F3908.02-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 90 AND ASTM E 492

Rendered to

FABRICUSHION LTD.

Series/Model: Laminated Wood on 1.5 mm Fabricushion Ltd. Acoustical Underlayment

Specimen Type: 152 mm Concrete Slab with Drop Ceiling

Overall Size: 3023 mm by 3632 mm

STC	**63**
IIC	**68**

Test Specimen Identification:
Floor Topping: 12.1 mm KRAUS ALACANTI KPLA10001 Charleston Hickory Laminated Wood
Floor Underlayment: 1.5 mm Fabricushion Ltd. Acoustical Underlayment
Floor Slab: 152.4 mm Concrete Slab
Main Beams: 38.1 mm Clark-Dietrich U-Channel Cold Rolled Channel
Isolation Clips: 25.4 mm Pliteq GenieClip-C3 Resilient Sound Isolation Clip
Cross Beams: 22.2 mm 25 Gauge Drywall Furring Channel
Insulation: 76.2 mm Roxul AFB Stonewool Insulation
Ceiling: 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel

Reference should be made to Intertek-ATI Report F3908.02-113-11 for complete test specimen description. This page alone is not a complete report.

Acoustical Performance Test Report

FABRICUSHION LTD.
259 Steelcase Road West
Markham, Ontario L3R 2P6
CANADA

Report	F3908.02-113-11
Test Date	01/15/16
Report Date	01/22/16

Project Scope

Architectural Testing, Inc., a subsidiary of Intertek (Intertek-ATI), was contracted to conduct airborne sound transmission loss and impact sound transmission tests. The complete test data is included as attachments to this report. The client provided the test specimen. The specimen was constructed on the date of testing.

Test Methods

The acoustical tests were conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

ASTM E 90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
ASTM E 413-10, Classification for Rating Sound Insulation
ASTM E 492-09, Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
ASTM E 989-06 (2012), Classification for Determination of Impact Insulation Class (IIC)
ASTM E 2235-04 (2012) Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods

Test Procedure

All testing was conducted in the VT test chambers at Intertek-ATI located in York, Pennsylvania. The microphones were calibrated before conducting the tests.

The airborne transmission loss test was conducted in accordance with the ASTM E 90 test method using the single direction method. Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions. Four sound pressure level measurements were made simultaneously in both rooms, at each of five microphone positions.

Test Procedure (Continued)
The impact sound transmission test was conducted in accordance with the ASTM E 492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E 492, and five sound absorption measurements were conducted at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Test Conditions

Source Room		Receive Room	
Average Temperature	18.1°C	Average Temperature	18.1°C
Average Relative Humidity	37%	Average Relative Humidity	48%

Test Calculations
The STC (Sound Transmission Class) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E 413 and ASTM E 989, respectively.

Test Specimen Materials and Installation Details

Material	Dimensions (mm)	Thickness (mm)	Manufacturer and Series	Quantity	Average Weight
Laminated Wood	3023 by 3623	12.1	KRAUS ALACANTI KPLA10001 Charleston Hickory	10.98 m²	10.09 kg/m²
	Note: Loose laid				
Acoustical Underlayment	3023 by 3632	1.5	Fabricushion Ltd.	10.98 m²	0.51 kg/m²
	Note: Loose laid				
Concrete Slab	3023 by 3632	152.4	N/A	10.98 m²	366.18 kg/m²
	Note: The concrete slab was installed in a test frame flush to the source room.				
Cold Rolled Channel	14.3 by 3632	38.1	Clark-Dietrich U-Channel	10.9 lin m	0.69 kg/m
	Note: The 1/2" threaded eye hooks were attached to the bottom of the concrete at twelve locations in a 609.6 mm by 1219.2 mm pattern. The 12 gauge hanger wire was fed through the eye hooks and around the U-Channel, creating a 304.8 mm plenum. The hanger wire was twisted around itself a minimum of three times within 76.2 mm. The measured steel thickness was 2.0 mm.				
Resilient Sound Isolation Clip	38.1 by 63.5	25.4	Pliteq GenieClip-C3	21 clips	0.06 kg/clip
	Note: Installed onto the U-Channel per manufacturer's specifications on 609.6 centers.				
25 Gauge Drywall Furring Channel	3023 by 63.6	22.2	N/A	21.16 lin m	0.57 kg/m
	Note: Inserted into isolation clips to span the 3632 mm length. The measured steel thickness is 1.2 mm.				
Stonewool Insulation	1219 by 609.6	76.2	Roxul AFB	10.98 m²	3.32 kg/m²
	Note: Loose laid onto the ceiling grid system				

