FIRE & ACOUSTIC GUIDE

COMPOSITE TOTALJOIST BY iSPAN SYSTEMS

ABOUT ACOUSTIC RATINGS

Acoustic ratings provide a means to rank a floor's ability to isolate sound. A higher acoustic rating indicates a floor is better able to stop the transmission of sound through it. Helpful planning and construction points on preventing acoustical problems are given in a publication by the National Association of Home Builders Research Foundation titled *Acoustical Manual–Apartment and Home Construction*. Another reference is *Sound, Noise, and Vibration Control* by Lyle Yerges, 1969, Van Nostrand-Reinhold. Sound transmission class (STC) ratings describe a floor's ability to isolate air-borne sounds such as speech. The significance of STC numbers is illustrated in the following chart from the Acoustical and Insulation Materials Association.

STC RATINGS

STC	Description of Potential Sound Transfer
25	Normal Speech can be understood quite clearly.
30	Loud speech can be understood fairly well.
35	Loud speech audible but not intelligible.
42	Loud speech audible as a murmur.
45	Must strain to hear loud speech.
48	Some loud speech barely audible.
50	Loud speech not audible.

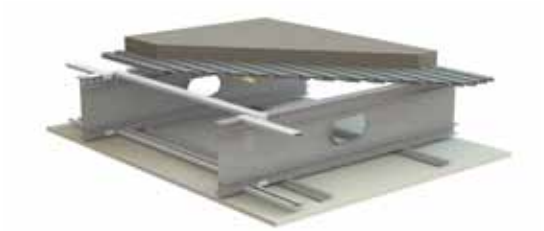
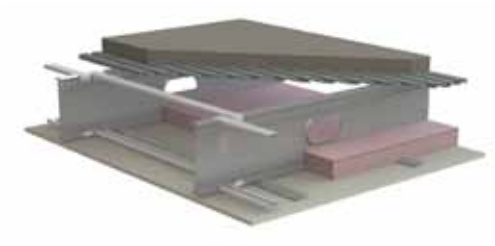
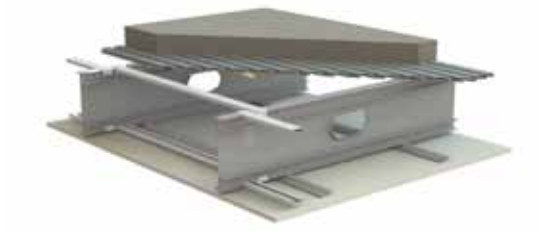
In addition to being rated for airborne sound transmission, floors are also rated by IIC (Impact Insulation Class). IIC values rate the capacity of floor assemblies to control impact noise such as a person's heal hitting the floor. Use of light-frame construction systems challenges designers to insulate against noise rather than simply relying on the massiveness of heavy walls and floors.

NOTES

Fire Resistance Ratings are based on CAN/ULC S101 tests (in Canada) or UL263 (in the US). Full scale floors are built and tested by subjecting them to a standard fire up to a temperature of 1,260°C. The floor must withstand this sustained fire for the duration of the test.

Acoustic test are based on ASTM E90 (STC) and ASTM E492 (IIC). Sounds loss and sound transmission are measured by a series of instrument from which the ratings are calculated for design.

BASE ASSEMBLIES

Slab Depth	Assembly and Approval Designation	Assembly Breakdown	FRR	STC	IIC
3"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • none **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board	2 HR or 3 HR	50[1]	25[1]
3" + Insulation		**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • none **Ceiling:** • 3-1/2" Fiberglass Batts • 7/8" Hat Channel • 5/8" Type C Gypsum Board		58[1]	30[1]
4"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 4" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • none **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board		51[1]	31[1]

[1] Denotes values based on lab tests [2] Denotes values based on field tests [3] Denotes values based on field tests

