



**F8112.01-113-11-R0**  
**ACOUSTICAL PERFORMANCE TEST REPORT**  
**ASTM E 90 AND ASTM E 492**

**Rendered to**

**FRAMECAD AMERICA**

**Series/Model: FRAMECAD Cold Formed Steel Members**

**Specimen Type: Steel Truss Assembly**

**Overall Size: 3023 mm by 3632 mm**

**STC     54**  
**IIC     37**

**Test Specimen Identification:**

Subfloor: 18.7 mm JetProducts JetBoard™ Magnesium-Oxide Board

Insulation: 88.9 mm Roxul Mineral Wool Insulation

Truss: 304.8 mm FRAMECAD Cold Formed Steel Members

Ceiling Isolation: 12.7 mm ClarkDietrich RC-2 ProPlus™ Resilient Channel

Ceiling: 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel

Reference should be made to Intertek-ATI Report F8112.01-113-11 for complete test specimen description. This page alone is not a complete report.

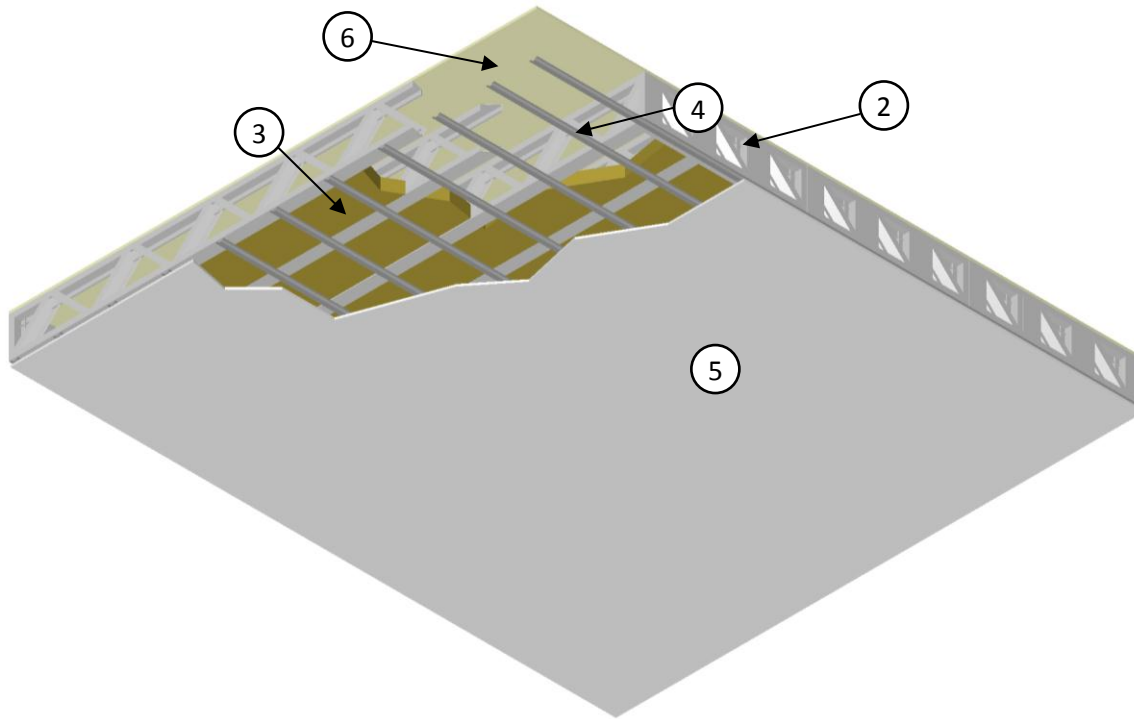
Series/Model: FRAMECAD Cold Formed Steel Members

Specimen Type: Steel Truss Assembly

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STC 54

IIC 37



1. **FLOOR/CEILING ASSEMBLY:** Construct a 1 hour rated floor/ceiling assembly incorporating the construction features described in Items 2 through 6.