Test Specimen Materials and Installation Details (Continued)

Material	Dimensions (mm)	Thickness (mm)	Manufacturer and Series	Quantity	Average Weight
Gypsum Panel	3023 by 1219	15.9	National Gypsum Gold Bond® Fire-Shield® Type X	10.56 m²	11.23 kg/m²
	Note: The gypsum panels were fastened to the furring channels on 304.8 mm centers along the channel with 25.4 mm #6 fine-thread drywall screws. Seams and perimeter were sealed with acoustical caulk.				

Comments

The total weight of the floor/ceiling assembly was 4313 kg. Intertek-ATI will store samples of the test specimen for four years. A drawing of the test specimen is included in the attachments.

Intertek-ATI will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

FOR INTERTEK-ATI:

Digitally Signed by: Daniel Mohler

Digitally Signed by: Jordan Strybos

Daniel B. Mohler
Technician II - Acoustical Testing

Jordan Strybos
Project Manager - Acoustical Testing

Attachments (6 Pages): This report is complete only when all attachments are included.

** Stated by Client/Manufacturer*
N/A - Non Applicable

Revision Log

Revision	Date	Page(s)	Description
R0	01/22/16	N/A	Original Report Issue

Attachments

Instrumentation

Instrument	Manufacturer	Model	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	63763	06/14 *
Microphone Calibrator	Norsonic	1251	Y002919	07/15
Receive Room Microphone	PCB Piezotronics	378B20	63748	05/15
Receive Room Microphone	PCB Piezotronics	378B20	63744	05/15
Receive Room Microphone	PCB Piezotronics	378B20	63745	05/15
Receive Room Microphone	PCB Piezotronics	378B20	63746	05/15
Receive Room Microphone	PCB Piezotronics	378B20	63747	05/15
Receive Room Environmental Indicator	Comet	T7510	63810	10/15
			63811	10/15
Source Room Microphone	PCB Piezotronics	378B20	63738	04/15
Source Room Microphone	PCB Piezotronics	378B20	63739	04/15
Source Room Microphone	PCB Piezotronics	378B20	63740	04/15
Source Room Microphone	PCB Piezotronics	378B20	63742	04/15
Source Room Microphone	PCB Piezotronics	378B20	63741	04/15
Source Room Environmental Indicator	Comet	T7510	63812	10/15
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	65351	11/15

** The calibration frequency for this equipment is every two years per the manufacturer's recommendation.*

Test Chambers

VT Receive Room Volume	155.77 m³
VT Source Room Volume	190 m³

AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	01/15/16
Data File No.	F3908.02
Client	Fabricushion Ltd.
Description	12.1 mm KRAUS ALACANTI KPLA10001 Charleston Hickory Laminated Wood, 1.5 mm Fabricushion Ltd. Acoustical Underlayment, 152.4 mm Concrete Slab, 38.1 mm Clark-Dietrich U-Channel Cold Rolled Channel, 25.4 mm Pliteq GenieClip-C3 Resilient Sound Isolation Clip, 22.2 mm 25 Gauge Drywall Furring Channel, 76.2 mm Roxul AFB Stonewool Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m²
Technician	Daniel B. Mohler

Freq (Hz)	**Background SPL** (dB)	**Absorption** (m²)	**Source SPL** (dB)	**Receive SPL** (dB)	**Specimen TL** (dB)	**95% Confidence Limit**	**Number of Deficiencies**
80	30.3	19.8	109	64	43	2.20	-
100	31.7	12.9	107	65	43	1.90	-
125	27.9	9.5	106	65	43	2.60	4
160	26.3	9.1	107	64	45	1.20	5
200	23.6	9.9	104	56	49	1.20	4
250	29.8	9.7	104	53	53	1.30	3
315	21.6	9.4	105	51	56	0.60	3
400	21.0	7.7	103	47	58	1.00	4
500	22.5	7.3	102	44	61	0.80	2
630	20.0	6.9	103	43	63	0.90	1
800	20.4	7.0	102	40	66	0.60	0
1000	19.3	7.2	102	40	65	0.90	1
1250	20.2	7.2	103	39	67	0.80	0
1600	16.5	7.4	103	39	67	0.70	0
2000	11.1	8.3	102	38	67	0.30	0
2500	7.3	9.4	101	36	67	0.70	0
3150	6.7	10.3	102	32	71	0.60	0
4000	6.3	12.4	103	30	72	0.60	0
5000	6.0	14.8	102	27	74	0.50	-
6300	6.2	19.5	96	17	78	0.80	-
8000	6.4	26.5	96	12	82	1.00	-
10000	6.5	33.3	91	6	81	0.90	-

