



STC SOUND CONTROL

Comprehensive Guide to the
STC ACOUSTIC SLEEPER™

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Simple, High-performance, Cost-effective
Acoustical Products for Buildings



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ABOUT STC SOUND CONTROL

Simple, High-performance, Cost-effective
Acoustical Products for Buildings



OUR START

STC Sound Control was founded by **Paul Battaglia** – an **architect** and **professor** of architectural acoustics – whose passion for and expertise in sound control led to the invention of unique, patented products that address long-standing needs in building markets.

A graduate of the MIT School of Architecture & Planning, Paul's experience spans **40 years** of architectural practice and **30 years** of acoustic education as a professor in the Department of Architecture, University at Buffalo. A member of the American Institute of Architects (AIA) and the Acoustical Society of America (ASA), he has presented multiple cited papers on acoustics.

As an accredited instructor for the ASA, Paul has provided acoustics trainings to some of the top architecture firms in America, including Gensler, OMA, Cooper Carry, Page, GFF, KTGy, Humphreys, and many others.

WHAT WE DO

STC Sound Control designs and manufactures products that easily and inexpensively create **acoustic comfort**.

Whether it's reducing sound from adjoining rooms, absorbing reverberant sound within a room, or minimizing sound from floors above, our products reduce noise-related annoyances in all kinds of settings – from apartments and hotels, to restaurants and office spaces. For architects, developers, contractors, and building owners, we provide solutions that are **easier to install** and more **cost-effective** than leading alternatives, while also exceeding market and building code standards for **acoustic performance**.

Headquartered in Buffalo, New York, STC Sound Control manufactures its products in partnership with TMP Technologies – a multinational market leader in foam, rubber, plastic, and metal fabrication – and currently serves customers across the continental United States.

OUR MISSION

PRODUCT DESIGN APPROACH

Our mission to provide better solutions for sound control is directly reflected in our product design approach. STC Sound Control makes acoustical products for buildings that are:

SIMPLE,
HIGH-PERFORMANCE, and
COST-EFFECTIVE.

SIMPLE

Reduced installation complexity

We design with builders in mind. As a result, all of our products reduce complexity in the installation process. This includes eliminating the need for specialized tools, preventing mess, decreasing install time, or eliminating failure risks like moisture.

HIGH-PERFORMANCE

Best-in-class acoustic ratings

We pride ourselves on our acoustical know-how and technical background. As a result, we do not develop products unless they have a superior acoustic rating (STC, IIC, and NRC) to the existing market standard.

COST-EFFECTIVE

Clear winner on price

We understand the intense price pressures that contractors and developers have experienced over the past decade. As a result, we only develop solutions where we can beat market standard pricing by at least 25% (and often by much more).

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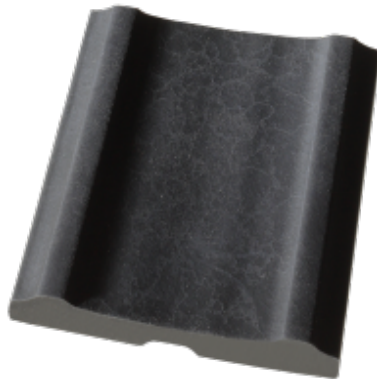
OUR PRODUCT PORTFOLIO

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ACOUSTIC SLEEPER™

Solution for noise
from floors
overhead



BOX SEAL™

Solution for noise
passing through
outlets



HI-SABIN PANEL™

Solution for noise
lingering in
rooms



MULLION SEAL™

Solution for noise
passing through
joints





SOLUTION FOR NOISE FROM FLOORS OVERHEAD



THE PROBLEM OF IMPACT NOISE

A key source of noise is activity from floors above, as sound travels through the floor structure and radiates into the space below. This is known as impact noise or footfalls, which is measured by a standard called Impact Insulation Classification (IIC).

Different elements of the floor and ceiling construction contribute to isolating noise in various amounts - measured by a standard called Δ IIC ("Delta IIC"). Beyond normal deck construction, some form of acoustic insulation is generally required to provide additional Δ IIC to bring a building up to code.

In multifamily residential and hotel construction, building codes require an IIC-50 rating.

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CHALLENGES OF MARKET STANDARD SOLUTIONS

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The most common solution for providing the additional ΔIIC required by code is an acoustical mat (in concrete construction) combined with (in wood construction) a gypsum cement underlayment.

However, gypsum cement creates a host of issues for construction, including the introduction of moisture, which poses risks of cracking, freezing, and mold. Meanwhile, the time needed for gypsum cement to dry can cause delays in construction. Solutions such as cork, rubber, or extruded nylon filament mats are significantly more expensive.

**STC Sound Control saw an opportunity to
address these challenges with
a better solution.**

A BETTER SOLUTION

PRODUCT OVERVIEW

The STC Acoustic Sleeper is a patented neoprene rubber pad (or strip) for flooring systems that reduces impact noise to floors below. It is the key component of STC Sound Control's UL Certified designs for floor underlayment assemblies in wood, concrete, and metal construction.