2. **CERTIFIED COMPANY:** FRAMECAD America, Inc.

**CERTIFIED PRODUCT:** Load-Bearing Floor/Ceiling Assembly

**LOAD-BEARING FLOOR/CEILING ASSEMBLY:** Use a FRAMECAD America, Inc. certified webbed floor joist constructed of min. 3-5/8 in. width, min. 1-5/8 in. flange width, min. 1/2 in. lip and 18 GA galvanized steel framing. The webbed floor joists shall be a min. 12 in. tall, spaced at 16 in. on center (oc) and designed in accordance with the North American Specification (AISI S100).

3. **BATTS AND BLANKETS:** Install nominal 4 in. thick, min. 4 pcf, unfaced mineral fiber insulation fitted into cavities of the load-bearing floor/ceiling assembly (Item 2), resting on top of resilient channel (Item 4).

4. **RESILIENT CHANNEL:** Install nominal 2-1/2 in. wide by min. 1/2 in. deep "hat shaped" RC2 channels perpendicular to floor joist (Item 2). Space resilient channel 16 in. oc and secure to floor joist using min. #8 x 3/4 in. self-drilling screws.

5. **GYPSUM BOARD:** Install min. one layer of 5/8 in. Type X gypsum board to resilient channel (Item 4) with 1-1/8 in. long, Type S, bugle-head drywall screws 12 in. oc along the length of the resilient channel. Apply a Level 2 finish of vinyl or casein, dry or premixed joint compound as follows. Apply to gypsum board in two coats to all exposed fastener heads and gypsum board joints.

**Division 05 – Metals**

**05 42 00 Cold-Formed Metal Joist Framing**

**05 42 13 Cold-Formed Metal Floor Joist Framing**

Embed min. 2 in. wide paper, plastic, or fiberglass tape in first layer of compound over joints in gypsum board.

6. **SUB-FLOOR:** Install min. 3/4 in. JetBoard™ glass fiber-mat reinforced MgO cementitious panels perpendicular to floor joist system (Item 2) with min. 1-5/8 in. long, Type S, self-drilling bugle-head screws spaced 6 in. oc along the perimeter and 12 in. oc in the

field along the joists. Apply a Level 2 finish at all joints and fasteners using a cementitious joint compound. Apply to JetBoard™ in two coats to all exposed fastener heads and joints, embedding min. 2 in. wide fiberglass tape in first layer of compound over joints in JetBoard™.



## Acoustical Performance Test Report

FRAMECAD AMERICA  
700 Lavaca Street  
Austin, Texas 78701

**Report** F8112.01-113-11  
**Test Date** 06/15/16  
**Report Date** 06/24/16

### 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(2016)e1, 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	23.2°C	Average Temperature	23.4°C
Average Relative Humidity	64%	Average Relative Humidity	39%

**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
Magnesium-Oxide Board	2438 by 1219	18.7	JetProducts JetBoard™	10.98 m <sup>2</sup>	15.89 kg/m <sup>2</sup>
	<i>Note: Secured to the top of the assembly with 41.3 mm type S, bugle head self-drilling screws spaced 152 mm and 305 mm along the perimeter and in the field, respectively, along the trusses. The JetBoard™ also received a Level 2 finish with a polymer enriched thin-set mortar and 2" wide fiberglass mesh tape.</i>				
Mineral Wool Insulation	2940 by 406.4	88.9	Roxul	10.98 m <sup>2</sup>	3.99 kg/m <sup>2</sup>
	<i>Note: Friction fit into joist cavities</i>				
Cold Formed Steel Members	2889 by 88.9	304.8	FRAMECAD	9 truss	17.51 kg/truss
	<i>Note: The structural members consisted of 18 gauge galvanized steel assembled into a truss system. Nine trusses were secured together with 305 mm by 305 mm by 88.9 mm members to create a nominal 406 mm on center truss spacing.</i>				
RC-2 ProPlus™ Resilient Channel	3353 by 63.5	12.7	ClarkDietrich	23.5 lin m	0.48 kg/m
	<i>Note: Secured perpendicular to the underside of the trusses with 19.1 mm #8 self-drilling screws in each leg of the channel at a spacing of 406 mm on center.</i>				
Gypsum Panel	1219 by 3023	15.9	National Gypsum Gold Bond® Fire-Shield® Type X	10.98 m <sup>2</sup>	11.23 kg/m <sup>2</sup>
	<i>Note: The gypsum panels were fastened to the resilient channels on 305 mm centers with 28.6 Type S bugle head drywall screws. The gypsum panels received a Level 2 finish with joint compound using 2" wide paper tape.</i>				