STC Rating **63** *(Sound Transmission Class)*

Deficiencies 27 *(Sum of Deficiencies)*

Notes: *1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.*
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

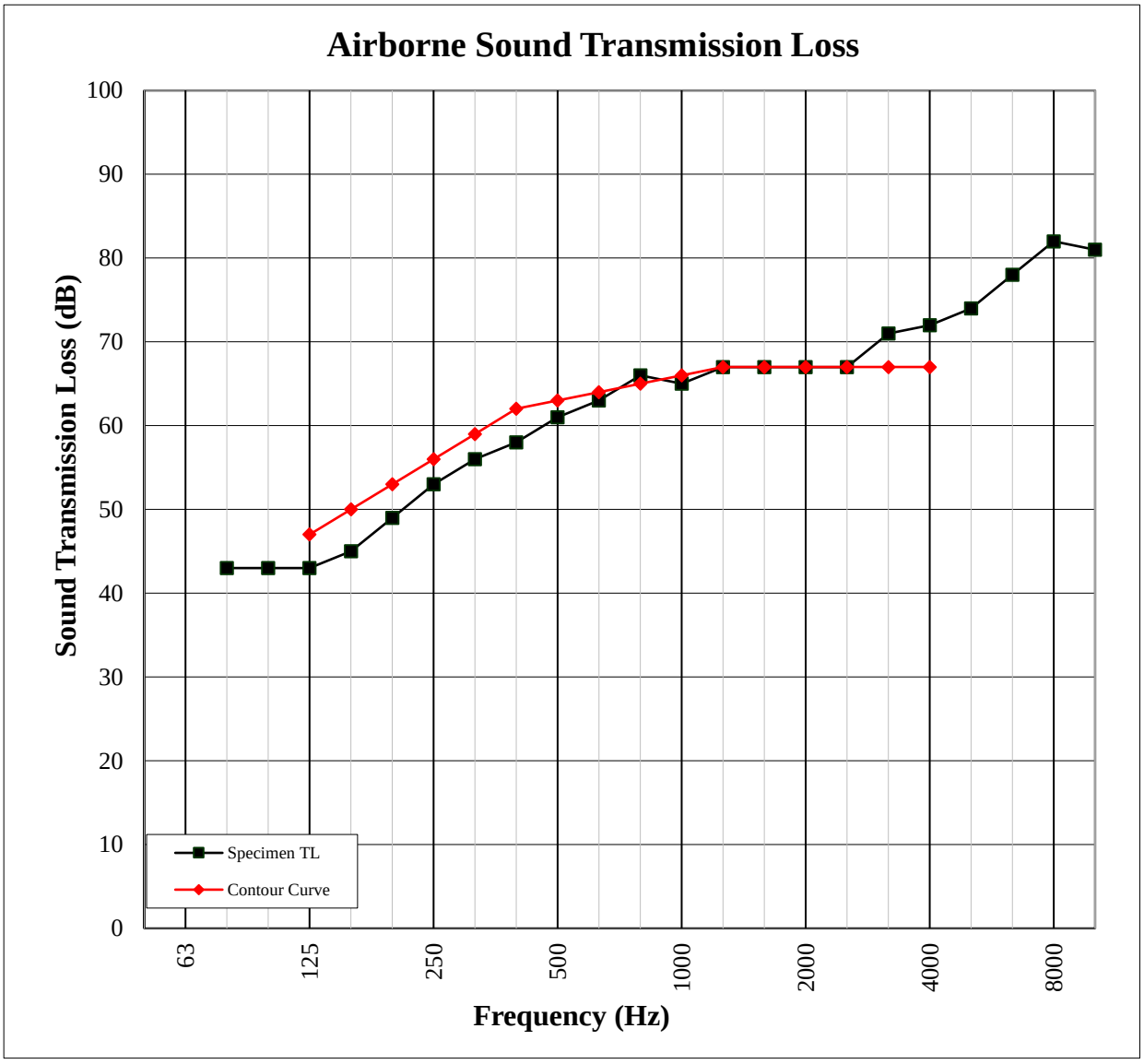
Architectural Testing

ACCREDITED TL-144

AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	01/15/16
Data File No.	F3908.02
Client	Fabricushion Ltd.
Description	12.1 mm KRAUS ALACANTI KPLA10001 Charleston Hickory Laminated Wood, 1.5 mm Fabricushion Ltd. Acoustical Underlayment, 152.4 mm Concrete Slab, 38.1 mm Clark-Dietrich U-Channel Cold Rolled Channel, 25.4 mm Pliteq GenieClip-C3 Resilient Sound Isolation Clip, 22.2 mm 25 Gauge Drywall Furring Channel, 76.2 mm Roxul AFB Stonewool Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m²
Technician	Daniel B. Mohler



IMPACT SOUND TRANSMISSION

ASTM E 492

Test Date	01/15/16
Data File No.	F3908.02
Client	Fabricushion Ltd.