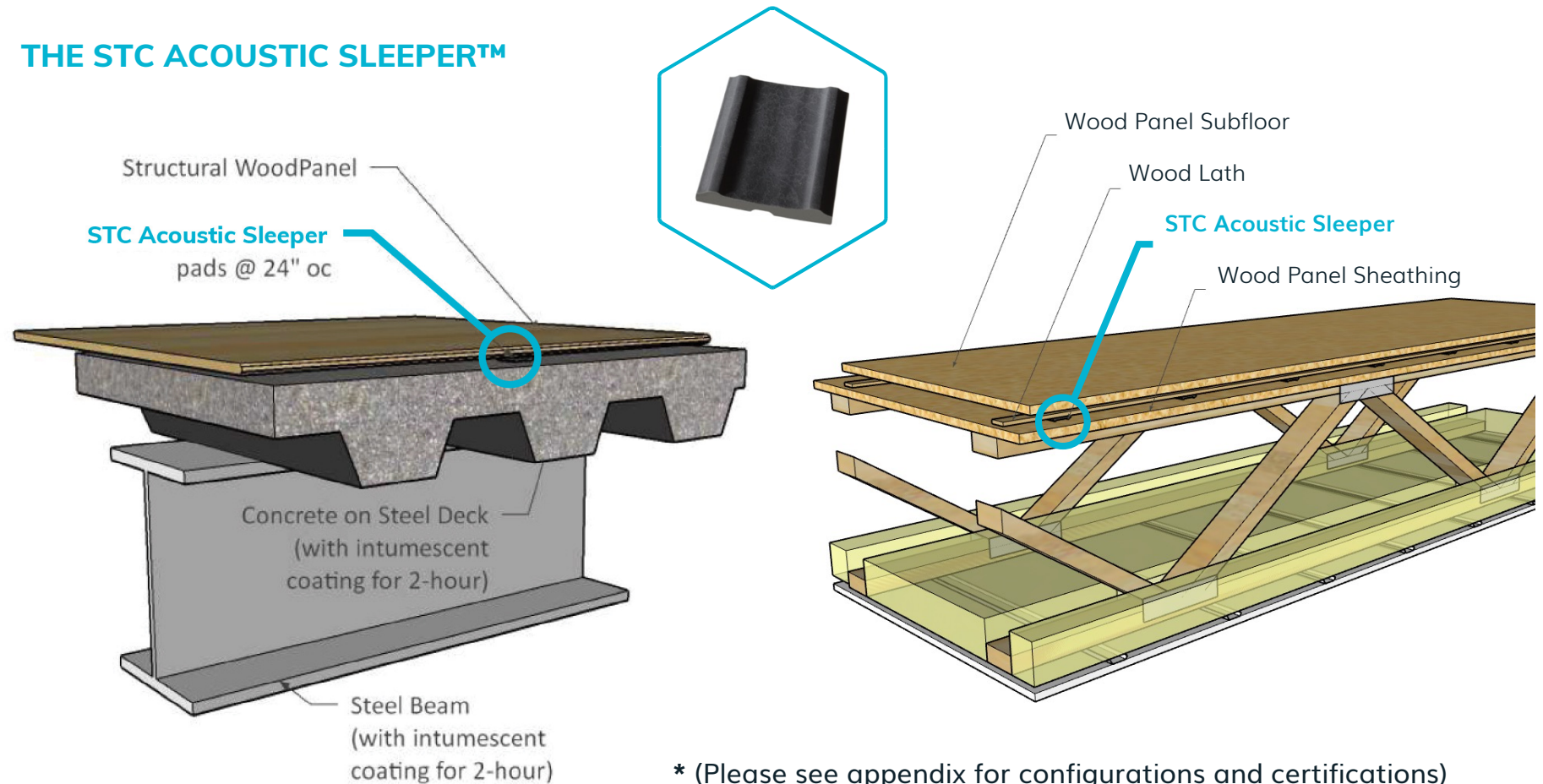
SYSTEM OVERVIEW

The STC Acoustic Sleeper system utilizes these pads and two layers of wood panels – removing gypsum and continuous mats from deck construction. The result is a solution that is simple, high-performance, and cost-effective.

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THE STC ACOUSTIC SLEEPER™



* (Please see appendix for configurations and certifications)

WHAT MAKES IT SPECIAL

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UNIQUE DESIGN

The STC Acoustic Sleeper's benefits are enabled by unique design:

- **NO GYPSUM:** No moisture is introduced to the building - removing risks of cracking, freezing, mold, and delays caused by time to dry.
- **MATERIAL:** Neoprene is a dense and resilient rubber, giving it exceptional ability to isolate vibrations while also bearing loads from the floor above.
- **PROFILE:** A unique patented profile minimizes contact between the finish floor surface and the supporting structure, providing better acoustical performance than continuous mat systems at a fraction of the cost.



SUSTAINABILITY & NET ZERO GOALS

The pads' small size combined with the system's use of wood rather than gypsum cement also means that the STC Acoustic Sleeper system ranks very high when it comes to sustainability.

Our solution offers net negative carbon emissions for the floor covering system, which – unlike other solutions – can help buildings achieve Net Zero goals.

ACOUSTIC SLEEPER ADVANTAGE

Compared to acoustical mat systems, the STC Acoustic Sleeper system performs better on noise isolation, sustainability, ease of installation, risk reduction, comfort underfoot, and cost.

**Please see Appendix for detailed cost breakdowns on wood and concrete frame.*

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	STC SOLUTION	ACOUSTICAL MAT
Noise Isolation	Δ IIC-23	Δ IIC-18 to 20
Wood Frame (Compares to Gypsum Cement + Acoustic Mat)		
Install Risk	No moisture introduced to the building	Moisture introduces risk of cracking, freezing, & mold
Install Time	Installs quickly prior to partitions	Time for gypsum to dry delays construction
Carbon Footprint	NET NEGATIVE	11,029g/sf
Cost / sf*	~ \$1.58	~ \$2.81
Concrete Frame (Compares to Gypsum Cement + Acoustic Mat)		
Comfort	System uses wood floor covering, which is more comfortable underfoot	Concrete is less comfortable and requires resilient flooring
Cost / sf*	~ \$1.70	~ \$3.35 - \$7.50

WHAT STC CAN DO FOR YOU



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The STC Acoustic Sleeper provides a host of benefits for architects, developers, construction managers, and end-users.

We're here to answer your questions and provide any technical guidance required.

Contact us today to find out **how much you could save** on your next project, while making your building more **acoustically comfortable**.

Email: info@stcsoundcontrol.com
Phone: 716-839-0900
Web: www.stcsoundcontrol.com



APPENDIX: TECHNICAL DETAILS & FAQ





WOOD FRAME:

UL CERTIFICATIONS
INSTALLATION INSTRUCTIONS
DETAILED COST COMPARISON

WOOD FRAME UL CERTIFICATIONS

APPLICATIONS

The STC Acoustic Sleeper can be installed on the three most common wood structural systems.

STC Sound Control has obtained UL certification for 1-hour and 2-hour fire-rated designs in these three applications. Sound tests indicate exceptional STC and IIC performance.

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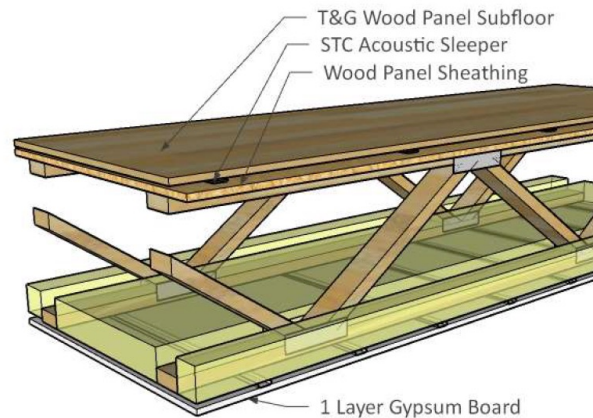


