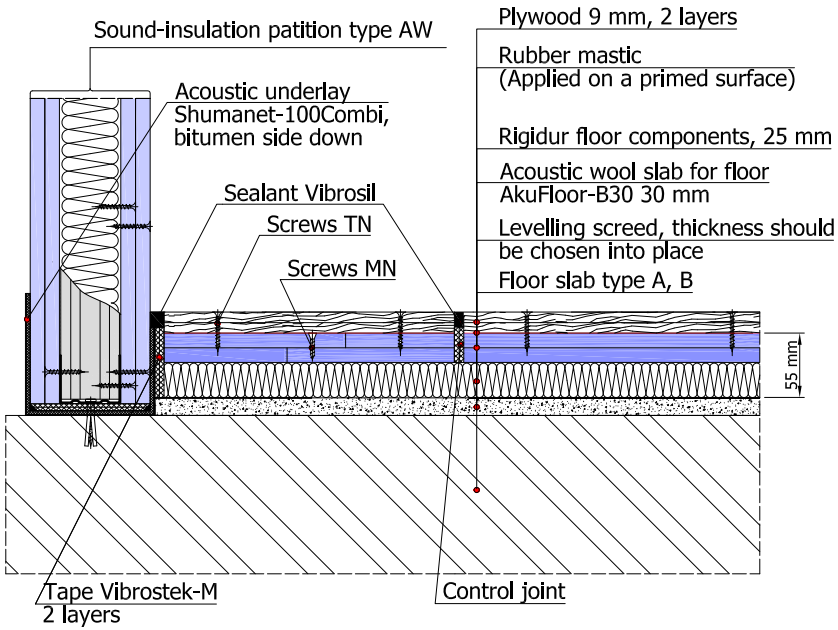


4.03.3 Junction of wall lining to assembled floating floor

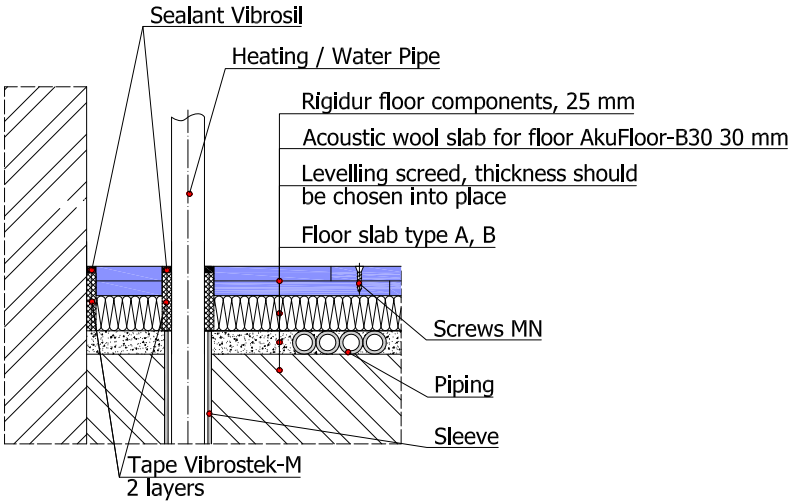


Design of soundproofing floor, type AFA, AFB 121

4.04.1 Junction of assembled floating floor to partition. Design of control joint



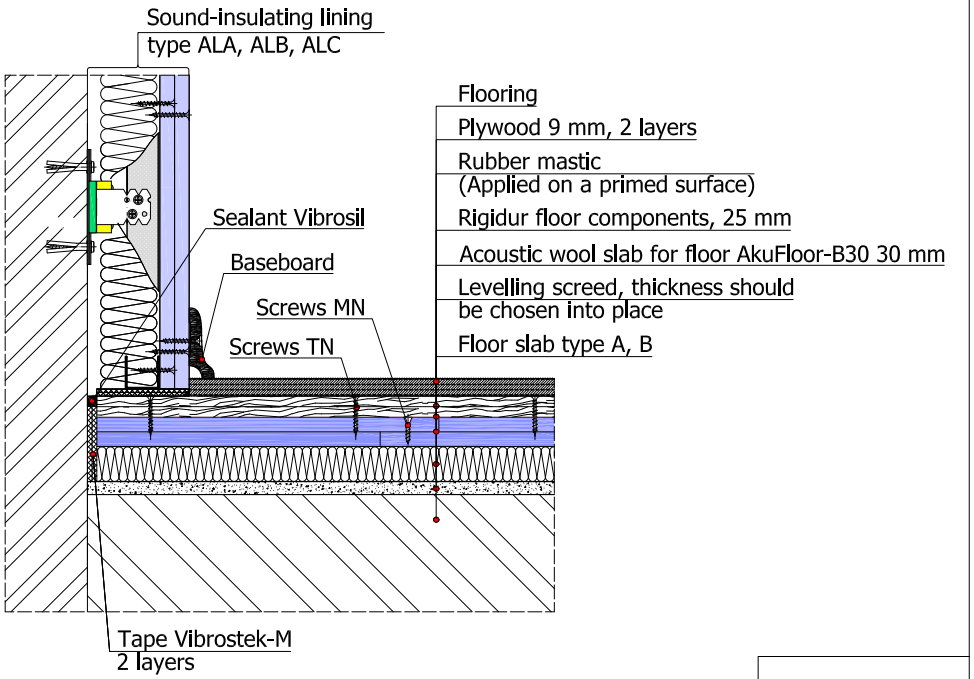
4.04.2 Junction of assembled floating floor to a wall and piping



Weighted normalized impact sound pressure level of floor design

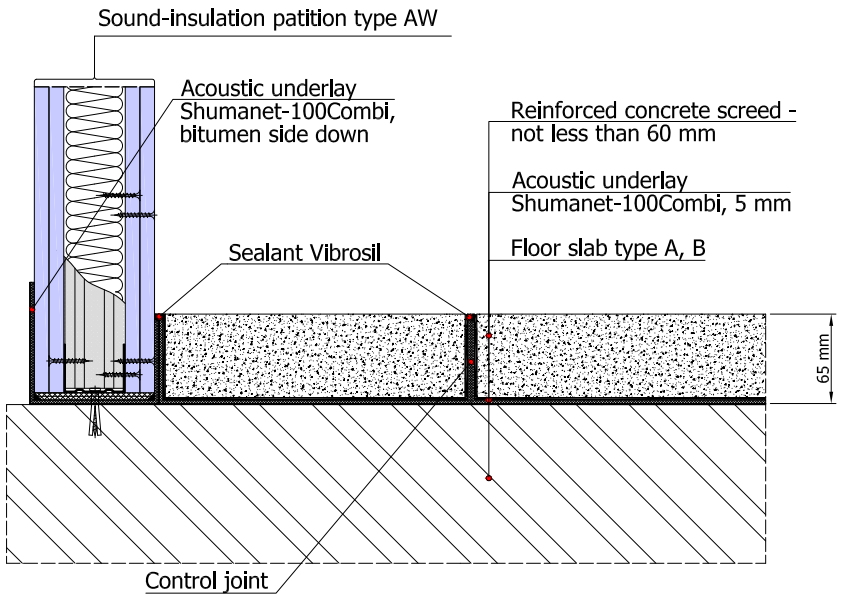
Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 121	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	24	**52 - 49**
AFB 121	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	24	**56 - 53**

4.04.3 Junction of wall lining to assembled floating floor

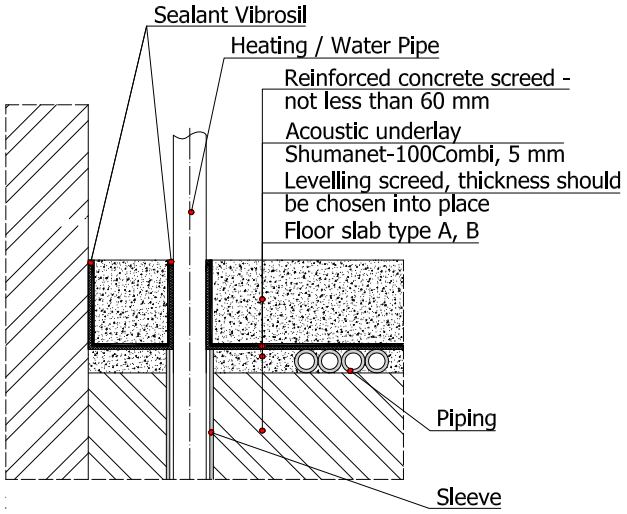


Design of soundproofing floor, type AFA, AFB 211

4.05.1 Junction of floating floor to partition. Design of control joint



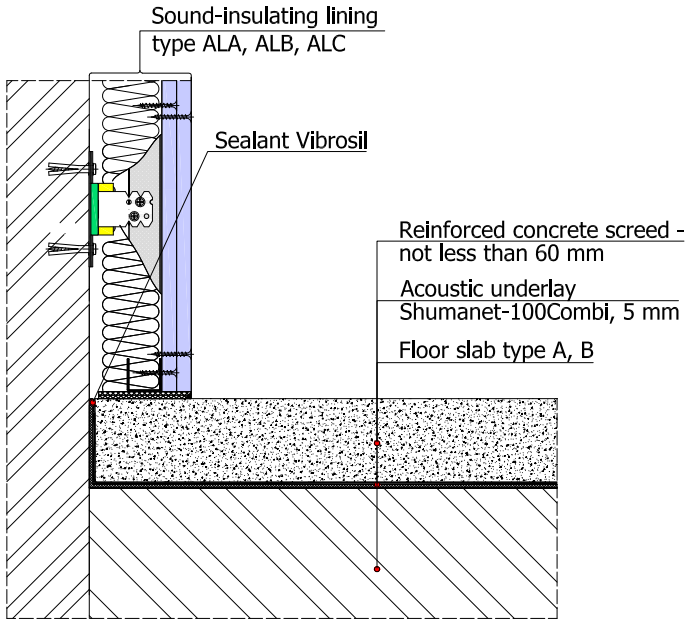
4.05.2 Junction of floating floor with acoustic underlay Shumanet-100Combi to a wall and piping



Weighted normalized impact sound pressure level of floor design

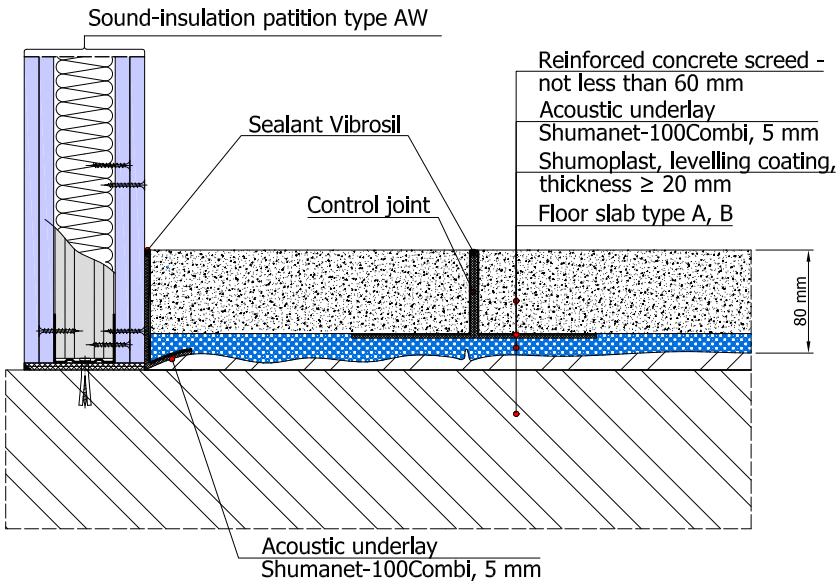
Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 211	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	25	**51 - 48**
AFB 211	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	25	**55 - 52**