1. '**FRR**' is the UL / ULC Approved Fire Resistance Rating tested as per CAN ULC S101
2. '**STC**' is the Sound Transmission Class
3. '**IIC**' is the Impact Insulation Class
4. See below for ratings specific to floor finishes
5. All topping thicknesses are measured from top of deck

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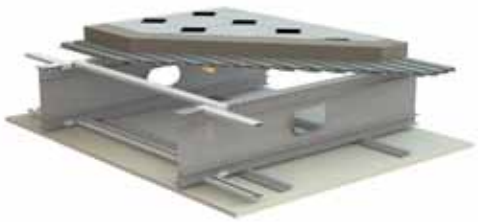
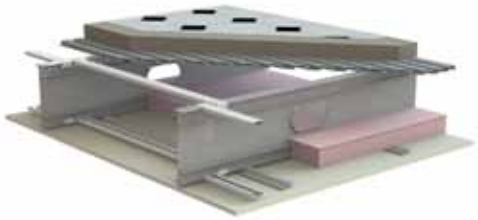
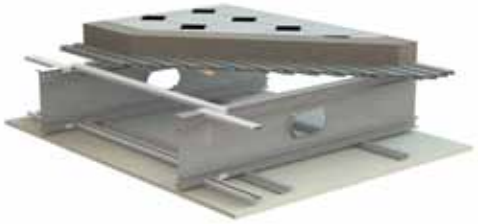
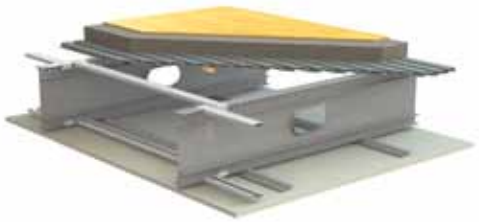
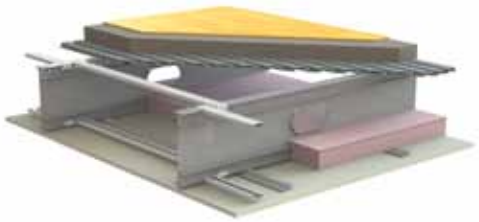
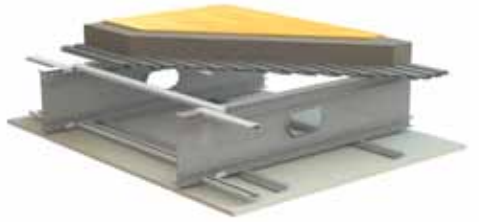
VINYL FLOOR FINISH

Slab Depth	Assembly and Approval Designation	Assembly Breakdown	FRR	STC	IIC
3"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Vinyl **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board	2 HR or 3 HR	50[1]	35[3]
3" + Insulation	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Vinyl **Ceiling:** • 3-1/2" Fiberglass Batts • 7/8" Hat Channel • 5/8" Type C Gypsum Board		58[1]	40[3]
4"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 4" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Vinyl **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board		51[1]	41[3]

[1] Denotes values based on lab tests [2] Denotes values based on field tests [3] Denotes values based on field tests

LAMINATE FLOOR FINISH

Slab Depth	Assembly and Approval Designation	Assembly Breakdown	FRR	STC	IIC
3"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Laminate Flooring **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board	2 HR or 3 HR	50[1]	40[3]
3" + Insulation	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Laminate Flooring **Ceiling:** • 3-1/2" Fiberglass Batts • 7/8" Hat Channel • 5/8" Type C Gypsum Board		58[1]	45[3]
4"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 4" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Laminate Flooring **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board		51[1]	46[3]

[1] Denotes values based on lab tests [2] Denotes values based on field tests [3] Denotes values based on field tests