WOOD TRUSSES

1-Hour UL Designs: L528, L563, L574

2-Hour UL Design: L577
STC-59

Hard Surface: IIC-54
Carpet with Pad: IIC-72

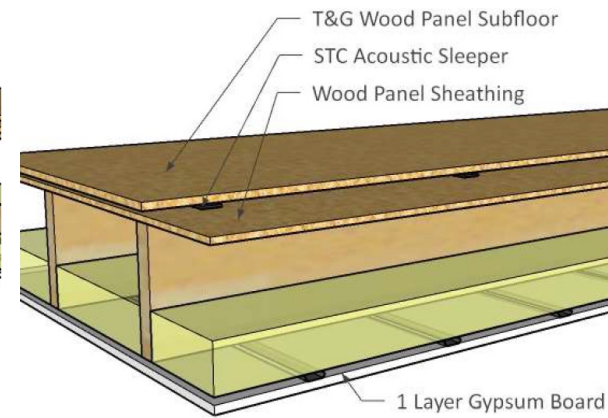


I-JOISTS

1-Hour UL Design: L589

STC-61

Hard Surface: IIC-55
Carpet with Pad: IIC-73

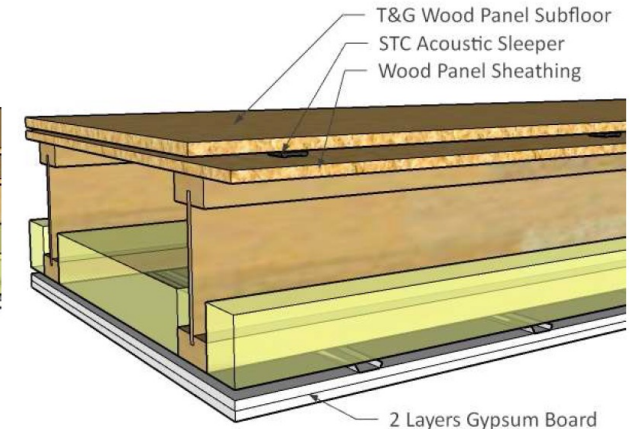


WOOD JOISTS

1-Hour UL Designs: L502, L506, L514

2-Hour UL Design: L505
STC-55

Hard Surface: IIC-53
Carpet with Pad: IIC-71



WOOD FRAME DECK DETAILS

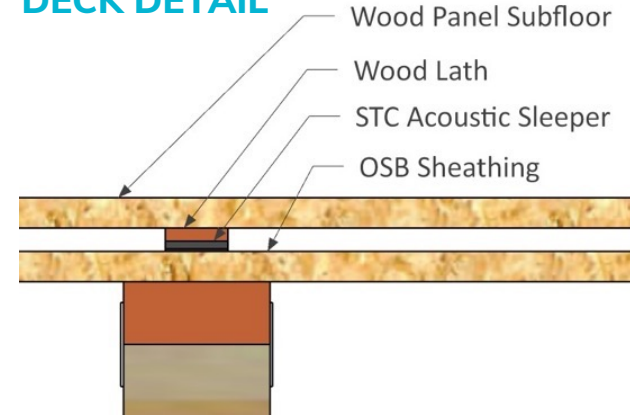
Ease of installation is achieved by stapling the STC Acoustic Sleeper pads to wood lath which is then placed over structural members.

A continuous bearing strip is recommended at bearing walls but is unnecessary for non-bearing partitions.

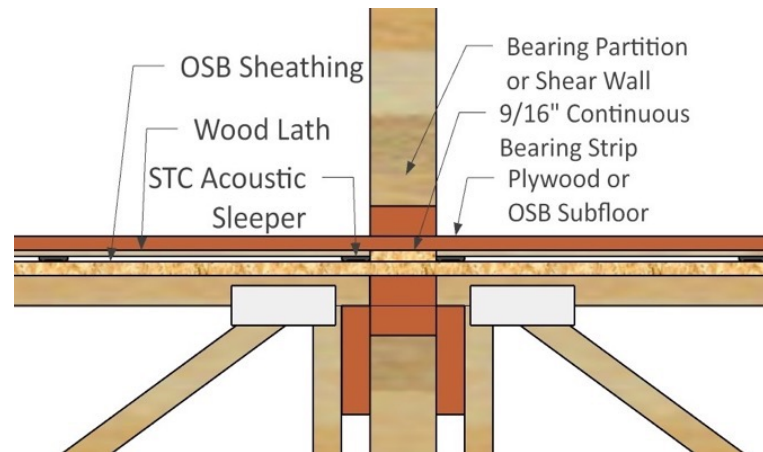
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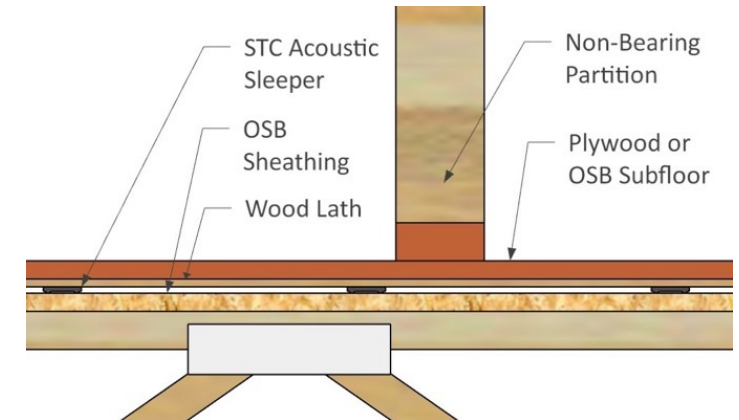
DECK DETAIL



BEARING WALL DETAIL



NON-BEARING WALL DETAIL



WOOD FRAME INSTALLATION

See our video guide to installing the STC Acoustic Sleeper in wood frame.

Just click the link below (you will be redirected to YouTube) or copy and paste the link to your web browser:

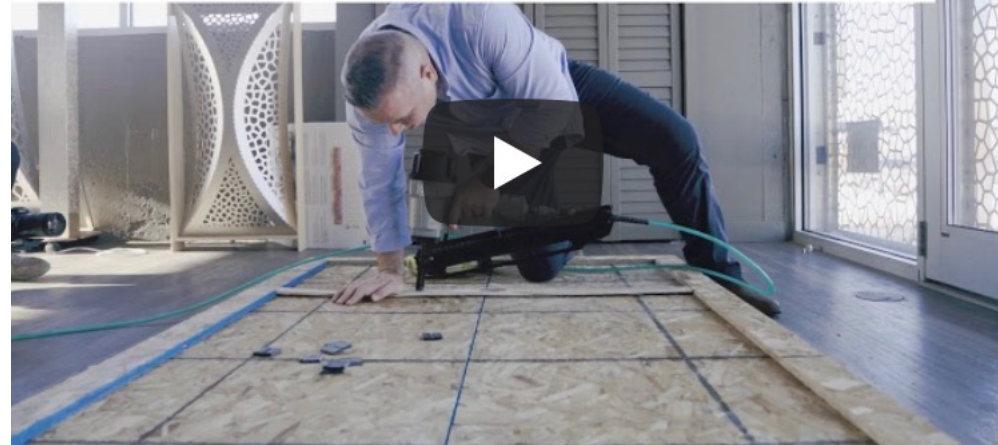
<https://youtu.be/9KXZKpUCIFQ>

We also provide installation illustrations and instructions on the following pages.

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STEP 4: INSTALLING THE STRIP/PAD COMPLEX ON SHEATHING



The STC Acoustic Sleeper: Installation
Demo and Moisture Test



STC Sound Control

SUBSCRIBE

WOOD FRAME INSTALLATION

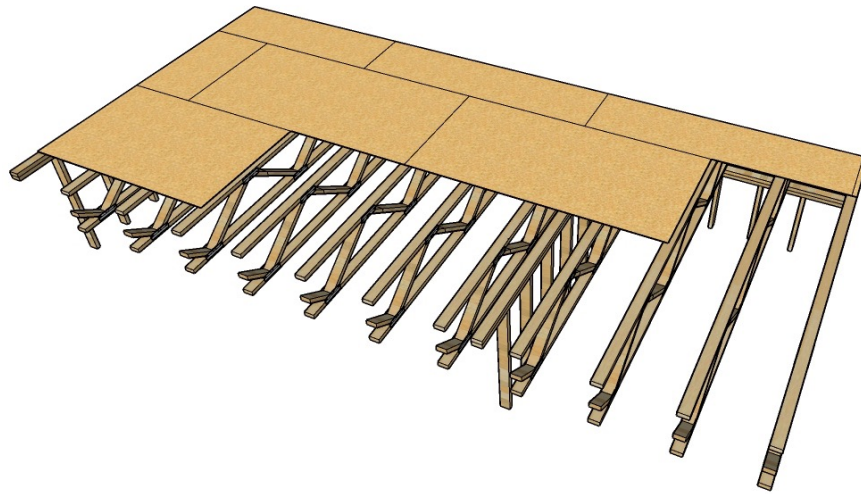
STEP 1

Sheathing is directly applied to the framing members with fasteners spaced for lateral shear resistance.