4.05.3 Junction of wall lining to floating floor with acoustic underlay Shumanet-100Combi

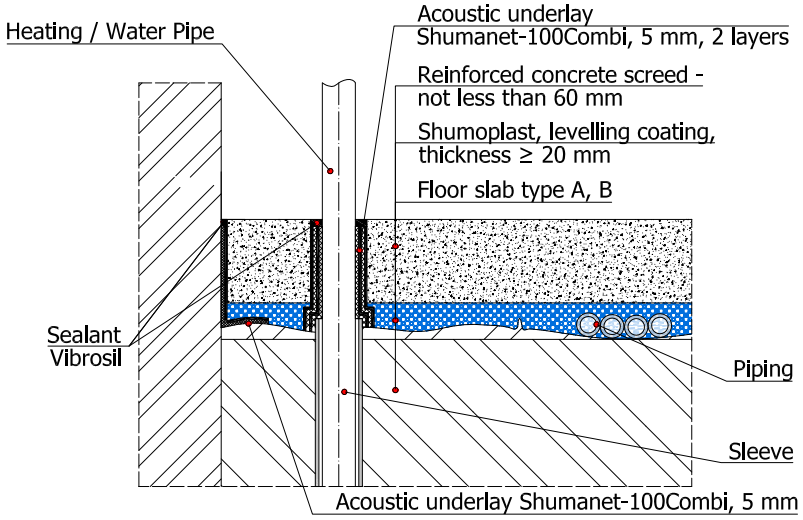


Design of soundproofing floor, type AFA, AFB 221

4.06.1 Junction of floating floor to partition. Design of control joint



4.06.2 Junction of floating floor to with levelling coating Shumoplast to a wall and piping



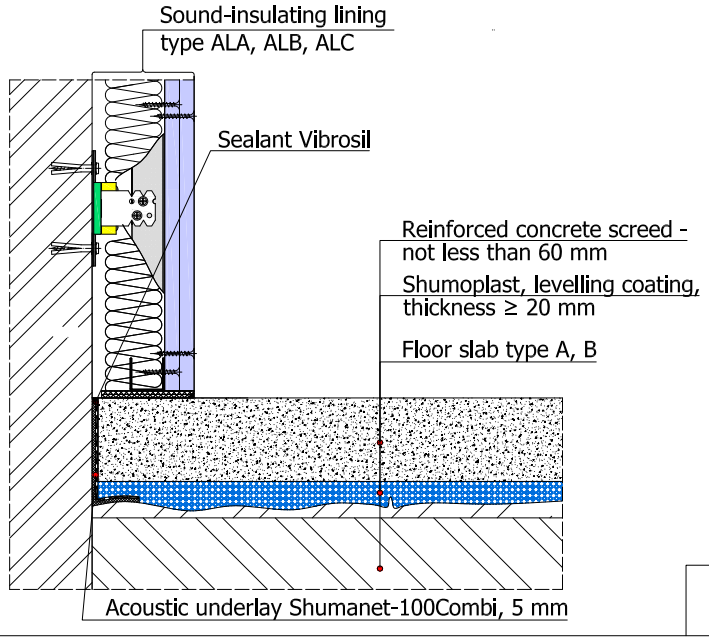
Weighted normalized impact sound pressure level of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 221	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	31	**45 - 42**
AFB 221	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	31	**49 - 46**

Weighted sound reduction index of floor design

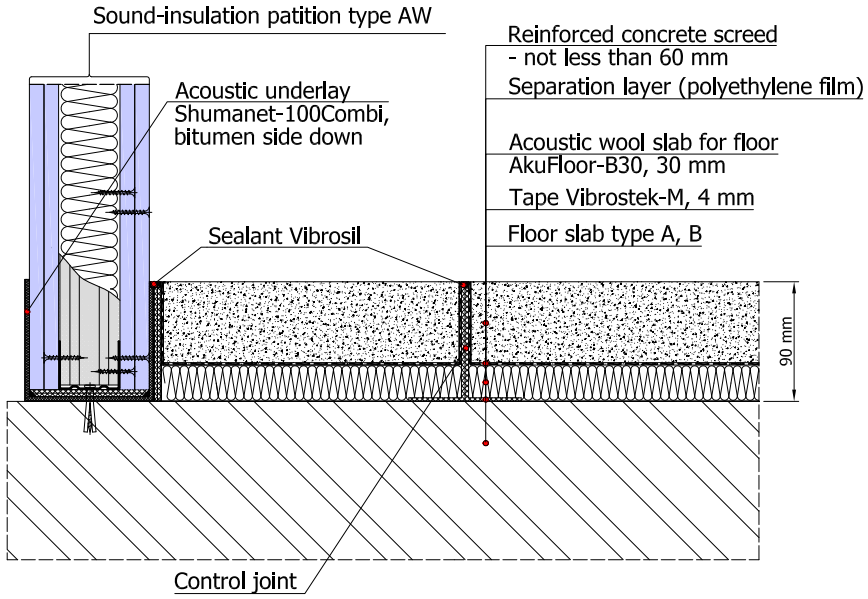
Tipe of floor design	Tipe and thickness of bearing wall	Weighted sound reduction index of floor slab, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
AFA 221	200 - 250 mm reinforced concrete slab (Type A)	54 - 56	9	**63 - 65**
AFB 221	140 - 180 mm reinforced concrete slab (Type B)	49 - 53	9	**58 - 62**

4.06.3 Junction of wall lining to floating floor with levelling coating Shumoplast

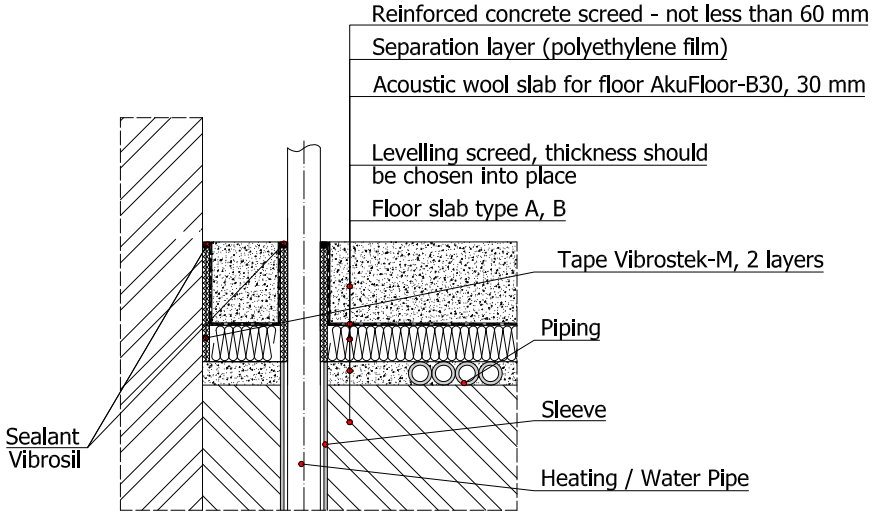


Design of soundproofing floor, type AFA, AFB 222

4.07.1 Junction of floating floor to partition. Design of control joint



4.07.2 Junction of floating floor to with acoustic wool slab AkuFloor-B30 to a wall and piping



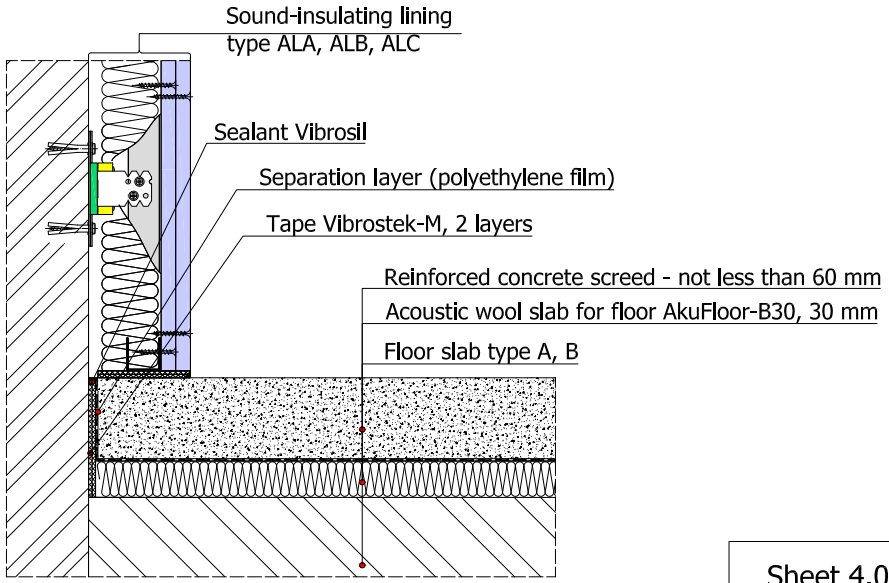
Weighted normalized impact sound pressure level of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 222	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	31	**45 - 42**
AFB 222	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	31	**49 - 46**

Weighted sound reduction index of floor design

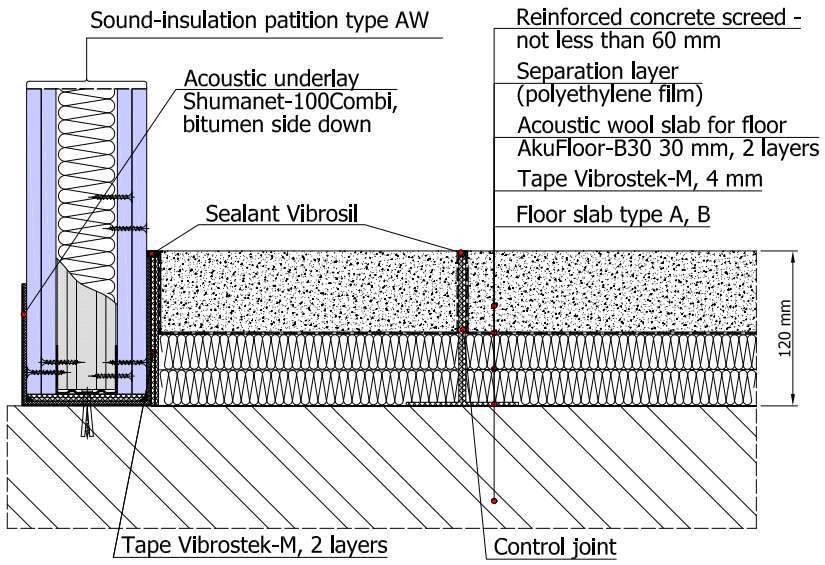
Tipe of floor design	Tipe and thickness of bearing wall	Weighted sound reduction index of floor slab, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
AFA 222	200 - 250 mm reinforced concrete slab (Type A)	54 - 56	10	**64 - 66**
AFB 222	140 - 180 mm reinforced concrete slab (Type B)	49 - 53	10	**59 - 63**

4.07.3 Junction of wall lining to floating floor with acoustic wool slab AkuFloor-B30



Design of soundproofing floor, type AFA, AFB 223

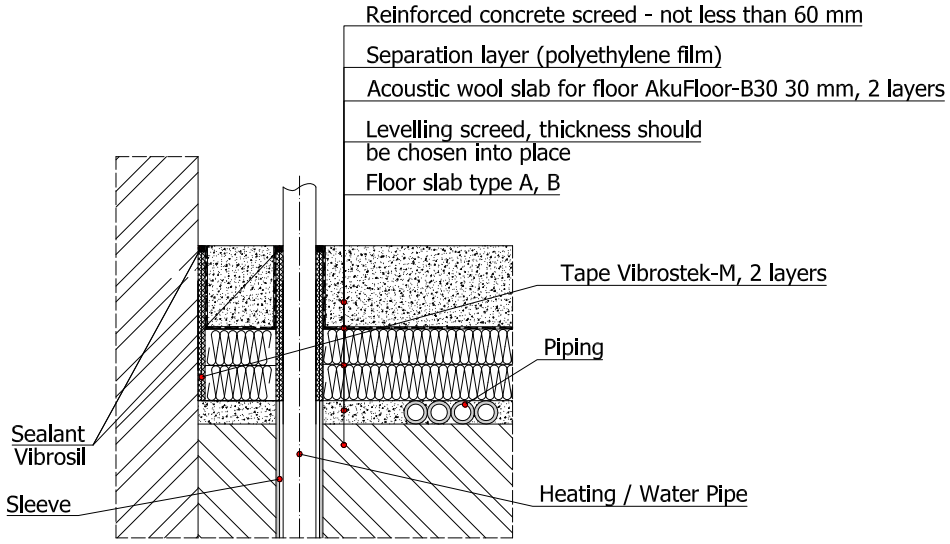
4.08.1 Junction of floating floor to partition. Design of control joint