## Comments

The total weight of the floor/ceiling assembly was 510.5 kg. Intertek-ATI will store samples of the test specimen for four years. Photographs of the test specimen are included in the attachments. The client did not supply drawings of the test specimen.

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.

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FOR INTERTEK-ATI:

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Daniel B. Mohler  
Project Lead - Acoustical Testing

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Jordan Strybos  
Project Manager - Acoustical Testing

Attachments (7 Pages): This report is complete only when all attachments are included.

*\* Stated by Client/Manufacturer*

*N/A - Non Applicable*



### Revision Log

<u>Revision</u>	<u>Date</u>	<u>Page(s)</u>	<u>Description</u>
R0	06/24/16	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	INT00127	01/16
Receive Room Microphone	PCB Piezotronics	378C20	65968	12/15
Receive Room Microphone	PCB Piezotronics	378C20	65586	02/16
Receive Room Microphone	PCB Electronics	378C20	INT00204	12/15
Receive Room Microphone	PCB Piezotronics	378C20	65969	12/15
Receive Room Microphone	PCB Piezotronics	378B20	65320	08/15
Receive Room Environmental Indicator	Comet	T7510	63810	10/15
			63811	10/15
Source Room Microphone	PCB Piezotronics	378B20	63738	05/16
Source Room Microphone	PCB Piezotronics	378B20	63739	05/16
Source Room Microphone	PCB Piezotronics	378B20	63740	05/16
Source Room Microphone	PCB Piezotronics	378B20	63742	05/16
Source Room Microphone	Scantek	378B20	63741	05/16
Source Room Environmental Indicator	Comet	T7510	63812	11/15
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	65351	02/16

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

### Test Chambers

VT Receive Room Volume	157.31 m <sup>3</sup>
VT Source Room Volume	190 m <sup>3</sup>





F8112.01-113-11-R0

**AIRBORNE SOUND TRANSMISSION LOSS**  
ASTM E 90



<b>Test Date</b>	06/15/16
<b>Data File No.</b>	F8112.01
<b>Client</b>	FRAMECAD America
<b>Description</b>	18.7 mm JetProducts JetBoard™ Magnesium-Oxide Board, 88.9 mm Roxul Mineral Wool Insulation, 304.8 mm FRAMECAD Cold Formed Steel Members, 12.7 mm ClarkDietrich RC-2 ProPlus™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Daniel B. Mohler

Freq (Hz)	Background SPL (dB)	Absorption (m <sup>2</sup> )	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	38.3	16.9	109	86	21	3.60	-
100	32.2	15.1	106	81	24	2.40	-
125	30.9	10.8	105	75	30	1.10	8
160	28.1	10.4	107	74	34	1.70	7
200	23.0	11.6	104	64	41	1.60	3
250	24.1	11.7	104	55	50	0.70	0
315	22.4	11.4	106	54	53	0.80	0
400	17.6	9.5	105	52	55	0.40	0
500	22.0	9.1	105	52	55	0.40	0
630	18.0	9.1	106	52	56	0.40	0
800	16.9	8.9	105	49	59	0.40	0
1000	15.1	9.0	105	48	59	0.30	0
1250	12.1	9.0	105	47	60	0.40	0
1600	8.1	8.9	105	48	58	0.50	0
2000	5.8	9.6	104	51	54	0.40	4
2500	4.7	10.6	103	47	55	0.30	3
3150	4.7	11.1	104	45	59	0.40	0
4000	5.0	12.4	104	42	62	0.30	0
5000	5.7	14.1	104	36	66	0.40	-
6300	6.2	17.2	98	25	71	0.70	-
8000	6.6	21.8	97	19	77	0.90	-
10000	6.8	27.0	92	10	79	0.60	-