STEP 2

Bearing strips are used wherever load-bearing walls or shear walls are to be installed – creating continuity of solid structure to transfer the loads. Fastening frequency is not critical, since the walls that follow will be fastened through to the framing members and hold everything together.

STEP 1: INSTALLING THE SHEATHING

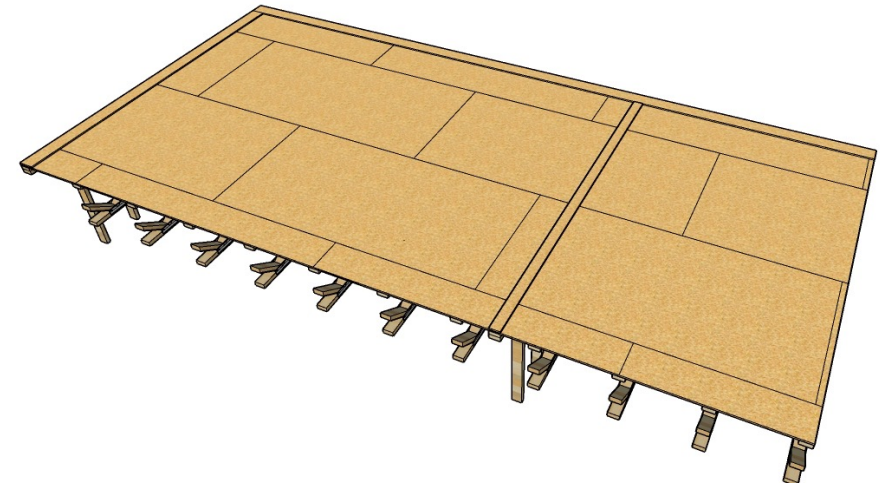


A key requirement for installation is maintaining an **eighth-inch gap** between panel edges. This is for evacuation of any moisture that may get between the sheathing and the subfloor panels. Fire designs allow for this spacing, and panels are fabricated anticipating it.

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STEP 2: INSTALLING PERIMETER BEARING STRIPS



The **thickness** of the strips should match the sum of the $\frac{1}{4}$ -inch high rubber pads plus the wood lath strips that are placed over the framing members in the next step. The **width** of the strips should match the wall stud thickness.

WOOD FRAME INSTALLATION

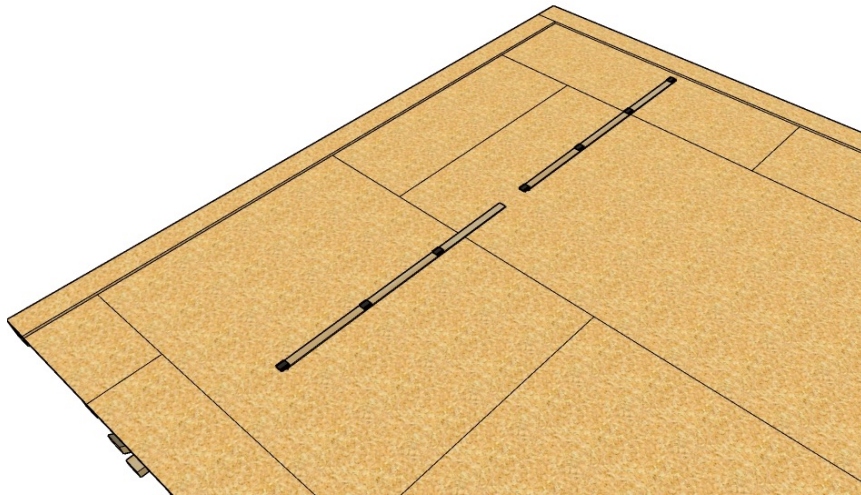
STEP 3

The STC Acoustic Sleeper pads are first stapled to wood lath strips at regular spacing – which is determined by the loads, as well as the thickness and type of subfloor panels.

STEP 4

The strips are inverted (so that the pads are in contact with the sheathing) and fastened through the pads with nails into the framing members.

STEP 3: INSTALLING SLEEPER PADS ON WOOD LATH

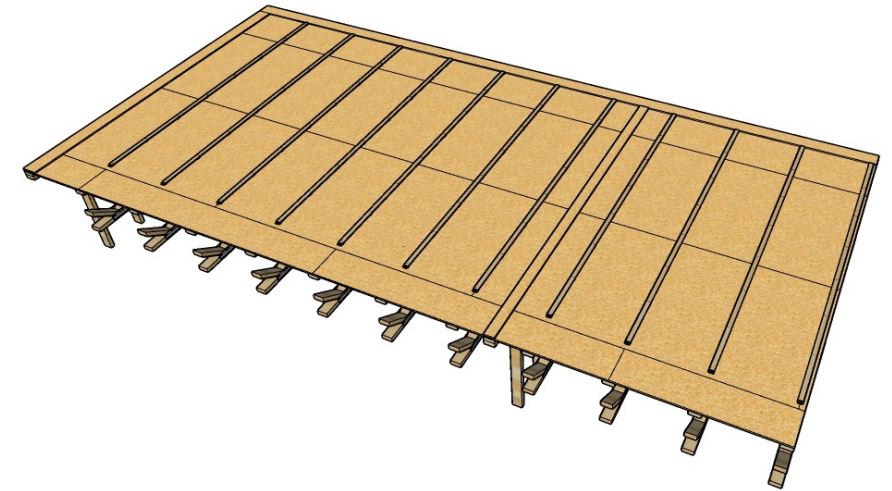


The reason for using the strips is to be able to easily see where the pads are located, so that they can be fastened through the sheathing into the framing members in the next step.

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STEP 4: INSTALLING THE STRIP/PAD COMPLEX



It's easy to see where the framing members are, thanks to the fasteners used to attach the sheathing panels.

WOOD FRAME INSTALLATION

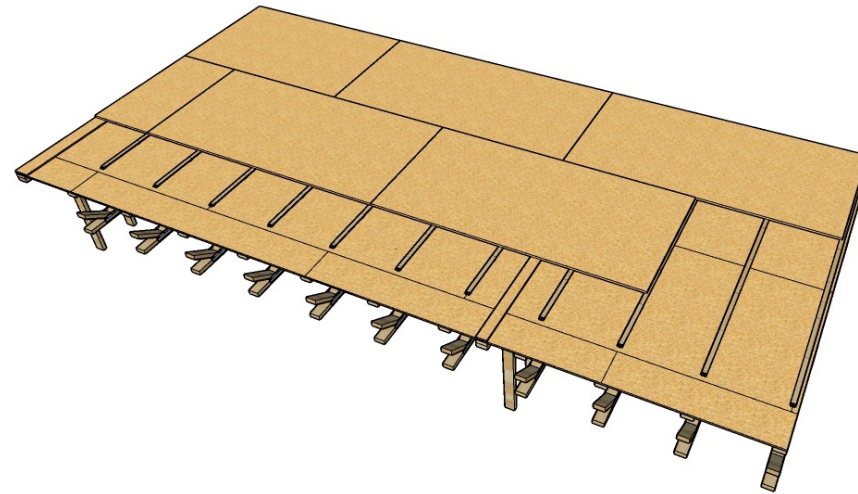
STEP 5

The last step involves adhering the subfloor panels to the wood strips. The use of adhesive is much better than fasteners which might cause squeaks.