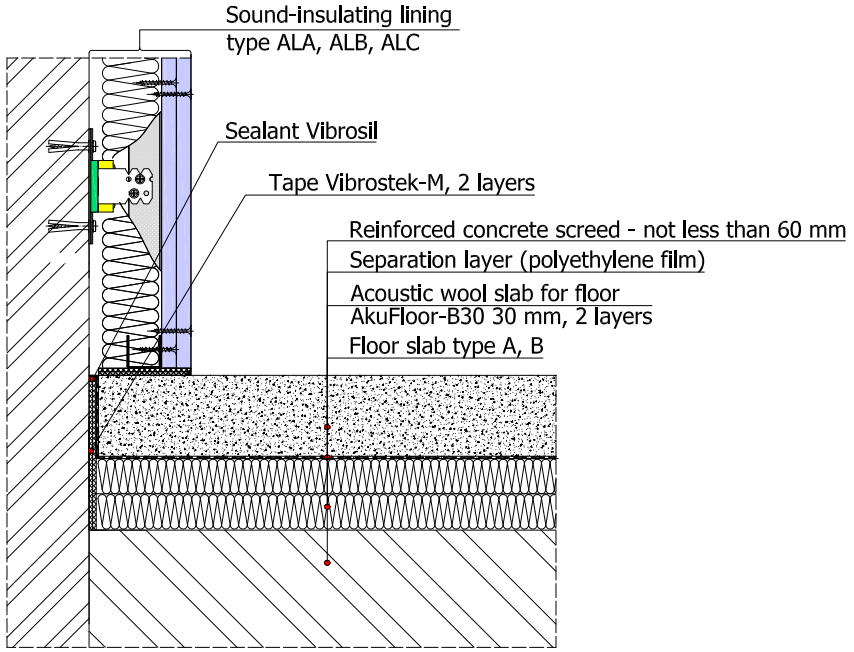
Weighted normalized impact sound pressure level of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 223	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	36	**40 - 37**
AFB 223	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	36	**44 - 41**

4.08.2 Junction of floating floor to with 2 layers of acoustic wool slab AkuFloor-B30 to a wall and piping

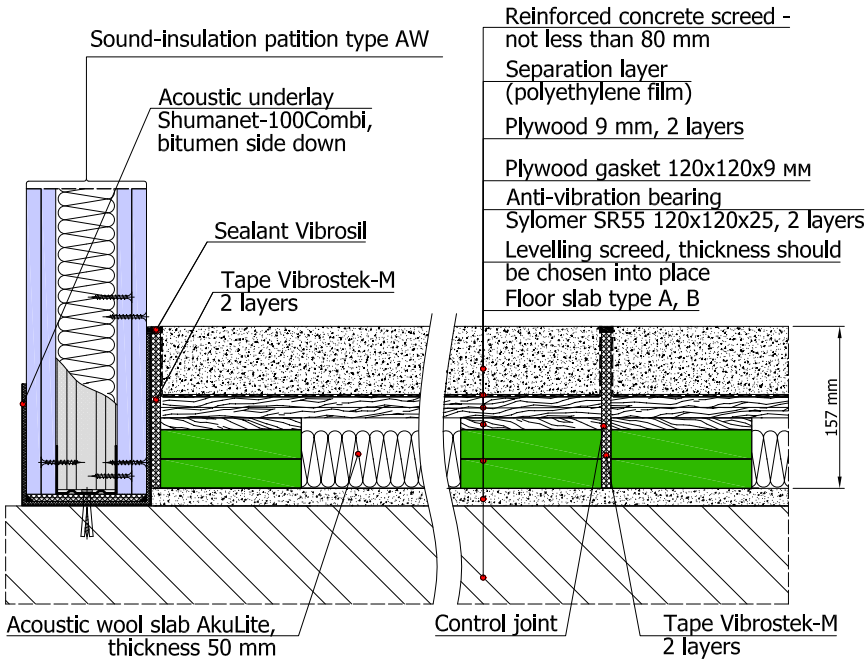


4.08.3 Junction of wall lining to floating floor with 2 layers of acoustic wool slab AkuFloor-B30

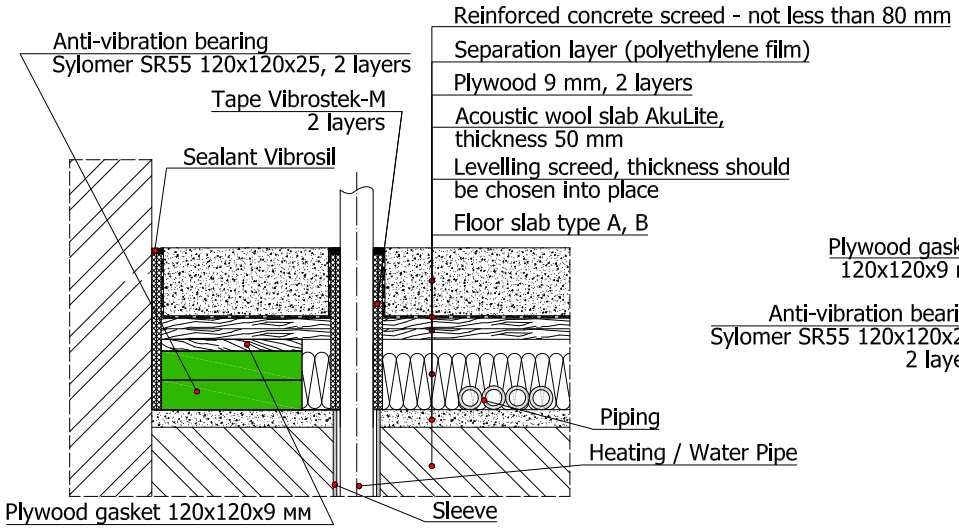


Design of soundproofing floor, type AFA, AFB 224

4.09.1 Junction of floating floor to partition. Design of control joint



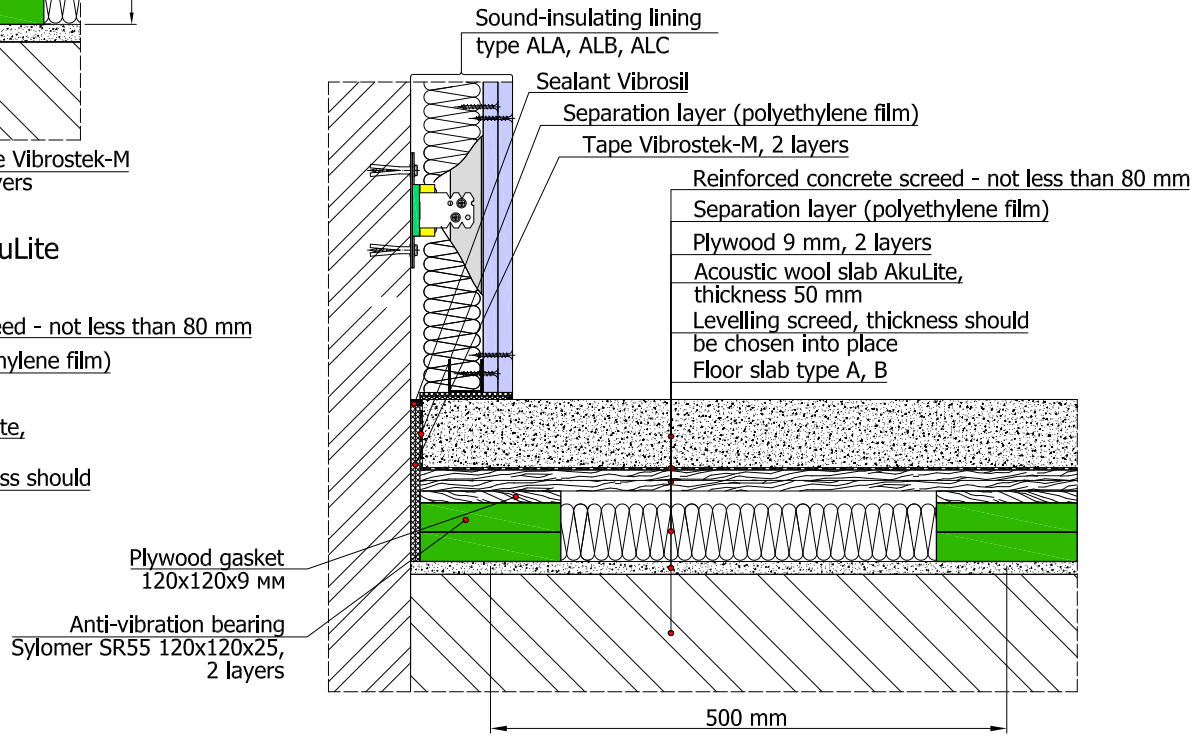
4.09.2 Junction of floating floor to with Sylomer/AkuLite to a wall and piping



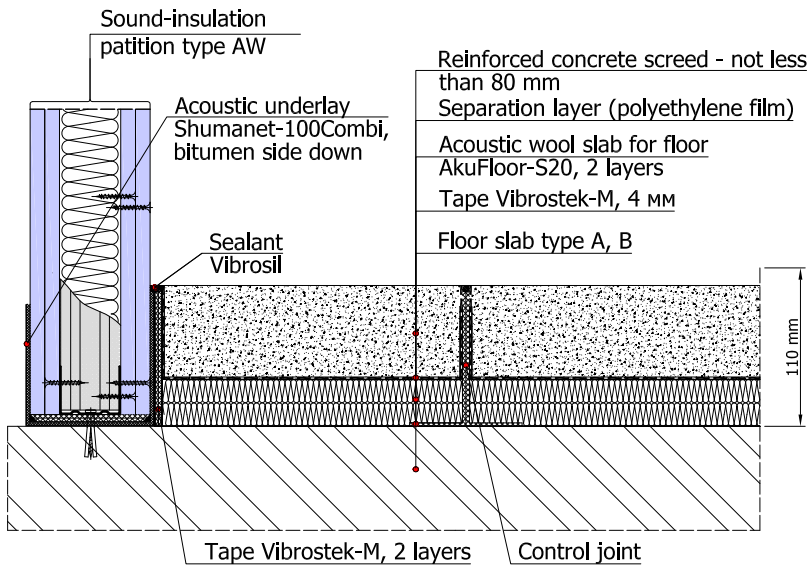
Weighted normalized impact sound pressure level of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 224	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	38	**38 - 35**
AFB 224	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	38	**42 - 39**

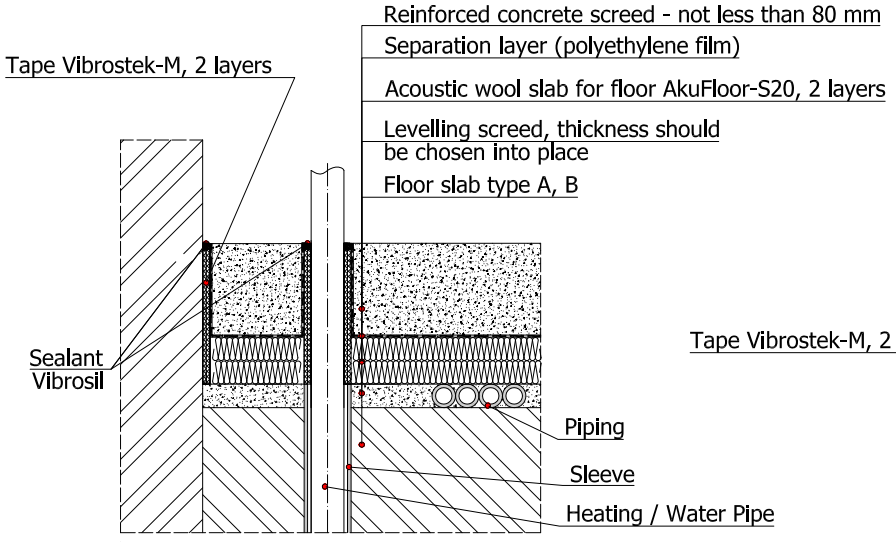
4.09.3 Junction of wall lining to floating floor with Sylomer/AkuLite