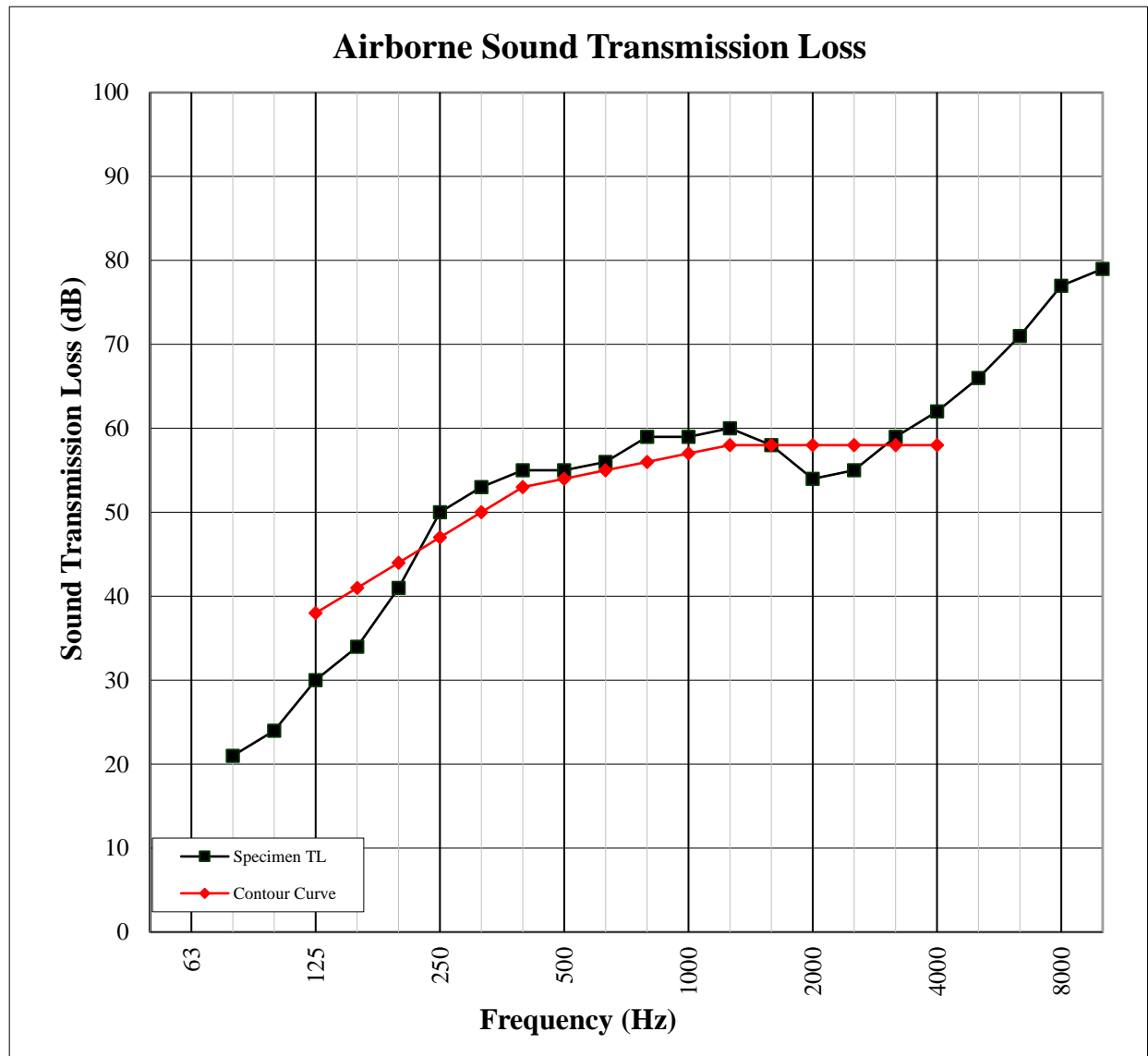
**STC Rating**      **54**      (*Sound Transmission Class*)

