MAXXON

INNOVATION & COLLABORATION

YOUR SOURCE FOR MASS TIMBER ACOUSTICS

BUILD BEAUTIFULLY. **BUILD CONFIDENTLY.**

Mass timber construction has revolutionized the construction industry and gained a stronghold due to its sustainability, decreased construction time and captivating beauty. Raw materials are left exposed to see the natural wood in the building. Mass timber continues to grow in popularity for new construction as well as renovation for modern commercial spaces and multifamily environments.

MAXXON® EXPERTISE: IDEALLY SUITED FOR MASS TIMBER

Mass timber has gained significant momentum in the U.S. since 2012. Recognizing the distinct advantages of this new construction method — from carbon sequestration and renewability to strength and versatility — Maxxon® began supporting mass timber in 2014 with proven solutions for fire and sound control subfloor assemblies to meet the unique demands of these projects. As the innovator of Maxxon Gyp-Crete® underlayment and Maxxon Acousti-Mat® sound control, Maxxon® has served mass timber construction across the U.S. with products covering more than 8.5 million square feet.

MAXXON EXPERTISE BY THE NUMBERS:

8.5+
MILLION SQUARE FEET of Maxxon Products in Mass Timber

500+
FIELD & SOUND LAB TESTS

55+
COMPLETED PROJECTS AS OF **2023**

WORLD CLASS **ACOUSTICAL CHAMBER**

Maxxon's accredited* acoustics lab is a world-class floor/ceiling testing facility that allows us to better serve our customers by developing more effective products and by contributing to the industry's knowledge of sound transmission in buildings.

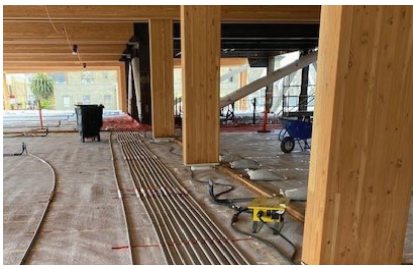
*Accredited by NVLAP (Lab code 600320-0) for ASTM E90, E492, and E2179

CASE STUDIES

San Mateo County Office Building #3

REDWOOD CITY, CA

Skidmore, Owings & Merrill LLP
Truebeck Construction
Maxxon Authorized Installer:
Cell-Crete Corporation — Hayward



The first civic building in the US featuring CLT construction and net-zero energy design.

This $150 million, 200,000+ square foot building champions sustainability and innovation in public sector development. The structure features double glulam beams and CLT decking with exposed timber to create a beautiful and soothing environment for building occupants. To ensure acoustical comfort, Maxxon's expertise developed an assembly of Maxxon Gyp-Crete® 2000 Multifamily, Acousti-Mat® 3/4 and Maxxon Reinforcement that was used to address sound control throughout the project.

The Joinery

CHARLOTTE, NC

Space Craft Developer
Shook Kelley Architect
Swinerton Construction
Arup, Acoustics Consultant
Maxxon Authorized Installer: Kent Companies

Thoughtfully designed urban living focused on sustainable choices including mass timber construction.

Completed in 2023, Phase 1 of The Joinery in Charlotte, features a mixed-use apartment building with 83 residential units and 2,000 square feet of retail space on the ground floor. The project's sustainable design features two levels of concrete podium topped with five stories of a hybrid cross-laminated timbers. To validate acoustic performance, Maxxon participated in a pre-construction mock-up, eventually developing a superior sound control solution that included 2 ½" Maxxon Gyp-Crete, 1"-thick Acousti-Mat 3/4 Premium and Acousti-Mat SBR.

Scan the QR code to see the Maxxon portfolio of mass timber projects that are under construction or built.