4.10.1 Junction of floating floor to partition. Design of control joint



4.10.2 Junction of floating floor to with 2 layers of acoustic wool slab AkuFloor-S20 to a wall and piping



Design of soundproofing floor, type AFA, AFB 225

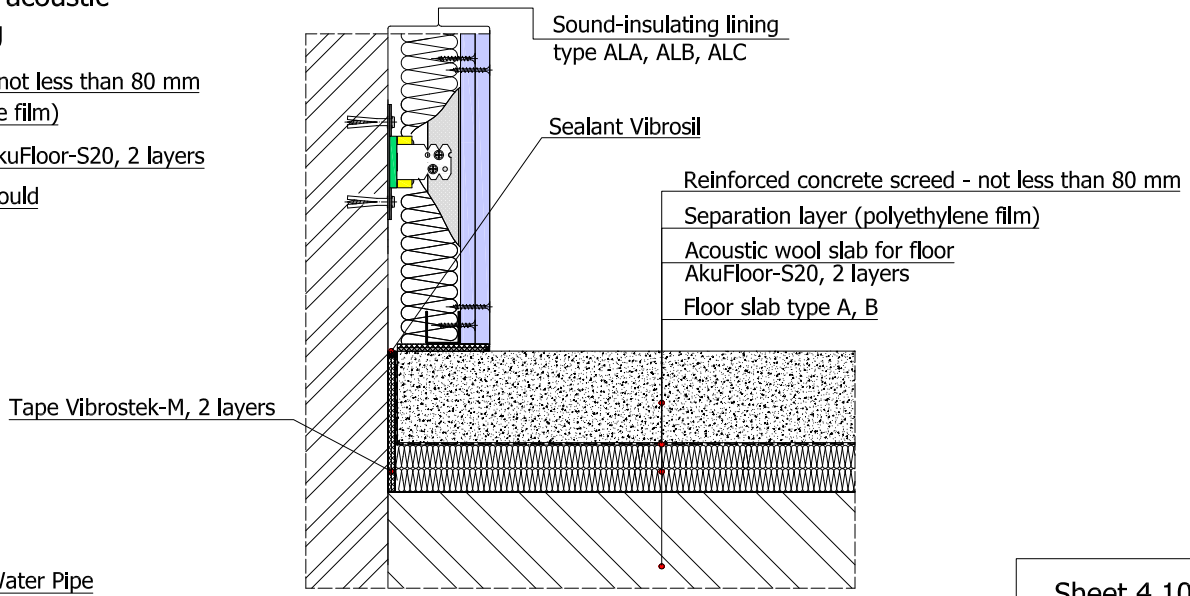
Weighted normalized impact sound pressure level of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 225	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	41	**35 - 32**
AFB 225	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	41	**39 - 36**

Weighted sound reduction index of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted sound reduction index of floor slab, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
AFA 225	200 - 250 mm reinforced concrete slab (Type A)	54 - 56	11	**65 - 67**
AFB 225	140 - 180 mm reinforced concrete slab (Type B)	49 - 53	11	**60 - 64**

4.10.3 Junction of wall lining to floating floor with 2 layers of acoustic wool slab AkuFloor-S20

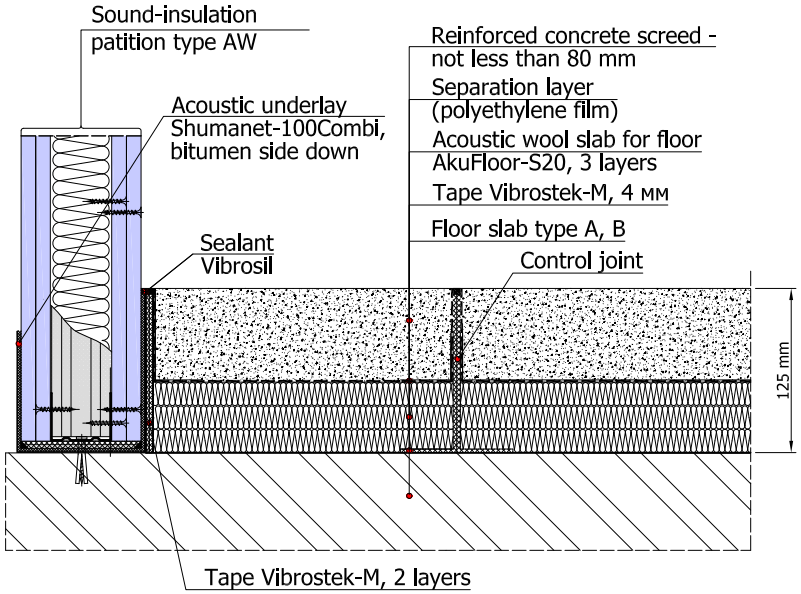


Design of soundproofing floor, type AFA, AFB 226

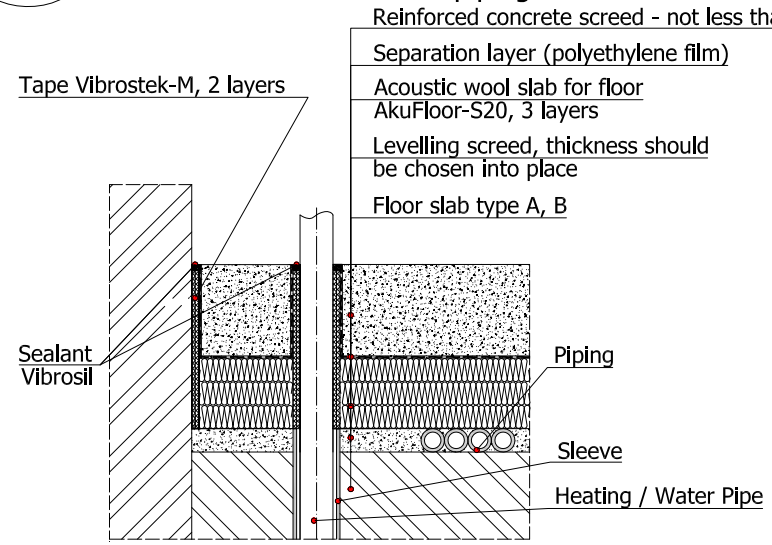
Weighted normalized impact sound pressure level of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 226	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	44	**32 - 29**
AFB 226	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	44	**36 - 33**

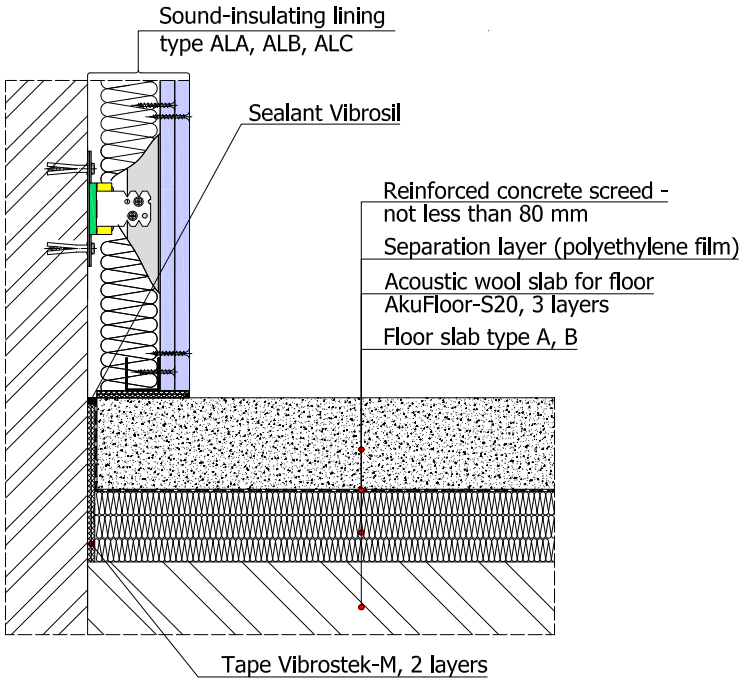
4.11.1 Junction of floating floor to partition. Design of control joint



4.11.2 Junction of floating floor to with 3 layers of acoustic wool slab AkuFloor-S20 to a wall and piping

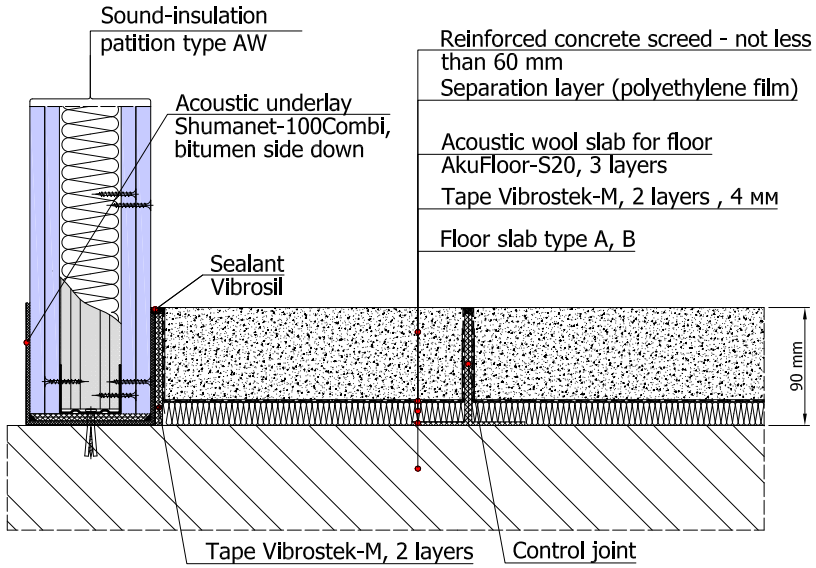


4.11.3 Junction of wall lining to floating floor with 3 layers of acoustic wool slab AkuFloor-S20



Design of soundproofing floor, type AFA, AFB 227

4.12.1 Junction of floating floor to partition. Design of control joint



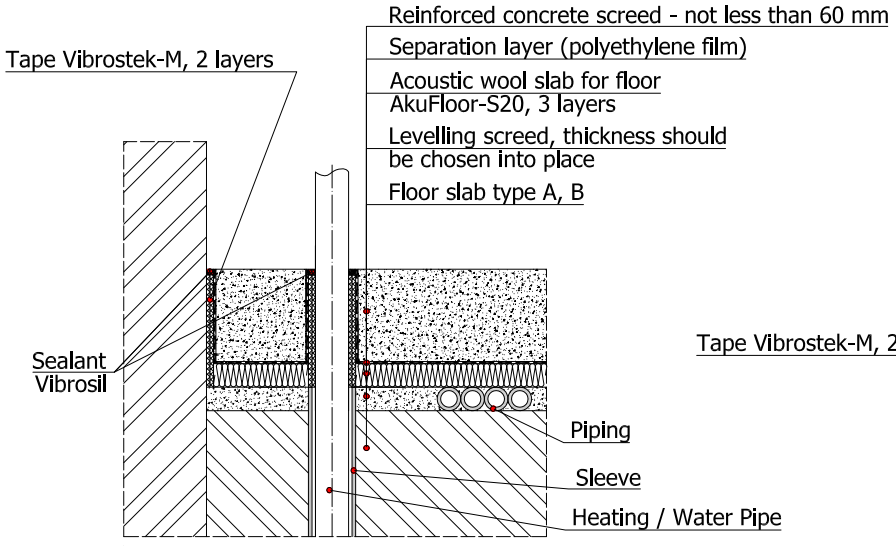
Weighted normalized impact sound pressure level of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted normalized impact sound pressure level of floor slab, Lnw, dB	Weighted normalized impact sound pressure level reduction of floating floor, ΔLnw, dB	Weighted normalized impact sound pressure level of the whole cunstruction, Lnw, dB
AFA 227	200 - 250 mm reinforced concrete slab (Type A)	76 - 73	36	**40 - 37**
AFB 227	140 - 180 mm reinforced concrete slab (Type B)	80 - 77	36	**44 - 41**