Description	12.1 mm KRAUS ALACANTI KPLA10001 Charleston Hickory Laminated Wood, 1.5 mm Fabricushion Ltd. Acoustical Underlayment, 152.4 mm Concrete Slab, 38.1 mm Clark-Dietrich U-Channel Cold Rolled Channel, 25.4 mm Pliteq GenieClip-C3 Resilient Sound Isolation Clip, 22.2 mm 25 Gauge Drywall Furring Channel, 76.2 mm Roxul AFB Stonewool Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m²
Technician	Daniel B. Mohler

Freq (Hz)	**Background SPL** (dB)	**Absorption** (m²)	**Normalized Impact SPL** (dB)	**95% Confidence Limit**	**Number of Deficiencies**
80	29.6	18.3	49	2.7	-
100	32.4	13.1	52	1.8	8
125	28.6	9.7	45	2.1	1
160	23.5	8.8	43	0.7	0
200	21.4	9.7	44	1.0	0
250	29.8	10.4	49	1.6	5
315	23.0	9.9	49	1.5	5
400	20.7	7.8	48	0.6	5
500	22.8	7.1	44	0.6	2
630	21.8	7.0	40	0.7	0
800	24.4	6.9	35	0.9	0
1000	19.3	7.0	29	0.5	0
1250	16.8	7.3	22	0.2	0
1600	13.3	7.4	20	0.4	0
2000	8.0	8.4	13	0.3	0
2500	5.6	9.4	9	0.3	0
3150	4.7	10.4	5	0.3	0
4000	4.8	12.5	4	0.2	-
5000	5.5	14.8	5	0.4	-
6300	6.0	19.7	7	0.4	-
8000	6.3	26.7	9	0.4	-
10000	6.5	33.7	10	0.6	-