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STEP 5: INSTALLING THE SUBFLOOR



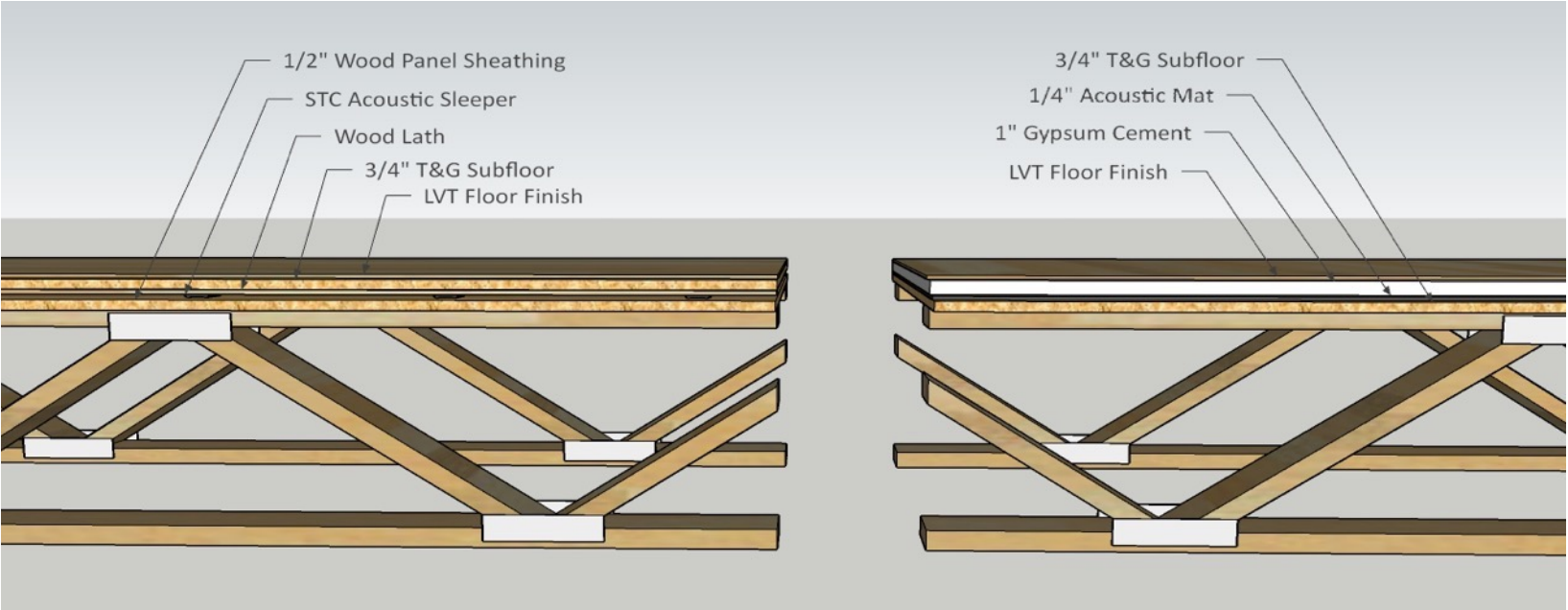
Once the panel is placed on the adhesive, just a few fasteners will hold the panel in place until the adhesive sets. Make certain that the length of the fastener is a length that does not penetrate the strip. Otherwise, there could be squeaks and sound flanking.

WOOD FRAME COST COMPARISON

In wood construction, material and labor costs for installing the STC Acoustic Sleeper system are just a little over ½ the cost of a gypsum cement and acoustical mat system.

**Cost estimates are for general reference only. Labor costs will vary by region. Material cost estimates are based on lumber prices as of November 2021. Lumber prices will be the largest determinant of variance in material cost.*

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STC System	Material	Labor
1/2" Sheathing	\$ 0.46	\$ 0.38
Bearing Strips	\$ 0.02	\$ 0.07
STC Acoustic Sleepers	\$ 0.43	\$ 0.09
Wood Lath	\$ 0.03	\$ 0.10
	<hr/>	<hr/>
	\$ 0.94	\$ 0.64

TOTAL **\$ 1.58***

Gypsum System	Material	Labor
3/8" Acoustic Mat	\$ 0.96	\$ 0.60
1" Gypsum Cement	\$ 0.55	\$ 0.70
	<hr/>	<hr/>
	\$ 1.51	\$ 1.30

TOTAL **\$ 2.81***



CONCRETE FRAME:

UL CERTIFICATIONS
INSTALLATION INSTRUCTIONS
DETAILED COST COMPARISON

CONCRETE UL CERTIFICATIONS

APPLICATIONS

The STC Acoustic Sleeper system can be installed on solid concrete decks. Wood is permitted in non-combustible construction types as a "floor covering material" per IBC 603.1.5.

STC Sound Control has obtained UL certification for a 1-, 2-, and 3-hour fire-rated design, D902. Sound tests indicate exceptional STC and IIC performance. Even without a ceiling, code requirements for STC-50 and IIC-50 are met.

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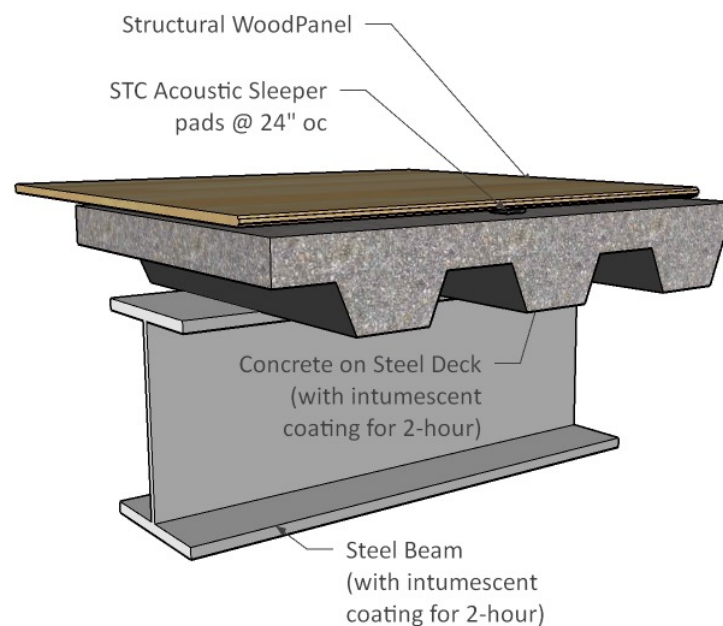
CONCRETE (WITHOUT CEILING)