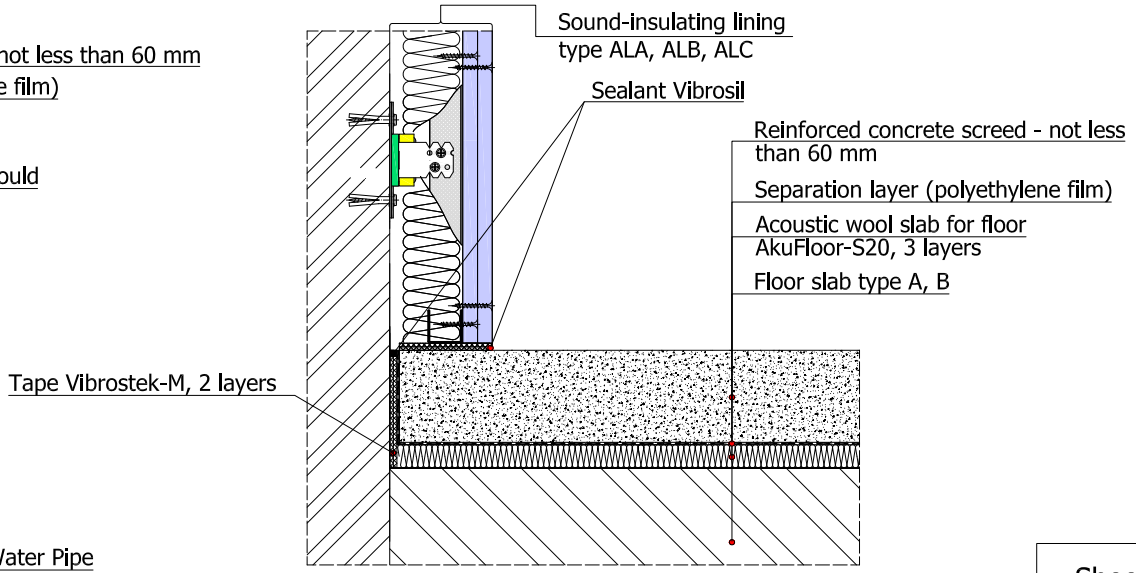
Weighted sound reduction index of floor design

Tipe of floor design	Tipe and thickness of bearing wall	Weighted sound reduction index of floor slab, Rw, dB	Weighted sound reduction index improvement of lining, ΔRw, dB	Weighted sound reduction index of the whole cunstruction, Rw, dB
AFA 227	200 - 250 mm reinforced concrete slab (Type A)	54 - 56	10	**64 - 66**
AFB 227	140 - 180 mm reinforced concrete slab (Type B)	49 - 53	10	**59 - 63**

4.12.2 Junction of floating floor to with acoustic wool slab AkuFloor-S20 to a wall and piping

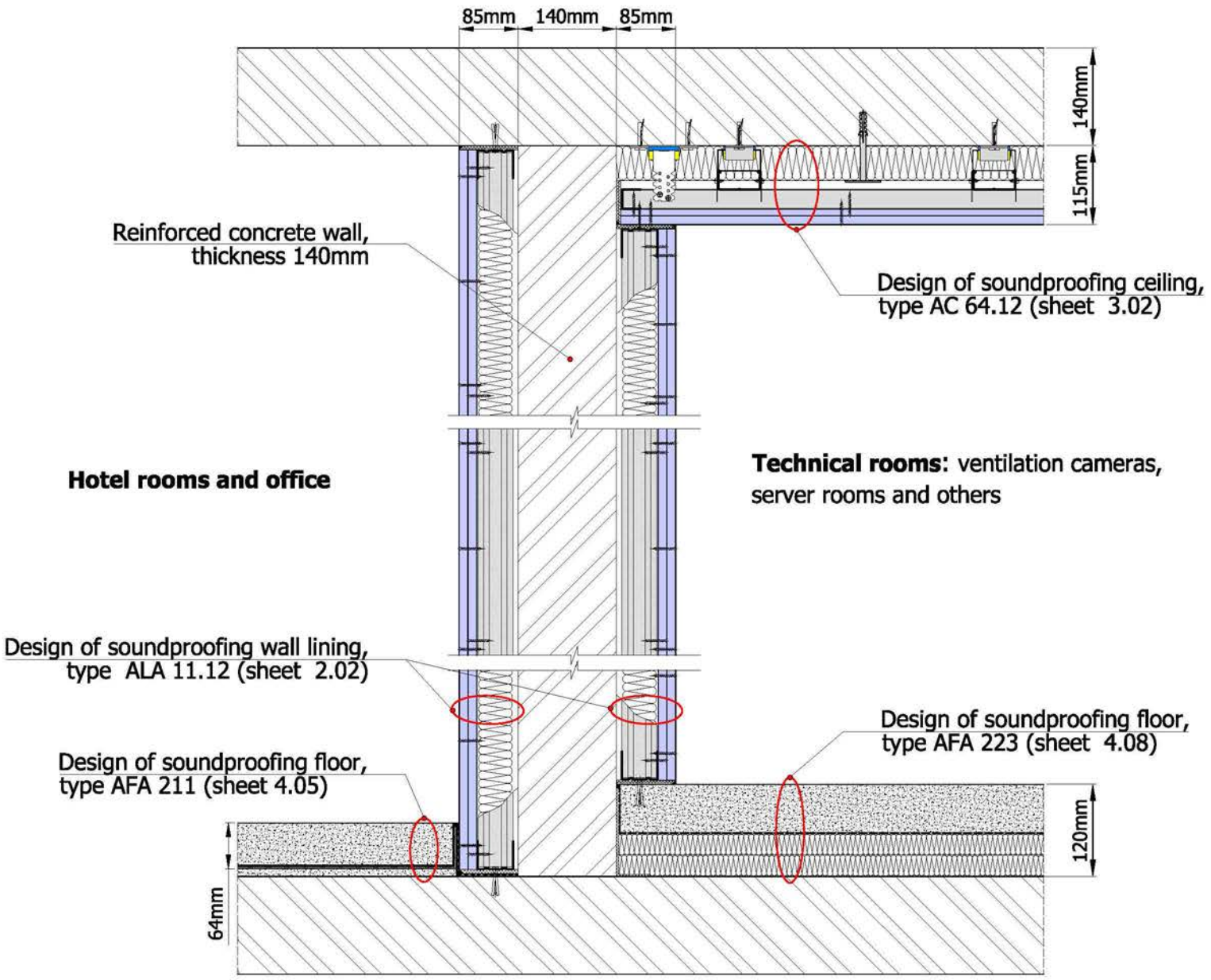


4.12.3 Junction of wall lining to floating floor acoustic wool slab AkuFloor-S20



Reinforced concrete wall design with lining ALA 11.12 on both sides, overall thickness - 310mm

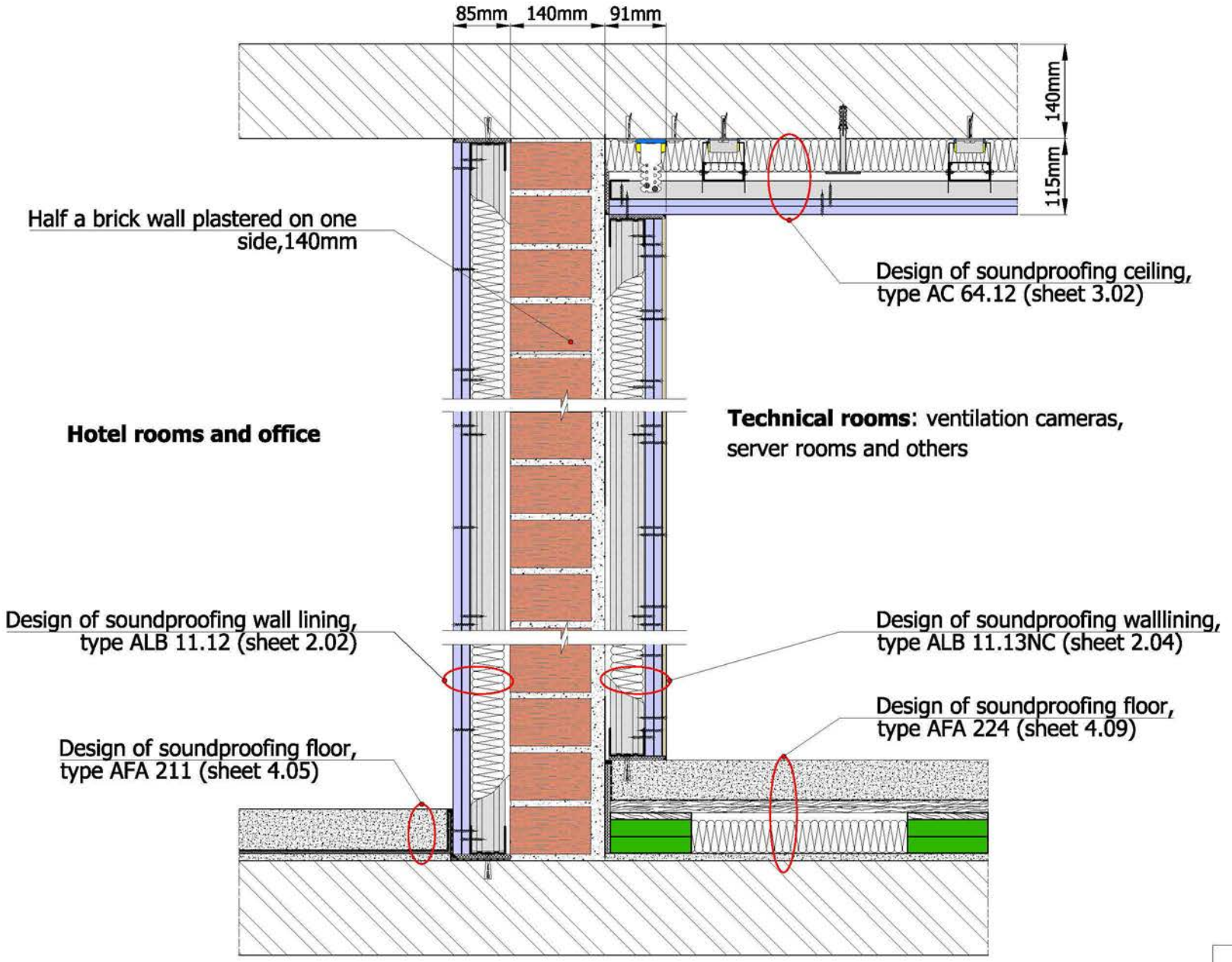
Rw ≥ 69dB



Sheet 5.01

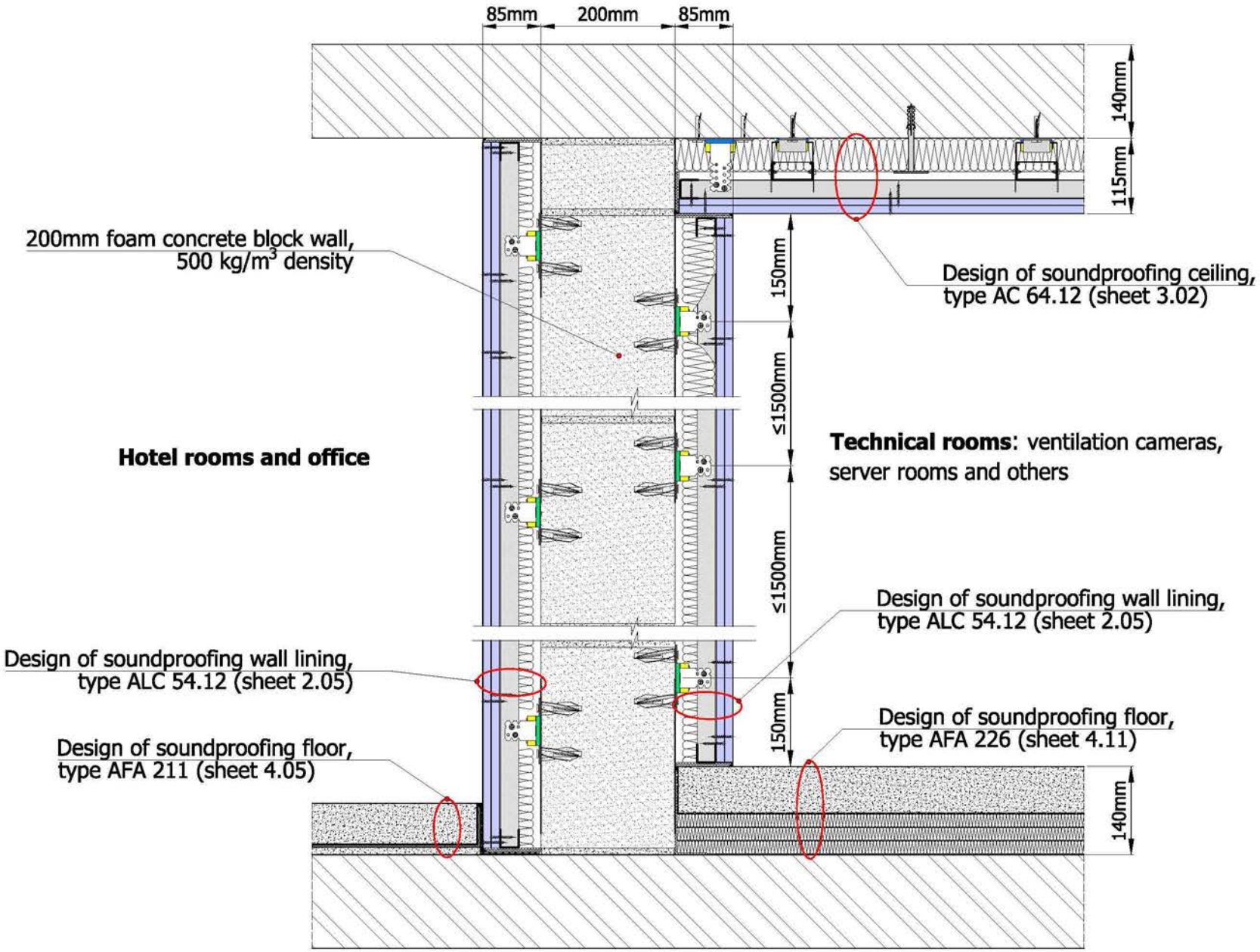
Solid brick wall design with lining ALB 11.12 и ALB 11.13NC overall thickness - 316mm