**Deficiencies**      **25**      (*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

**AIRBORNE SOUND TRANSMISSION LOSS**  
ASTM E 90

<b>Test Date</b>	06/15/16
<b>Data File No.</b>	F8112.01
<b>Client</b>	FRAMECAD America
<b>Description</b>	18.7 mm JetProducts JetBoard™ Magnesium-Oxide Board, 88.9 mm Roxul Mineral Wool Insulation, 304.8 mm FRAMECAD Cold Formed Steel Members, 12.7 mm ClarkDietrich RC-2 ProPlus™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Daniel B. Mohler





F8112.01-113-11-R0



**IMPACT SOUND TRANSMISSION**  
ASTM E 492

<b>Test Date</b>	06/15/16
<b>Data File No.</b>	F8112.01
<b>Client</b>	FRAMECAD America
<b>Description</b>	18.7 mm JetProducts JetBoard™ Magnesium-Oxide Board, 88.9 mm Roxul Mineral Wool Insulation, 304.8 mm FRAMECAD Cold Formed Steel Members, 12.7 mm ClarkDietrich RC-2 ProPlus™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Daniel B. Mohler

<b>Freq</b> (Hz)	<b>Background SPL</b> (dB)	<b>Absorption</b> (m <sup>2</sup> )	<b>Normalized Impact SPL</b> (dB)	<b>95% Confidence Limit</b>	<b>Number of Deficiencies</b>
80	38.6	16.8	76	1.3	-
100	32.9	14.1	75	2.2	0
125	30.6	10.2	75	2.7	0
160	26.1	9.9	76	3.7	1
200	20.8	10.8	74	2.1	0
250	23.1	10.9	70	0.6	0
315	20.7	11.4	70	0.5	0
400	16.7	9.4	71	0.7	0
500	21.9	9.3	73	0.3	0
630	17.5	9.0	72	0.7	0
800	16.8	8.8	69	0.3	0
1000	14.1	9.0	68	0.4	0
1250	11.6	8.9	66	0.2	0
1600	8.4	8.8	63	0.3	0
2000	5.6	9.5	64	0.2	3
2500	5.0	10.4	65	0.3	7
3150	4.9	11.0	63	0.3	8
4000	5.3	12.4	60	0.4	-
5000	5.8	14.1	55	0.5	-
6300	6.2	17.2	49	1.2	-
8000	6.6	21.6	43	1.4	-
10000	6.8	26.8	39	1.7	-