1-, 2-, and 3-Hour UL Design: D902

STC-51

Hard Surface: IIC-51

Carpet with Pad: IIC-69



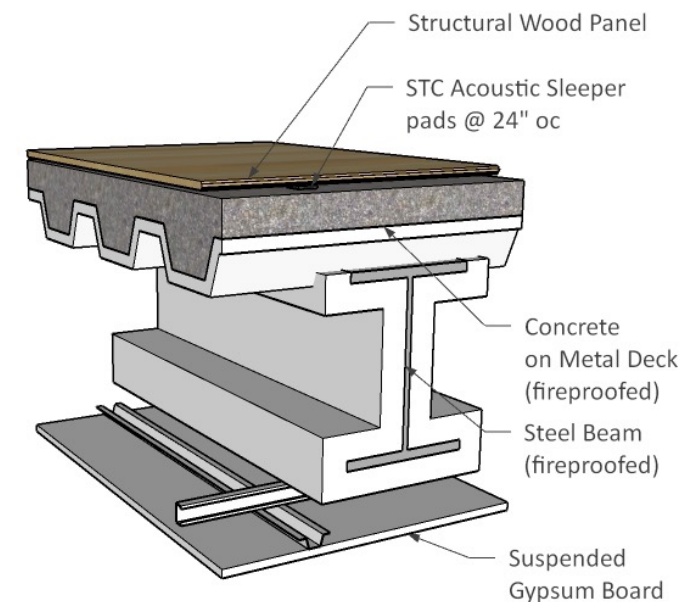
CONCRETE (WITH CEILING)

1-, 2-, and 3-Hour UL Design: D902

STC-61

Hard Surface: IIC-64

Carpet with Pad: IIC-82



CONCRETE DECK DETAIL & FLANKING PATHS

DECK DETAIL

Any floor finish can be installed with the STC Acoustic Sleeper system, without the need for additional acoustic mats or treatments.

FLANKING PATHS

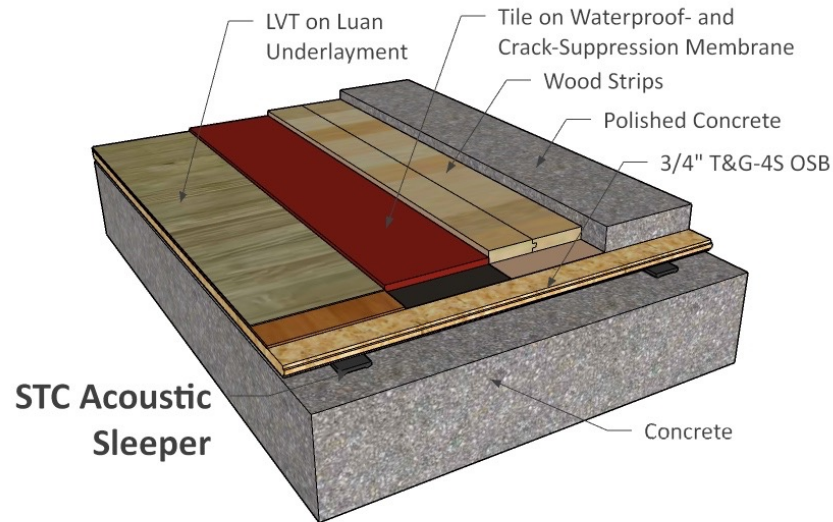
Sound flanking paths are eliminated unlike with other systems:

- Fire Partitions extend from floor/ceiling assembly (IBC 708.4)
- UL Design D902: Boards and pads are part of the floor/ceiling assembly

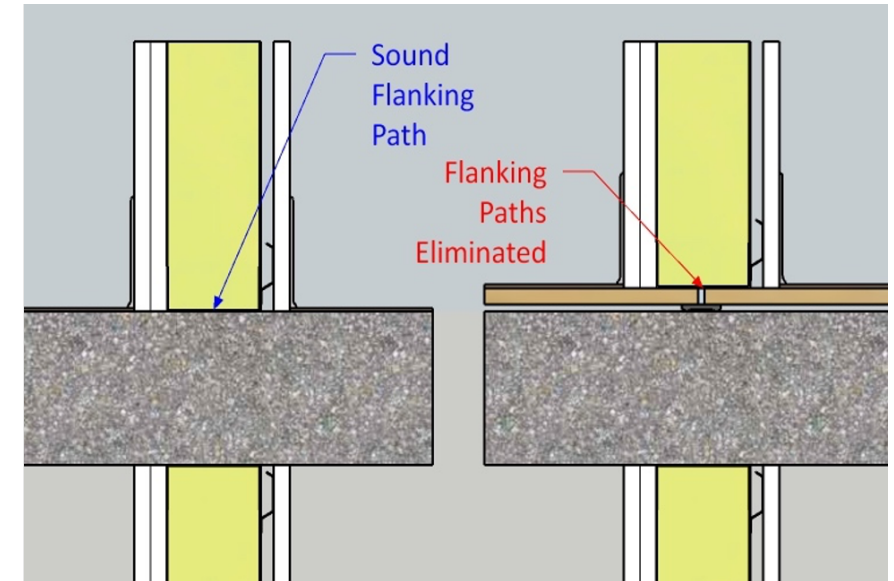
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DECK DETAIL



FLANKING PATHS



CONCRETE INSTALLATION

STEP 1

The concrete is screeded, floated, and allowed to cure. No trowel finishing is required (which can help save on cost). Wood strips at $\frac{1}{4}$ " thick are provided at slab edges and around columns and large pipes.

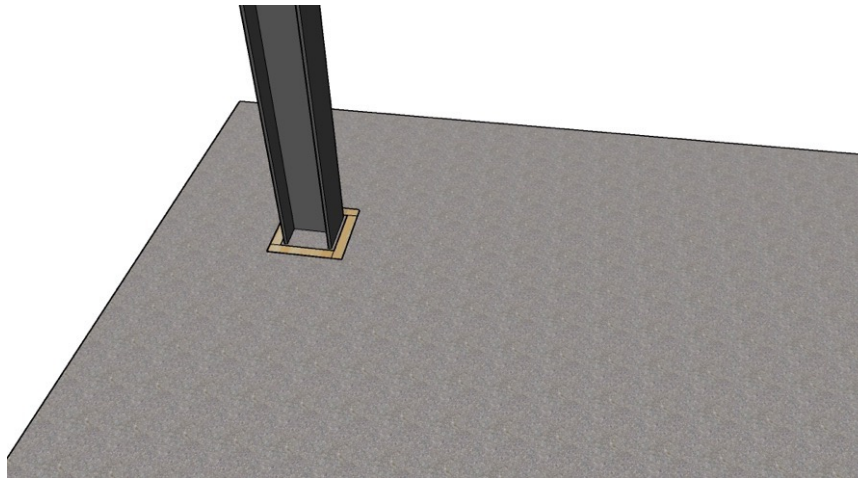
STEP 2

STC Acoustic Sleeper pads are stapled to the underside of square-edge wood panels. These panels are then inverted and loosely laid directly on the concrete deck.