Rw ≥ 69 dB



Foam concrete block wall design with lining ALC 54.12 on both sides, overall thickness - 370mm

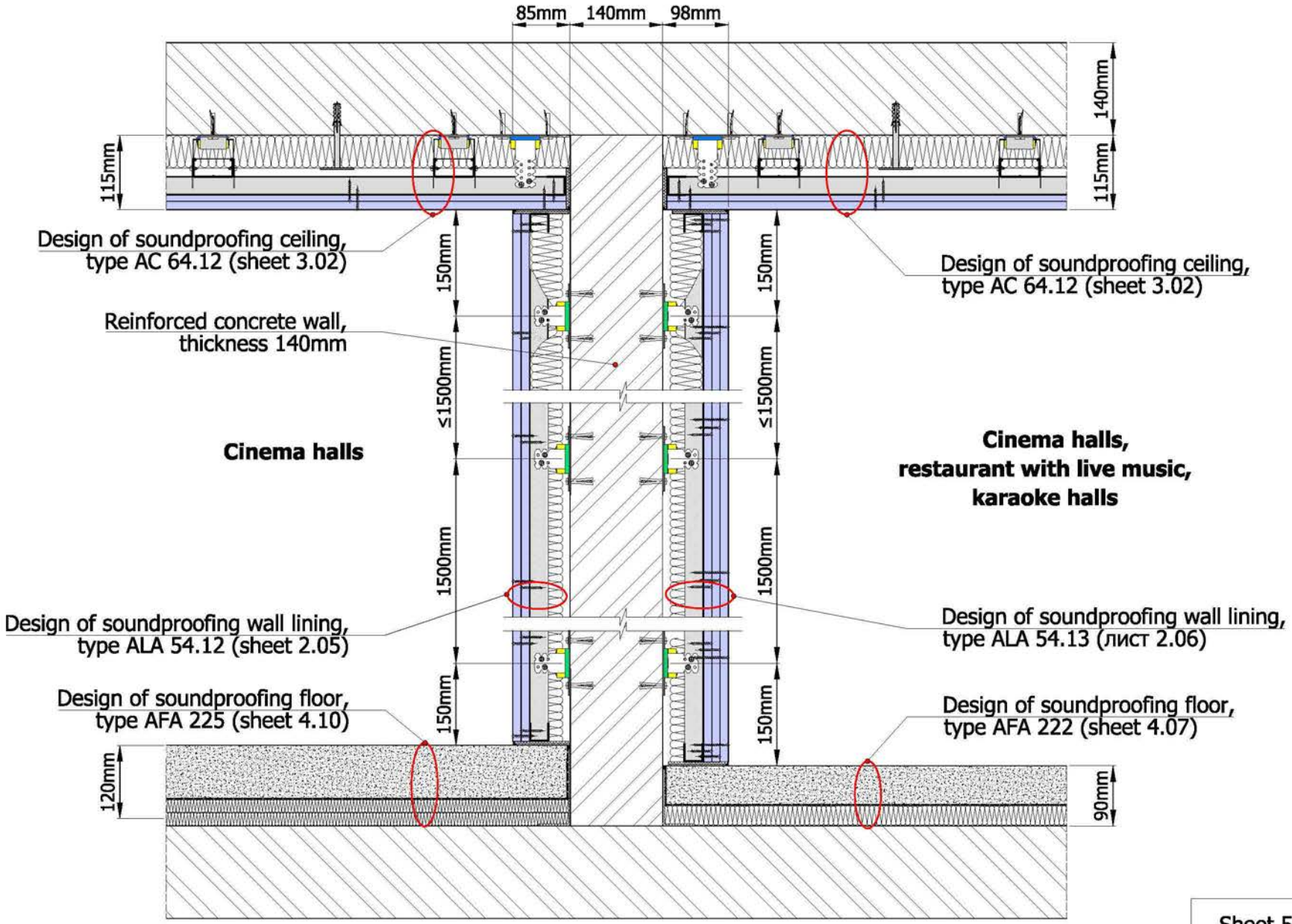
Rw ≥ 69 dB



Sheet 5.03

Reinforced concrete wall design with lining ALA 54.12 and ALA 54.13, overall thickness-323mm

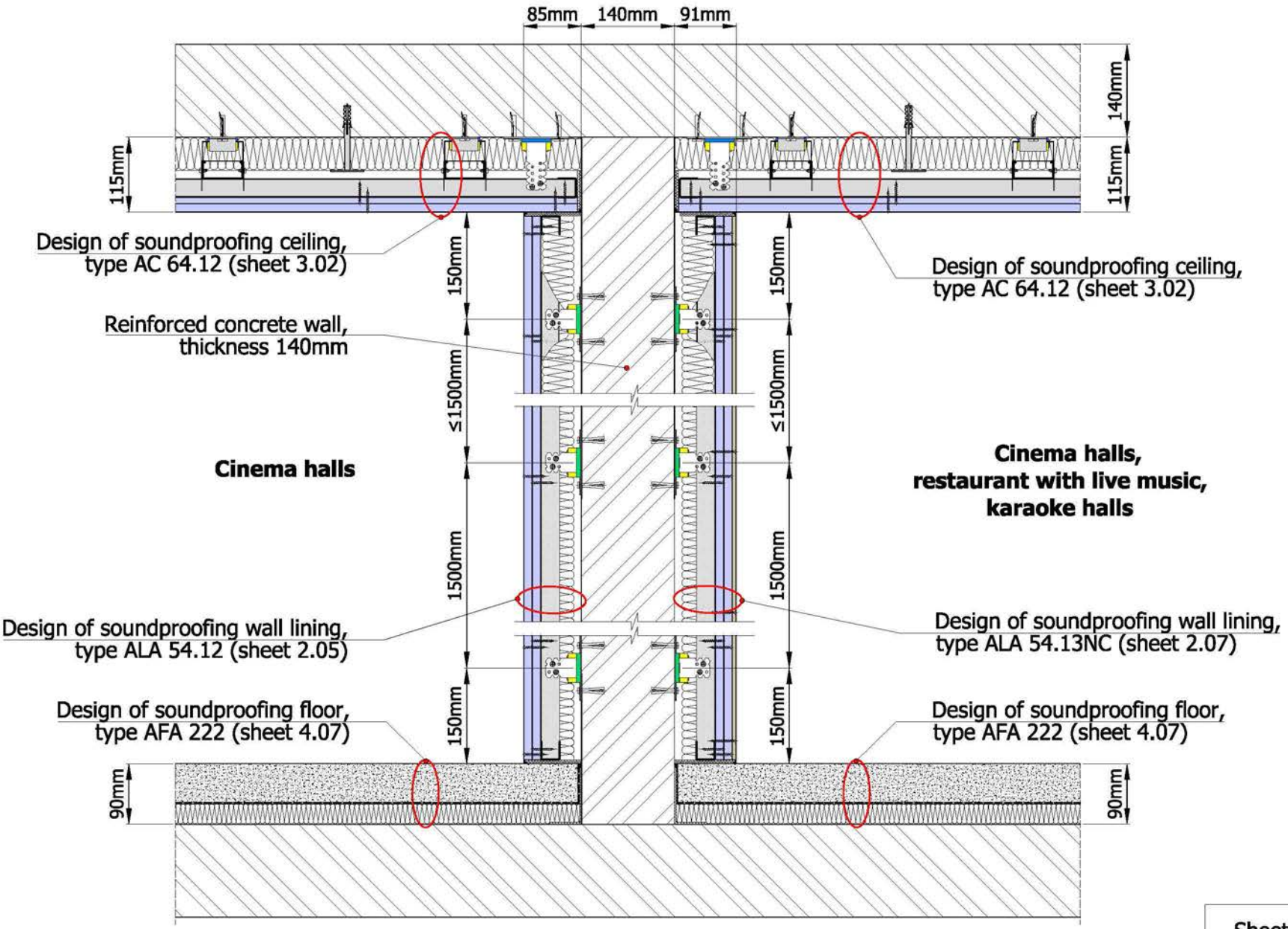
Rw ≥ 70 dB



Sheet 5.04

Reinforced concrete wall design with lining ALA 54.12 and ALA 54.13NC, overall thickness - 316mm

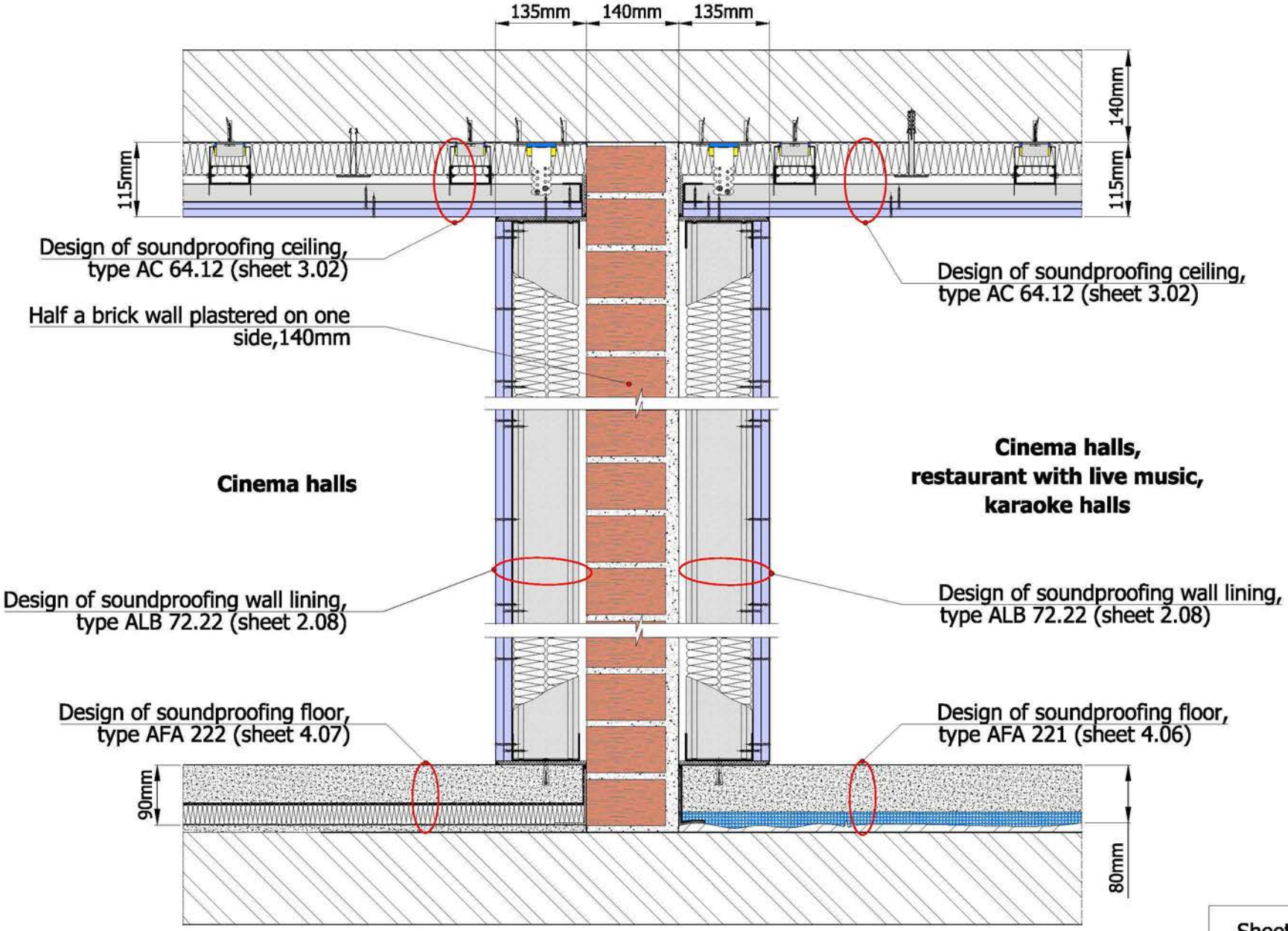
Rw ≥ 70dB



Sheet 5.05

Solid brick wall design with lining ALB 72.22 on both sides, overall thickness - 410mm