WOODWORKS INNOVATION NETWORK™

MAINTAIN AESTHETICS WITH **ACOUSTICAL**

The biophilic aesthetic and high strength-to-weight ratio of mass timber make it an appealing choice for designers, builders, and occupants. However, its limited mass presents a sound control challenge, especially in exposed ceiling designs. Because acoustical privacy is almost always the first factor cited in occupant satisfaction, it should be one of the first considerations when designing multifamily residences and commercial buildings. Maxxon® delivers a comprehensive offering of subfloor assemblies for CLT to meet all contemporary occupant expectations.

ICC G2-2010 GUIDELINE FOR MULTIFAMILY RESIDENTIAL ACOUSTICS

	LABORATORY SOUND RATING	FIELD SOUND RATING
COMMERCIAL*	40–45 STC/IIC	40 ASTC/AIIC
CODE MINIMUM	50 STC/IIC	45 ASTC/AIIC
ACCEPTABLE PERFORMANCE	55 STC/IIC	52 ASTC/AIIC
PREFERRED PERFORMANCE	60 STC/IIC	57 ASTC/AIIC

*Commercial ratings are not regulated by code but are consistent with contemporary commercial construction performance.

ASSEMBLIES FOR COMMON ACOUSTICAL PERFORMANCE

COMMERCIAL

EXPECTED SYSTEM PERFORMANCE

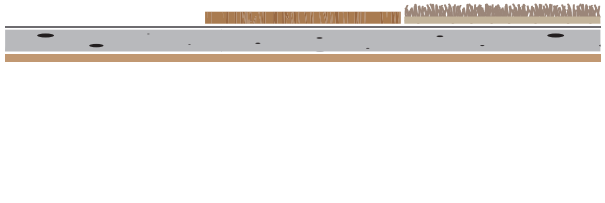
SOUND CONTROL SYSTEM**	TOPICAL MAT	SOUND RATING
• 1" Maxxon Underlayment • Acousti-Mat 3/8 Premium	None	STC 51 / IIC 43 K1279.18

CODE MINIMUM

EXPECTED SYSTEM PERFORMANCE

SOUND CONTROL SYSTEM**	TOPICAL MAT	SOUND RATING
• 2" Maxxon Underlayment • Acousti-Mat 3/8 Premium	2 mm Foam Mat	STC 52 / IIC 51 G2463.08

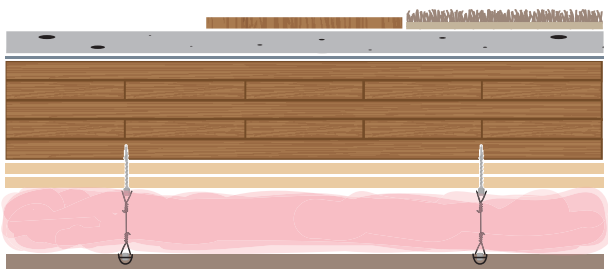
ACCEPTABLE



EXPECTED SYSTEM PERFORMANCE

SOUND CONTROL SYSTEM**	TOPICAL MAT	SOUND RATING
• 2" Maxxon Underlayment • Acousti-Mat 3/4 Premium • Acousti-Mat SBR	1.4 mm Foam Mat	STC 58 / IIC 54 P4428.03

PREFERRED



EXPECTED SYSTEM PERFORMANCE

SOUND CONTROL SYSTEM**	TOPICAL MAT	SOUND RATING
• 1" Maxxon Underlayment • Acousti-Mat 3/8 Premium • Insulated gypsum board ceiling	None	STC 64 / IIC 63 K1279.14

*Maxxon Underlayments and Acousti-Mats are but single components of an effective sound control system. No sound control system is better than its weakest component. Care must be taken in the selection and installation of all components of construction to ensure the ultimate designed acoustical performance. For more information, including type of floor covering used and additional system component information, contact Maxxon Corporation. All data presented on this page is backed by third party testing. For copies of relevant test reports, contact Maxxon Corporation.

PERFORMANCE*

Complement mass timber's natural beauty of exposed wood with the exposed aggregate aesthetic of Maxxon® Commercial Pro VersaTop™. This innovative hydraulic cement topping produces a decorative concrete surface that is specially formulated to reduce grinding requirements while eliminating the need for heavy-duty polishing equipment.