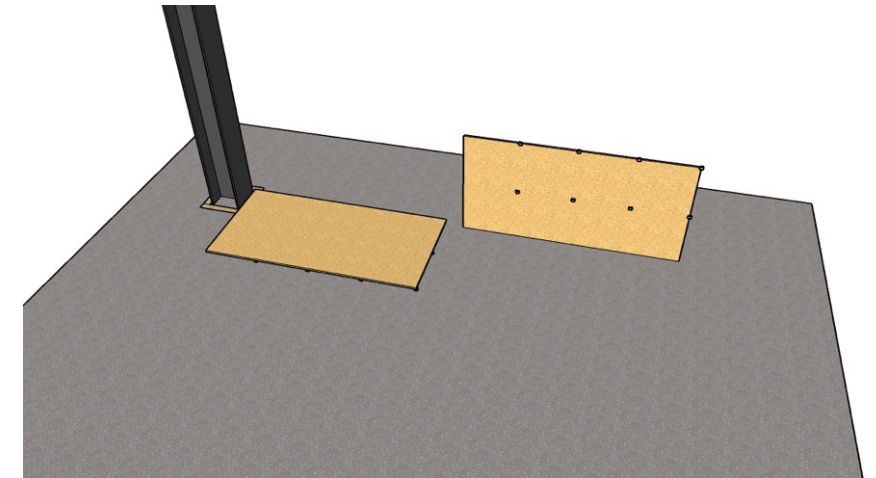
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STEP 1: PLACING SHIMS ON THE DECK



STEP 2: INSTALLING PADS ON PANELS



CONCRETE INSTALLATION

STEP 3

Panels with pads are laid end-to-end in a running bond pattern, covering the entire floor space.

STEP 4

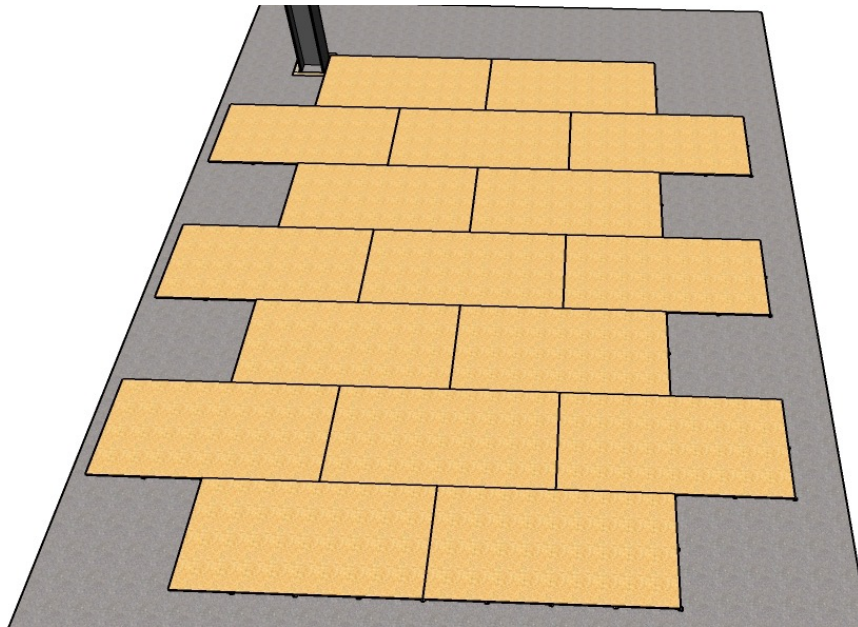
A second layer of square-edge wood panels are adhered to the lower layer. Panels are rotated at a right angle, to locate strong axes in both directions, and staggered to cover the joints in the lower layer.

Voids are filled with vinyl patching compound, and lightly sanded. Finish flooring is installed directly.

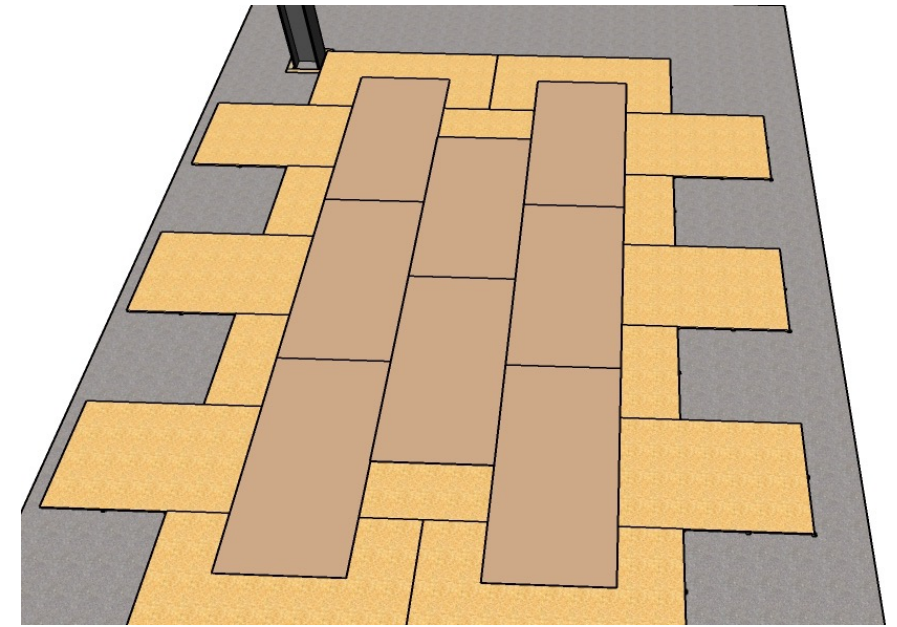
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STEP 3: LAYING FIRST PANEL LAYER



STEP 4: LAYING SECOND PANEL LAYER



CONCRETE COST COMPARISON

The STC Acoustic Sleeper system is less expensive per square foot and has a better Δ IIC than the leading competitors.

The total cost per square foot includes the two layers of wood, STC Acoustic Sleeper pads, and labor for installation.

**Cost and IIC estimates for competing products are for general reference only and may not reflect precise up-to-date data across different scenarios or configurations. These figures have been obtained from the respective products' websites and are not meant to replace official quotations from the respective companies or a third-party estimator. Lumber prices are estimated as of November 2021 and may vary over time.*

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PERFORMANCE & COST ESTIMATES*

PRODUCT / SYSTEM	Δ IIC	Cost / sf
STC Acoustic Sleeper System	23	\$ 1.70
Regupol [®] Rubber Mat (10 mm)	18	\$ 2.74
Widget Cork (1/2")	20	\$ 2.85
QuietWalk [®] Pad for LVT	20	\$ 2.92
Maxxon Acousti-Top [®] (1/8") + Gypcrete	19	\$ 3.35
Maxxon Acousti-Mat [®] (1/4") + Gypcrete	18	\$ 3.60
Maxxon Acousti-Mat [®] (3/4") + Gypcrete	20	\$ 7.50



METAL FRAME:

UL CERTIFICATIONS



METAL

UL CERTIFICATIONS

APPLICATIONS

The STC Acoustic Sleeper can also be installed on metal joists and truss systems.