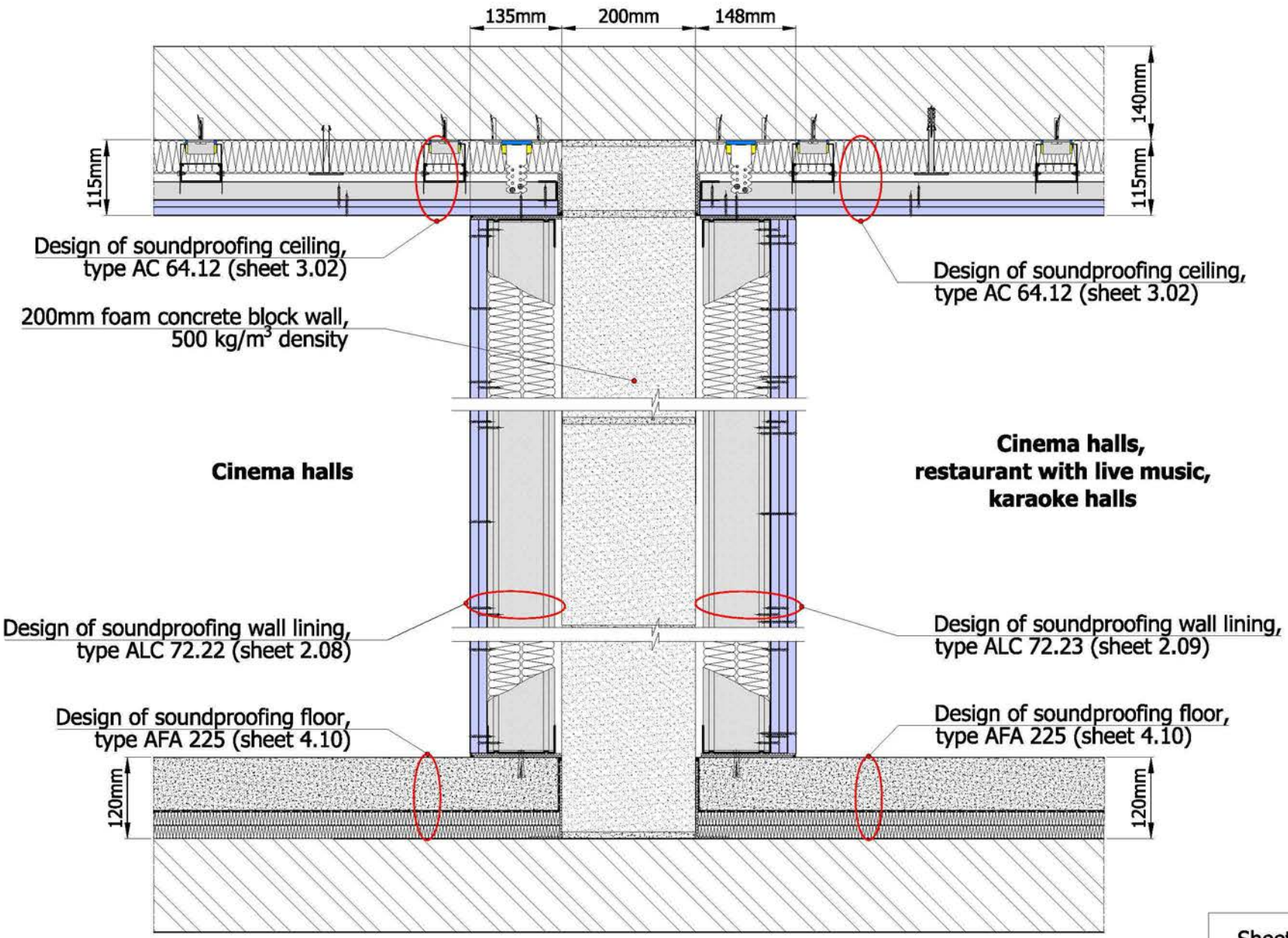
Rw ≥ 70 dB



Sheet 5.06

Foam concrete block wall design with lining ALC 72.22 and ALC 72.23, overall thickness - 483mm

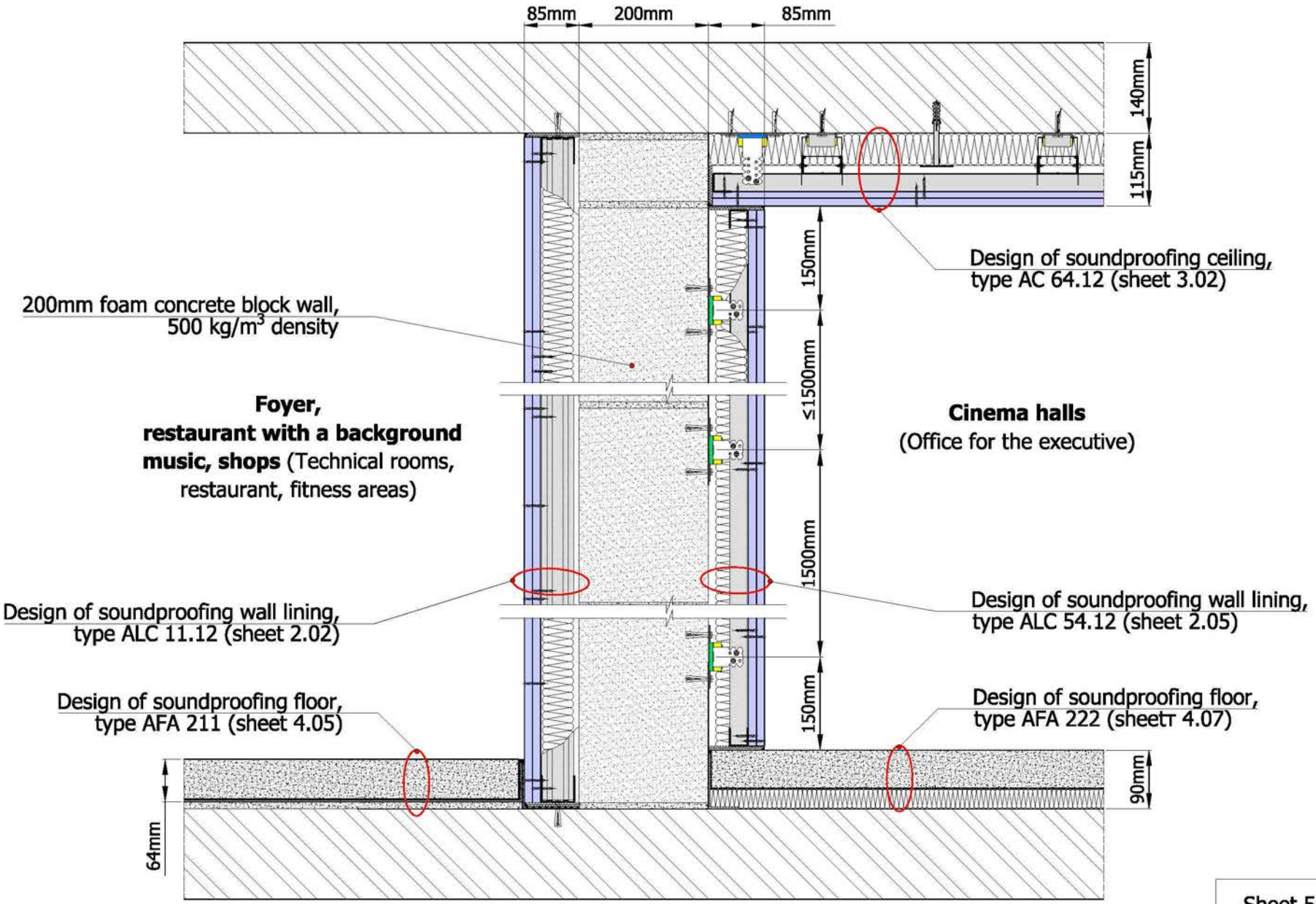
Rw ≥ 70 dB



Sheet 5.07

Foam concrete block wall design with lining ALC 11.12 and ALC 54.12, overall thickness - 370mm

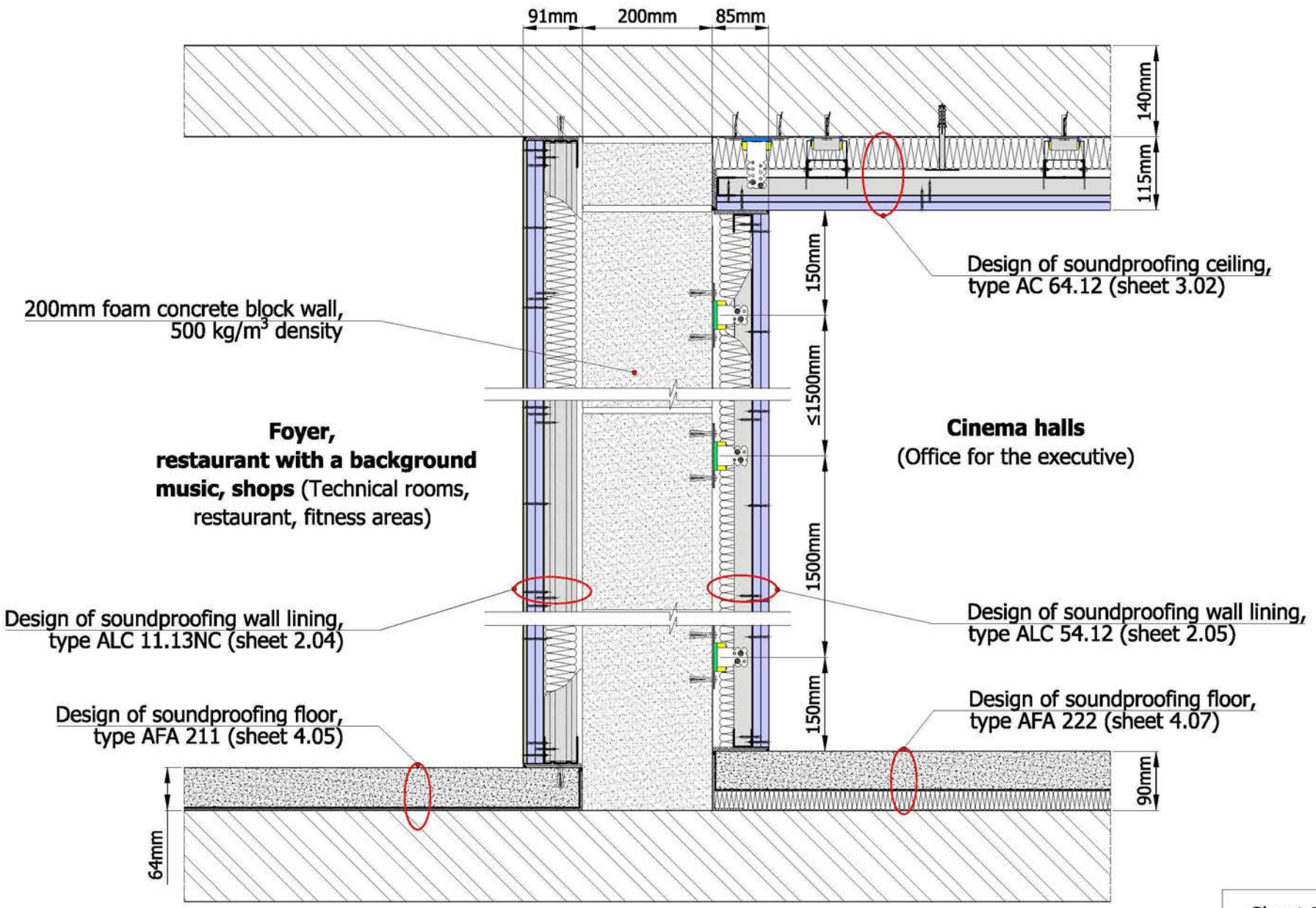
Rw ≥ 67dB



Sheet 5.08

Foam concrete block wall design with lining ALC 11.13NC and ALC 54.12, overall thickness - 376mm