IIC Rating **68** *(Impact Insulation Class)*

Deficiencies 26 *(Sum of Deficiencies)*

Note: *Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.*

Architectural Testing

ACCREDITED TL-144

IMPACT SOUND TRANSMISSION

ASTM E 492

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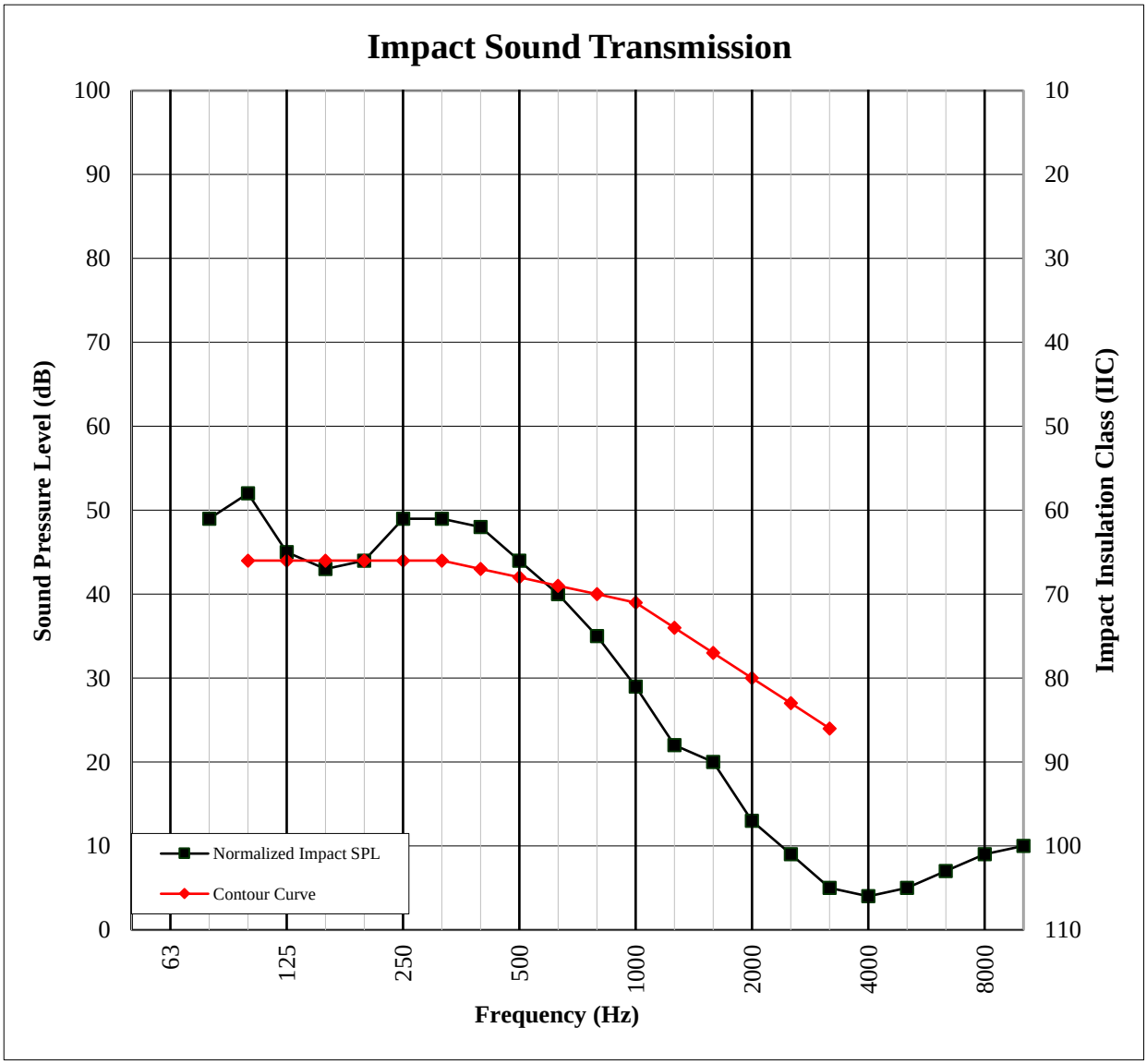
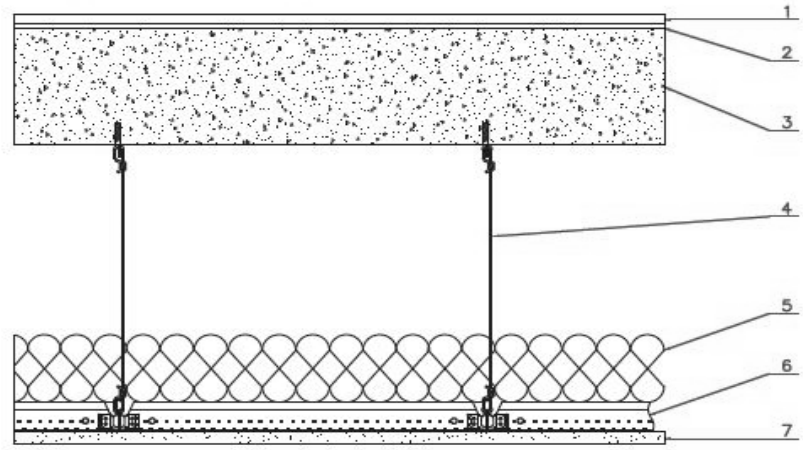


Drawing



1-Floor Topping
2-Underlayment
3-Concrete Slab
4-Hanger Wire
5-Insulation
6-U-Channel & Furring Channel Grid with GenieClips
7-Ceiling