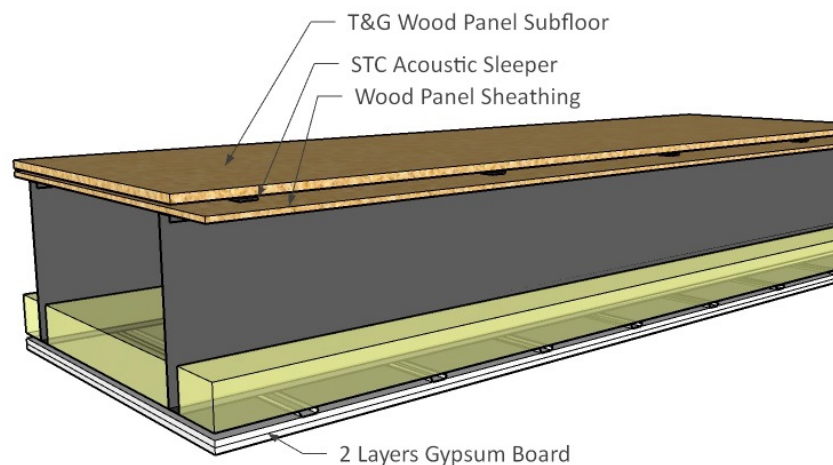
STC Sound Control has obtained UL certification for 1-hour fire-rated designs. Sound tests indicate exceptional performance for both STC and IIC.

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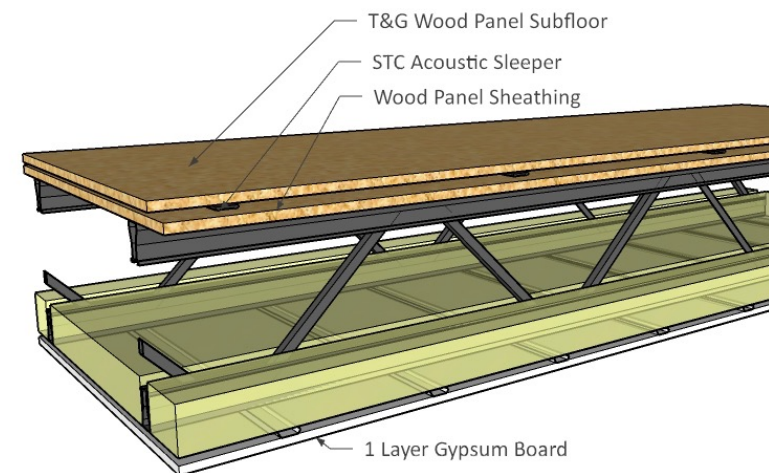
METAL JOISTS

1-Hour UL Design: L524
STC-61
Hard Surface: IIC-54
Carpet with Pad: IIC-69



LIGHT GAUGE METAL TRUSSES

1-Hour UL Designs: L560, L565
STC-61
Hard Surface: IIC-54
Carpet with Pad: IIC-69





FREQUENTLY ASKED QUESTIONS

SPECS & CODE

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Q: What is the STC Acoustic Sleeper made of? And why does it have that particular profile?

A: The STC Acoustic Sleeper is made of neoprene, a dense and resilient rubber selected for its ability to isolate vibrations. Its profile is designed to minimize contact between the finish floor surface and the supporting structure – a critical goal of isolating impact noise. More than 99.8% of the floor area is isolated from contact with the structure with STC Acoustic Sleeper installations – continuous mat systems don't do that.

Q: How thick is the system?

A: For wood framing, the system is typically 1-¾" above structural members – ½" sheathing, ¼" lath, ¼" pads, and ¾" subfloor. For concrete decks, the pads and subfloor total 1" thick.

Q: What configurations are available?

A: STC Acoustic Sleepers are 1-½" wide, ¼" high, and are available as pads (1-½" square) and strips (44" long). Strips can be easily cut to any length.

Q: How well does the STC Acoustic Sleeper perform for Impact Insulation Classification (IIC)?

A: Independent tests per ASTM E 2179 of STC Acoustic Sleeper pads demonstrate DIIC-23, much higher than gypsum cement and acoustical mat systems, cork, and rubber.

Q: Is the STC Acoustic Sleeper fire rated for use in combustile construction?

A: Yes. The STC Acoustic Sleeper is part of UL Listed 1-hour and 2-hour fire-rated assemblies in Construction Types III-A and V-A: Wood Joists: 1-hour L502, L506, L514; 2-hour L505; I-Joists: 1-hour L589; Wood Truss: 1-hour L528, L563, L574; 2-hour L577; Metal Joists: 1-hour L524; Light Gauge Metal Truss: 1-hour L560, L565.

Q: Can the STC Acoustic Sleeper system be used in non-combustible construction with wood panels?

A: Yes. Wood panels are permitted as a "floor covering material" over noncombustible floor/ceiling assemblies per IBC 603.1.5 and IBC 804.1. Refer to installation instructions on concrete decks for information regarding panel orientation and fastening.

INSTALLATION

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Q: What is the construction sequence for the STC Acoustic Sleeper system in wood construction?

A: Installation of the system is continuous over the entire floor plate by the framing contractor, after the sheathing layer and before partitions are installed. This eliminates cutting of the sheets and speeds the process. With a continuous bearing strip of $\frac{1}{4}$ " plywood or OSB under load-bearing walls, shear walls, and fire-resistance-rated walls, all studs are precut to the same length. This is the preferred detail.

Q: Why are there two wood layers of wood?

A: Typical wood floor construction has a single subfloor/sheathing layer. The STC Acoustic Sleeper system separates the functions of acoustic insulation and fire resistance with two layers of wood (and without gypsum cement). The sheathing (base) layer is fastened to the structural members to provide diaphragmatic shear resistance, glued and nailed to also provide composite action and reduce deflection. The subfloor (upper) layer is supported on top of the sheathing layer by the STC Acoustic Sleeper pads or strips, and in line with the structural members. This isolates the transmission of impact vibration while transferring the vertical loads to the structure. In the event of fire, the lower sheathing layer chars and protects the upper subfloor layer so it can continue to carry the structural loads for the required fire resistance.

Q: Is $\frac{1}{2}$ " OSB really enough for the sheathing layer?

A: OSB $\frac{1}{2}$ " thick can be designed for high-load diaphragms in accordance with the American Wood Council (AWC) Special Design Provisions for Wind and Seismic (SDPWS). Where higher diaphragm capacities are required, or where spans are designed assuming composite action with sheathing, thicker panels may be used for the sheathing layer.

Q: What about moisture between the two layers?

A: If moisture enters between the two wood panels it wicks to the square-edge joint in the lower sheathing panel by vapor pressure differential and evaporates. This is accelerated since the two panels do not touch, which would cause adhesion and condensation of the vapor. We recommend an open joint of about $\frac{1}{8}$ " at the sheathing panels between structural members.

INSTALLATION

Simple, High-performance, Cost-effective
Acoustical Products for Buildings



Q: Does the STC Acoustic Sleeper system self-level like gypsum cement?

A: No, the STC Acoustic Sleeper system acts like a typical panel on structural members, deflecting for comfort underfoot. It is flat as required by finish floors; levelness is not required. Also, with self-levelling underlayment, the variable thickness of the cement brings behavior under fire conditions into question – it causes cracking at thin areas and it stresses the structure from additional dead load at thick areas.

Q: How many pads are needed?

A: Quantity depends on structural member spacing and the desired spacing of pads along the structural member for deflection based on loads and panel thickness. Refer to the chart below.

AREA COVERED PER 100 PADS			
SPACING OF STRUCTURAL MEMBERS	SPACING OF PADS ALONG STRUCTURAL MEMBERS		
	12"	16"	24"
16"	133 sf	177 sf	266 sf
19.2"	160 sf	213 sf	320 sf
24"	200 sf	266 sf	400 sf



STC SOUND CONTROL