Rw ≥ 67dB

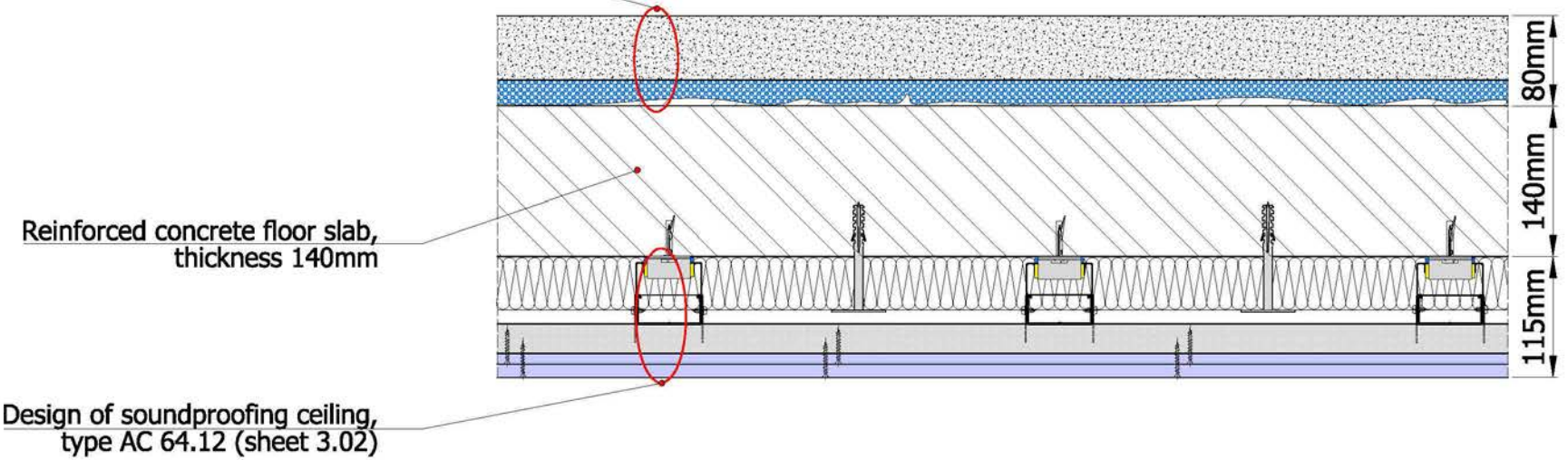


Sheet 5.09

Combined soundproofing design of reinforced concrete floor slab AFB 221 and AC 64.12, overall thickness - 335mm	Rw ≥ 70 dB

5.10.1 Combined floor of reinforced concrete slabs, floating floors and gypsum ceilings

Cinema halls,
restaurant with live music,
karaoke halls
(Technical rooms)



Cinema halls
(Hotel rooms and office)

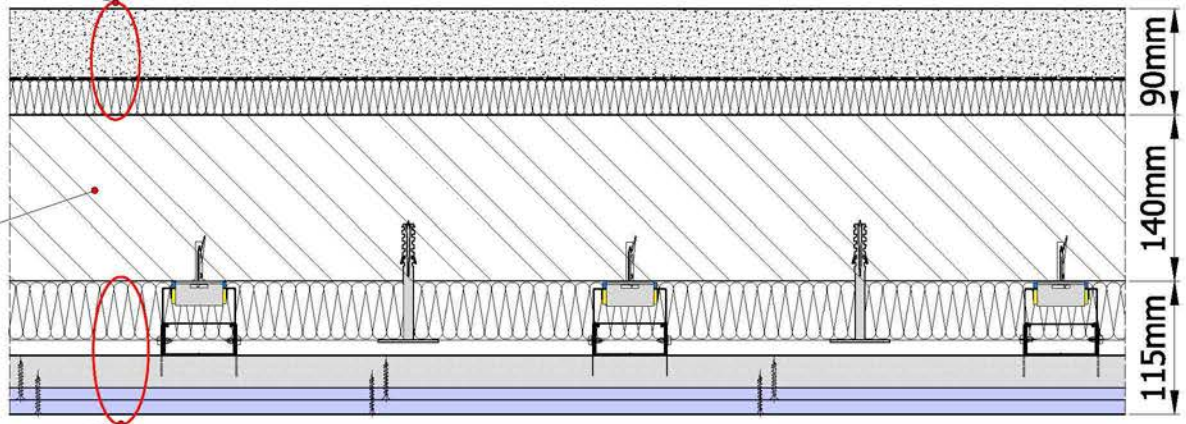
5.11.1 Combined floor of reinforced concrete slabs, floating floors and gypsum ceilings

Cinema halls,
restaurant with live music,
karaoke halls
(Technical rooms)

Design of soundproofing floor, type AFB 222 (sheet 4.07)

Reinforced concrete floor slab, thickness 140mm

Design of soundproofing ceiling, type AC 64.12 (sheet 3.02)

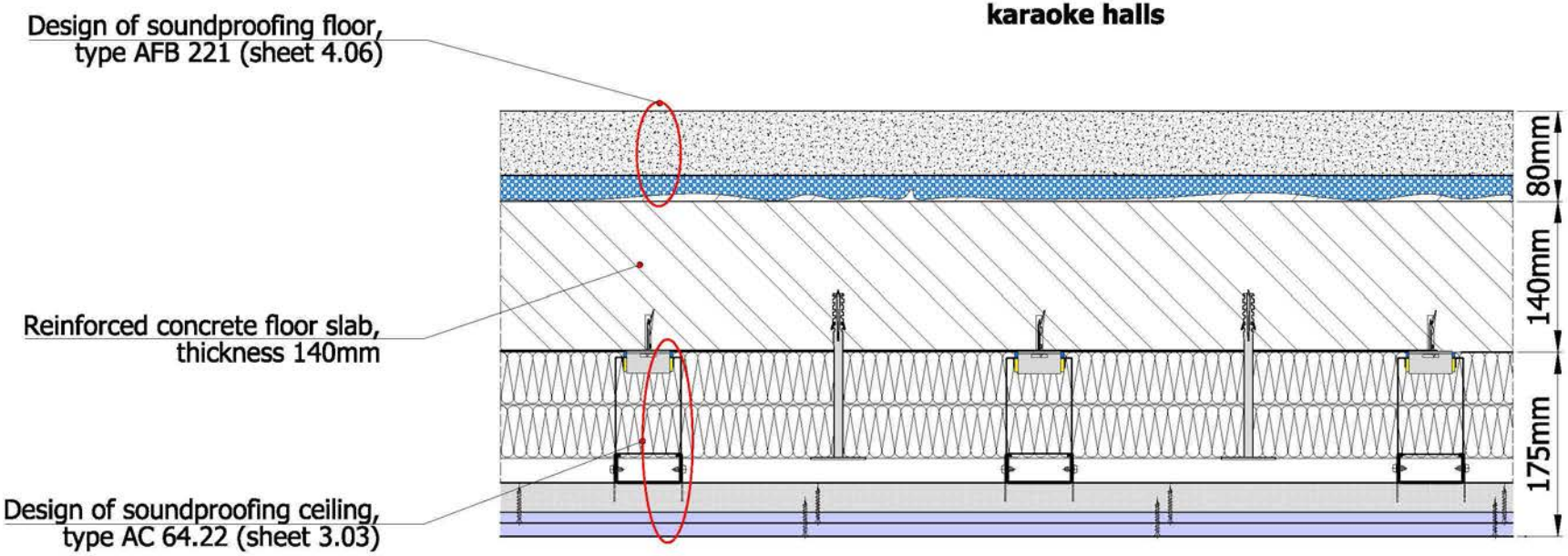


Cinema halls
(Hotel rooms and office)

Combined soundproofing design of reinforced concrete floor slab AFB 221 and AC 64.22, overall thickness - 395mm	Rw ≥ 70 dB

5.12.1 Combined floor of reinforced concrete slabs, floating floors and gypsum ceilings

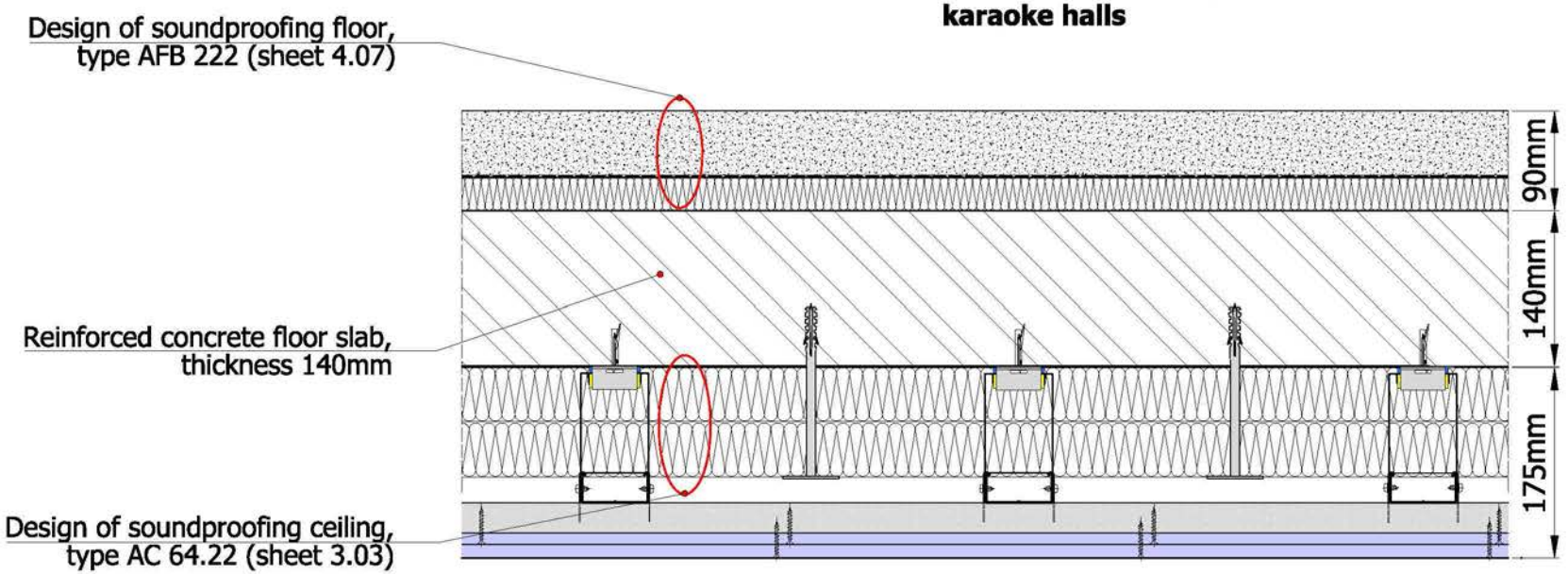
Cinema halls,
restaurant with live music,
karaoke halls



Cinema halls

5.13.1 Combined floor of reinforced concrete slabs, floating floors and gypsum ceilings

Cinema halls,
restaurant with live music,
karaoke halls



Cinema halls

For notes