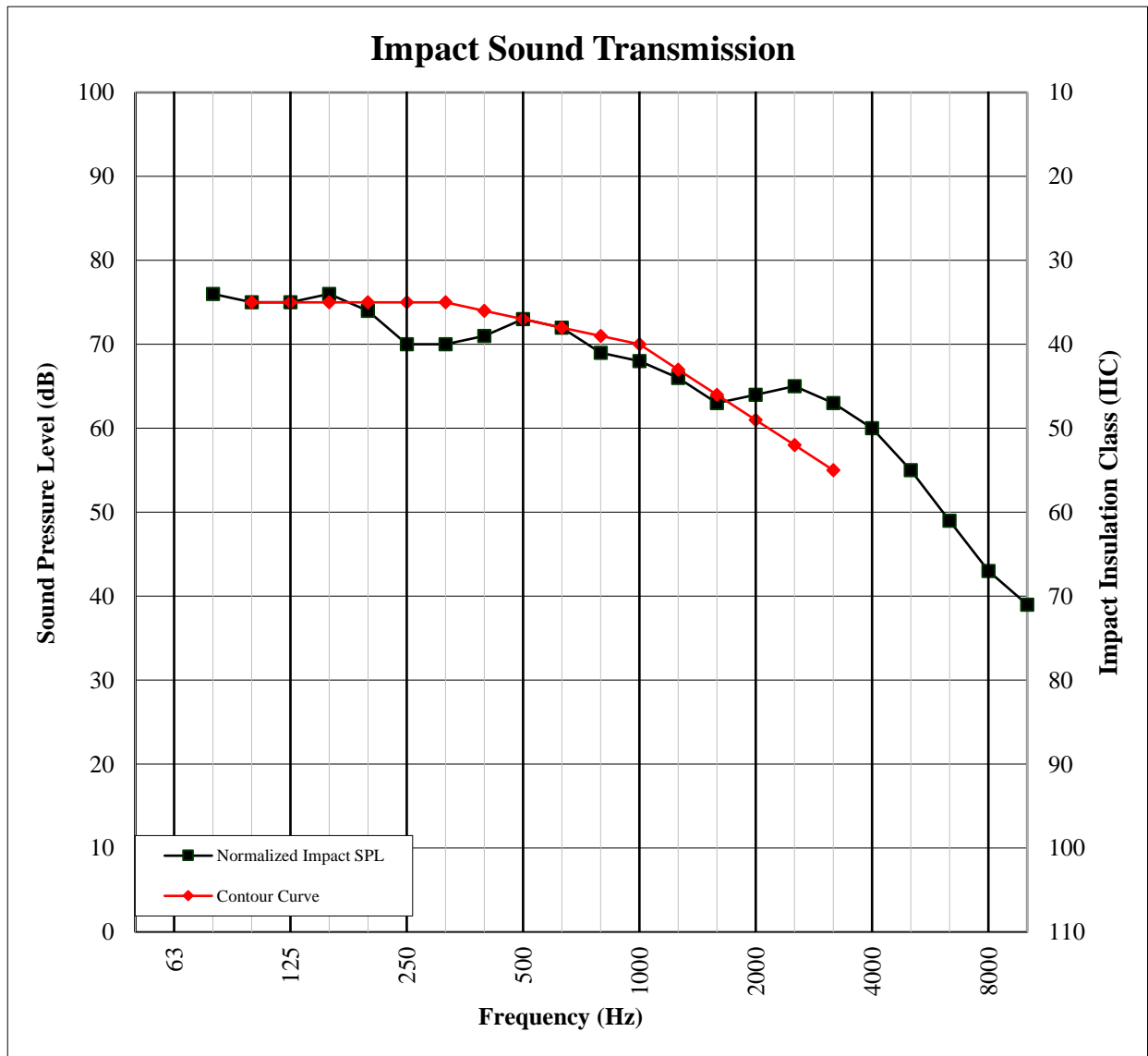
**IIC Rating**      **37**      (*Impact Insulation Class*)

**Deficiencies**      **19**      (*Sum of Deficiencies*)

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

**IMPACT SOUND TRANSMISSION**  
ASTM E 492

<b>Test Date</b>	06/15/16
<b>Data File No.</b>	F8112.01
<b>Client</b>	FRAMECAD America
<b>Description</b>	18.7 mm JetProducts JetBoard™ Magnesium-Oxide Board, 88.9 mm Roxul Mineral Wool Insulation, 304.8 mm FRAMECAD Cold Formed Steel Members, 12.7 mm ClarkDietrich RC-2 ProPlus™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Daniel B. Mohler



**Photographs**



**Construction of Test Specimen**



**Construction of Test Specimen**

**Photographs**



**Close-Up of Test Specimen**



**Receive Room View of Test Specimen Installation**