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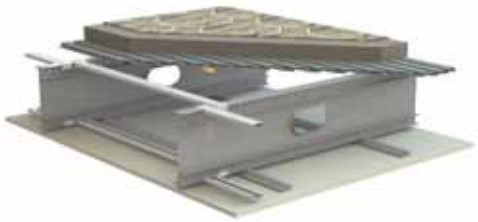
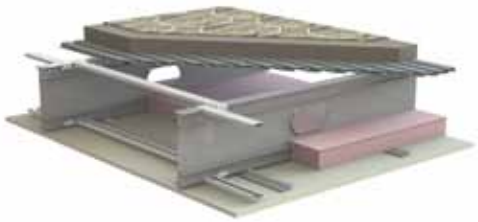
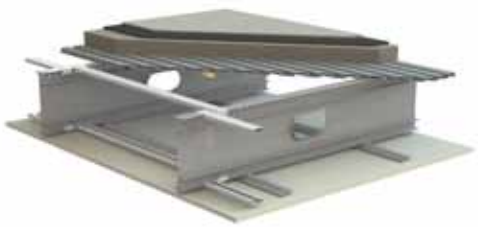
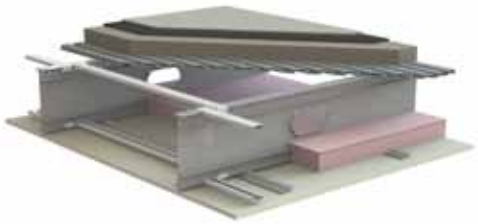
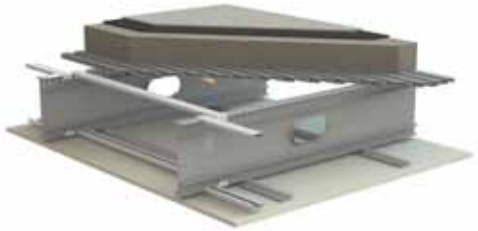
CERAMIC TILE FLOOR FINISH

Slab Depth	Assembly and Approval Designation	Assembly Breakdown	FRR	STC	IIC
3"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Ceramic Tile **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board	2 HR or 3 HR	50[1]	32[3]
3" + Insulation	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Ceramic Tile **Ceiling:** • 3-1/2" Fiberglass Batts • 7/8" Hat Channel • 5/8" Type C Gypsum Board		58[1]	32[3]
4"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 4" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • Ceramic Tile **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board		51[1]	34[3]

[1] Denotes values based on lab tests [2] Denotes values based on field tests [3] Denotes values based on field tests

CARPET FLOOR FINISH

Slab Depth	Assembly and Approval Designation	Assembly Breakdown	FFR	STC	IIC
3"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • 5/16" Underpad • Carpet **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board	2 HR or 3 HR	50[1]	55[3]
3" + Insulation	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 3" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • 5/16" Underpad • Carpet **Ceiling:** • 3-1/2" Fiberglass Batts • 7/8" Hat Channel • 5/8" Type C Gypsum Board		58[1]	60[3]
4"	Unrestrained/Restrained UL G555 / ULC I525 UL G589 / ULC I532 	**Structure:** • CompositeTotalJoist™ • Total-Lewis-Deck™ **Topping:** • Min. 4" Normal Weight Concrete, 3.0 ksi **Finished Floor:** • 5/16" Underpad • Carpet **Ceiling:** • 7/8" Hat Channel • 5/8" Type C Gypsum Board		51[1]	61[1]

[1] Denotes values based on lab tests [2] Denotes values based on field tests [3] Denotes values based on field tests

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NOTES

The acoustic ratings are based on various finished floors. Finished floors can be applied to Composite TotalJoist Floor Systems in the same way that they are applied in traditional floors.

There are several methods to install wood flooring products over the Composite TotalJoist Floor Systems:

- For installation over concrete slabs, refer to the instructions published by The Wood Flooring Manufacturers Association at www.nofma.org.

There are also several methods to install ceramic tile on Composite TotalJoist Floor Systems. For guidance, refer to the *2009 TCA Handbook for Ceramic Tile Installation* published by The Tile Council of North America, Inc. Visit their website at www.tileusa.com. Inside you will find many approved installation systems suitable for the Composite TotalJoist Floor Systems.