ASSEMBLIES FOR MAXXON COMMERCIAL PRO VERSATOP™

COMMERCIAL

EXPECTED SYSTEM PERFORMANCE

SOUND CONTROL SYSTEM**	SOUND RATING
• 2" Maxxon Underlayment • Acousti-Mat 3/8 Premium	STC 55 / IIC 47 Q7356.01

CODE MINIMUM

EXPECTED SYSTEM PERFORMANCE

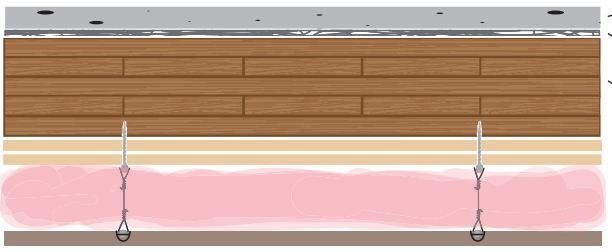
SOUND CONTROL SYSTEM**	SOUND RATING
• 1" Maxxon Underlayment • Acousti-Mat 3/8	STC 52 / IIC 50 K3094.97

ACCEPTABLE

EXPECTED SYSTEM PERFORMANCE

SOUND CONTROL SYSTEM**	SOUND RATING
• 2" Maxxon Underlayment • Acousti-Mat 3/4 Premium • Acousti-Mat SBR	STC 56 / IIC 57 K3094.98

PREFERRED



EXPECTED SYSTEM PERFORMANCE

SOUND CONTROL SYSTEM**	SOUND RATING
• 1" Maxxon Underlayment • Acousti-Mat 3/8 Premium • Insulated gypsum board ceiling	STC 63 / IIC 60 K1279.06

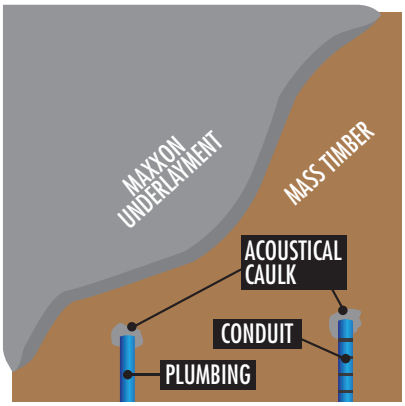
**Maxxon Underlayments are selected based on the end use requirements. Considerations should at minimum include: end use sound code requirements, floor goods strength requirements, building frame type.
***Structural composite construction is 5.4" 5-ply CLT with 2-1/4" normal weight concrete.

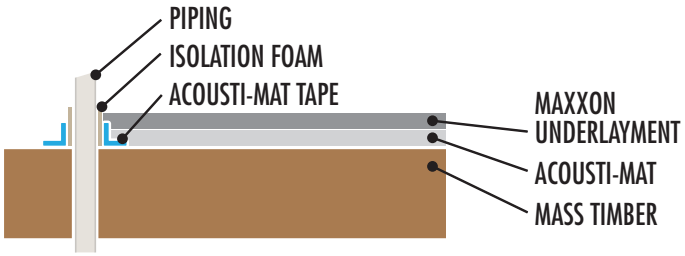
DESIGN & SEQUENCING **CONSIDERATIONS**

When developing mass timber projects, it is essential to consider acoustical requirements early in the design process. By addressing questions and issues in the planning phase, costly mistakes can be avoided during construction. Partnering with Maxxon early in a project's development allows us to establish a realistic budget for sound control solutions that meet your desired acoustical performance.

ADDRESSING FLOOR PENETRATIONS

PLUMBING & CONDUIT



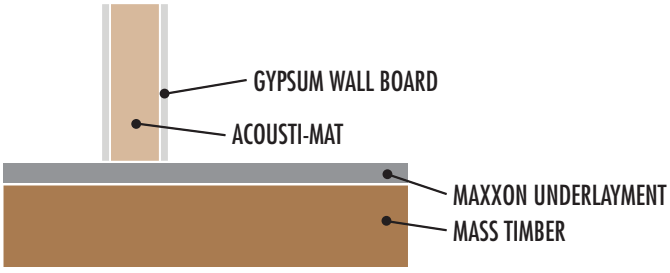


CONSIDERATIONS

Plumbing and other floor penetrations should be installed prior to sound control system and gypsum underlayment.

ADDRESSING WALL SEQUENCING

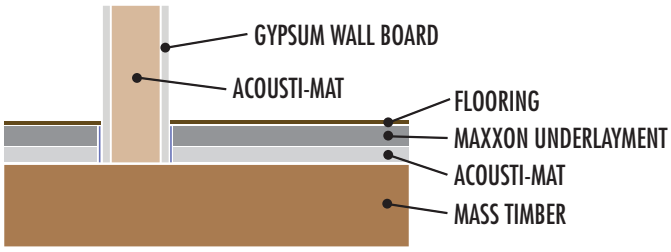
BEFORE DRYWALL



SPACE FLEXIBILITY, EXPEDITED INSTALLATION

Ideal for commercial spaces where flexibility is desired and horizontal sound transfer is not a concern.

AFTER DRYWALL

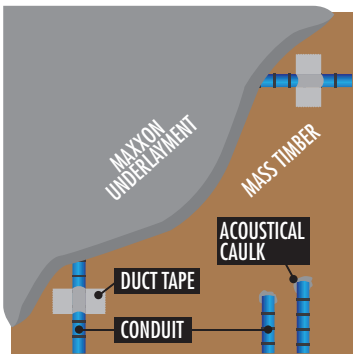


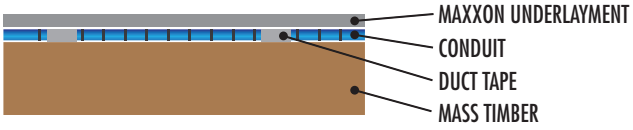
ACOUSTICAL PRIVACY

Ideal for residential and medical environments where acoustical privacy is critical.

ADDRESSING CONDUITS

CONDUIT BEFORE GYP-CRETE





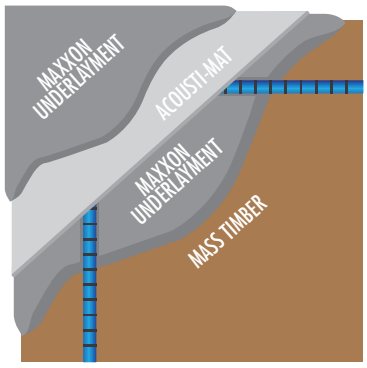
BENEFITS

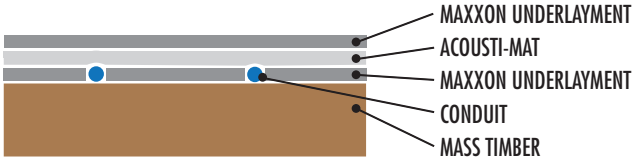
- Easiest for Gyp-Crete Install
- No placement constraints
- Sequencing not critical
- Standard installation

CONSIDERATIONS

- Secure conduit to panel to prevent floating
- May require inspector approval for fire code
- May create facture cracking — unsuitable for LVT, acceptable for floating wood
- Min 3/4" gypsum underlayment over top

CONDUIT OVER CLT BEFORE GYP-CRETE





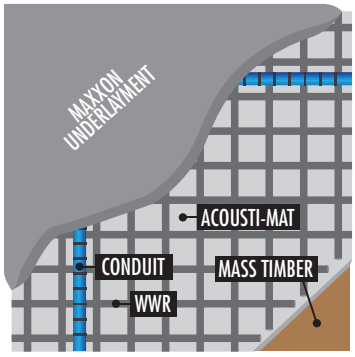
BENEFITS

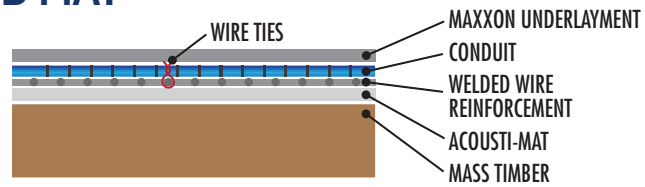
- Easiest for Gyp-Crete Install
- No placement constraints
- Sequencing not critical
- Straightforward installation

CONSIDERATIONS

- More costly; requires additional mobilization
- May increase dry time
- Use metal tubing or pour 3/4" over plastic tubes to avoid scissor lift crushing

CONDUIT OVER SOUND MAT





BENEFITS

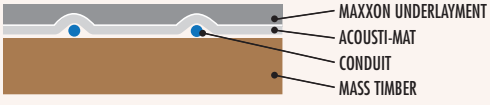
- No advanced conduit planning needed
- Two-pour system not required– reduces labor and cost

CONSIDERATIONS

- Determine who lays welded wire reinforcement
- May increase dry time
- Sequencing is crit ical

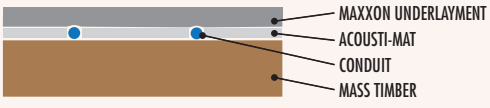
NOT RECOMMENDED

SOUND MAT OVER CONDUIT



ISSUES: Creates areas of weakness which may lead to cracking and debonding. Slopes make underlayment placement difficult and require significant material increase.

SOUND MAT BETWEEN CONDUIT



ISSUES: Due to many cuts and angles this method is slow and labor-intensive. The conduit bridges the Gyp-Crete to the mass timber, greatly reducing the sound attenuation.

SOUND CONTROL BASICS

	IIC IMPACT SOUNDS 	STC AIRBORNE SOUNDS 
EXAMPLES	• Footsteps • Dropping/Falling Items • Chair Scrapes	• Television • Voices • Music
SOUND TRANSMISSION METHOD	Direct impact on a floor is transmitted through the building material and is radiated as sound.	Sound waves travel through the air and are transmitted through walls and floors.
HOW IT IS MEASURED	Impact sounds are measured using a tapping machine in which standard sized weights are dropped onto the floor in a constant rhythmic pattern. Sound levels in the room below are recorded at 16 frequency bands and calculated into one number identified as the IIC (Impact Insulation Class) Rating.	Airborne sounds are measured at 16 frequency bands through a floor/ceiling assembly. The resulting reduction in sound is calculated into a single rating identified as the STC (Sound Transmission Class) Rating.
MITIGATION FACTORS	ISOLATION BREAK — The basic principle behind impact noise reduction is decoupling: complete separation of building materials will reduce sound vibration transfer. The entangled mesh layer of an Acousti-Mat not only separates the mass timber floor panel and the underlayment, but also creates an air gap, improving the impact isolation performance even more.	MASS — Adding mass to a floor increases the amount of airborne sound that is blocked. Where the International Building Code requires encapsulation on the top of mass timber floors to meet fire requirements, a 1" gypsum topping is the minimum. Maxxon underlayment minimum thickness is dictated by sound mat requirements.
ADDITIONAL CONSIDERATIONS	CEILING CAVITY — Adding a dropped ceiling assembly below a mass timber panel provides an air space proven to further reduce impact sounds, similar to traditional wood-frame construction. Mass timber assemblies with exposed wood ceiling or with gypsum board directly screwed for encapsulation need thicker sound mats and topping slabs to achieve similar isolation performance.	FLANKING PATHS — Rigid connections across isolation breaks, exposed ducts between separate spaces, continuous curtain walls, exposed, continuous columns and beams, or doors with undercuts for ventilation are often potential flanking paths. Flanking path noise is typically observed as high frequency sound.

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MAXXON®

Mass Timber Sound Control 2024-2 v6