



E6968.08-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 90 AND ASTM E 492

Rendered to

PAC INTERNATIONAL, LLC

Series/Model: RSIC-1 Classic Spaced 16" x 48" OC Traditional Layout

Specimen Type: Weyerhaeuser TJI Assembly - 302 mm

Overall Size: 3023 mm by 3632 mm

STC 61
IIC 56

Test Specimen Identification:

Floor Topping: 6.9 mm ECORE International Forest rx Rubber Back Sheet Vinyl

Subfloor: 18.8 mm Oriented Strand Board Sheathing

Subfloor: 18.8 mm Oriented Strand Board Sheathing

Insulation: 88.9 mm CertainTeed R-11 Fiberglass Insulation

Joist: 301.63 mm Weyerhaeuser TrusJoist® 360 TJI Joist

Ceiling Isolation: 28 mm PAC International RSIC-1 Classic Isolation Clips

Ceiling Isolation: 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel

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

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

Reference should be made to Intertek-ATI Report E6968.08-113-11 for complete test specimen description. This page alone is not a complete report.



Acoustical Performance Test Report

PAC INTERNATIONAL, LLC
6585 Whispering Sands Drive
Las Vegas, Nevada 89131

Report E6968.08-113-11
Test Date 04/30/15
Report Date 06/17/15

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 twenty 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 twenty 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	20.6°C	Average Temperature	19.7°C
Average Relative Humidity	49%	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
Rubber Back Sheet Vinyl	3023 by 1829	6.9	ECORE International Forest rx	10.98 m ²	6.6 kg/m ²
	<i>Note: Loose laid onto the subfloor</i>				
Oriented Strand Board Sheathing	1219 by 2438	18.8	N/A	10.98 m ²	10.25 kg/m ²
	<i>Note: Fastened to the additional sheathing layer with 25.4 mm screws on 203 mm centers along perimeter and 305 mm centers in the field.</i>				
Oriented Strand Board Sheathing	1219 by 2438	18.8	N/A	10.98 m ²	10.25 kg/m ²
	<i>Note: Fastened to joists with 76 mm by 3 mm framing nails on 203 mm centers along perimeter and 305 mm centers in the field.</i>				
Fiberglass Insulation	2962 by 584	88.9	CertainTeed R-11	10.98 m ²	1.25 kg/m ²
	<i>Note: Secured at the top of joist cavity</i>				
TJI Joist	57.2 by 3023	301.6	Weyerhaeuser TrusJoist® 360	21.16 lin m	4.46 kg/m
	<i>Note: Fastened to perimeter frame on 610 mm centers</i>				
Isolation Clips	76.9 by 35.6	28.0	PAC International RSIC-1 Classic	36 clips	0.06 kg/clip
	<i>Note: Fastened to joists in a 610 mm by 1220 mm traditional pattern.</i>				

Test Specimen Materials and Installation Details (Continued)

Material	Dimensions (mm)	Thickness (mm)	Manufacturer and Series	Quantity	Average Weight
Furring/Hat Channel	3657.6 by 76.2	22.3	ClarkDietrich 087F125-18	29.1 lin m	0.48 kg/m
	<i>Note: Installed into the isolation clips.</i>				
Gypsum Panel	1219 by 3023	15.9	National Gypsum Gold Bond® Fire-Shield® Type X	10.98 m ²	11.23 kg/m ²
	<i>Note: Fastened to furring channels with 25.4 mm type S screws. Seams and perimeter sealed with acoustical caulk.</i>				
Gypsum Panel	1219 by 3023	15.9	National Gypsum Gold Bond® Fire-Shield® Type X	10.98 m ²	11.23 kg/m ²
	<i>Note: Fastened to furring channels with 25.4 mm type S screws. Seams and perimeter sealed with acoustical caulk. Seams and screws covered with foil tape.</i>				

Comments

The total weight of the floor/ceiling assembly was 668.6 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.

This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

FOR INTERTEK-ATI:


Digitally Signed by: Leeland Hoover

Leeland S. Hoover
Technician II - Acoustical Testing


Digitally Signed by: Bradley Hunt

Bradlay D. Hunt
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

<u>Revision</u>	<u>Date</u>	<u>Page(s)</u>	<u>Description</u>
R0	06/17/15	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	06/14
Receive Room Microphone	PCB Piezotronics	378B20	64340	04/14
Receive Room Microphone	PCB Piezotronics	378B20	63744	04/14
Receive Room Microphone	PCB Piezotronics	378B20	63745	04/14
Receive Room Microphone	PCB Piezotronics	378B20	63746	04/14
Receive Room Microphone	PCB Piezotronics	378B20	63747	04/14
Receive Room Environmental Indicator	Comet	T7510	63810 63811	09/14
Source Room Microphone	PCB Piezotronics	378B20	63738	04/14
Source Room Microphone	PCB Piezotronics	378B20	63739	04/14
Source Room Microphone	PCB Piezotronics	378B20	63748	04/14
Source Room Microphone	PCB Piezotronics	378B20	63742	04/14
Source Room Microphone	PCB Piezotronics	378B20	63741	04/14
Source Room Environmental Indicator	Comet	T7510	63812	09/14
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	65351	11/14

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

Test Chambers

VT Receive Room Volume	157.31 m ³
VT Source Room Volume	190 m ³



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AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	04/30/15
Data File No.	E6968.08
Client	PAC International, LLC
Description	6.9 mm E CORE International Forest rx Rubber Back Sheet Vinyl, 18.8 mm Oriented Strand Board Sheathing, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm CertainTeed R-11 Fiberglass Insulation, 301.63 mm Weyerhaeuser TrusJoist® 360 TJI Joist, 28 mm PAC International RSIC-1 Classic Isolation Clips, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m ²
Technician	Leeland S. Hoover

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	65.9	18.0	108	69	39	2.90	-
100	46.9	13.6	107	69	39	2.30	-
125	38.3	10.3	105	66	41	0.90	4
160	36.2	9.6	107	66	43	1.10	5
200	30.8	11.2	106	59	48	1.20	3
250	28.9	11.1	106	54	53	0.80	1
315	29.2	10.6	106	53	54	0.80	3
400	27.3	9.3	105	52	56	0.40	4
500	24.5	8.9	105	50	57	0.70	4
630	26.3	8.9	106	50	59	0.60	3
800	27.7	8.6	106	47	61	0.40	2
1000	25.7	8.6	105	44	63	0.30	1
1250	25.1	9.0	106	43	65	0.60	0
1600	21.3	8.8	106	41	67	0.30	0
2000	14.6	9.9	106	40	68	0.30	0
2500	9.7	10.7	105	39	68	0.30	0
3150	8.2	11.5	105	34	71	0.30	0
4000	6.6	13.3	105	31	73	0.60	0
5000	5.8	15.8	104	28	75	0.70	-
6300	5.9	19.9	98	19	78	0.90	-
8000	6.1	26.7	97	14	80	1.10	-
10000	6.2	32.3	92	8	81	0.90	-

STC Rating **61** *(Sound Transmission Class)*

Deficiencies **30** *(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

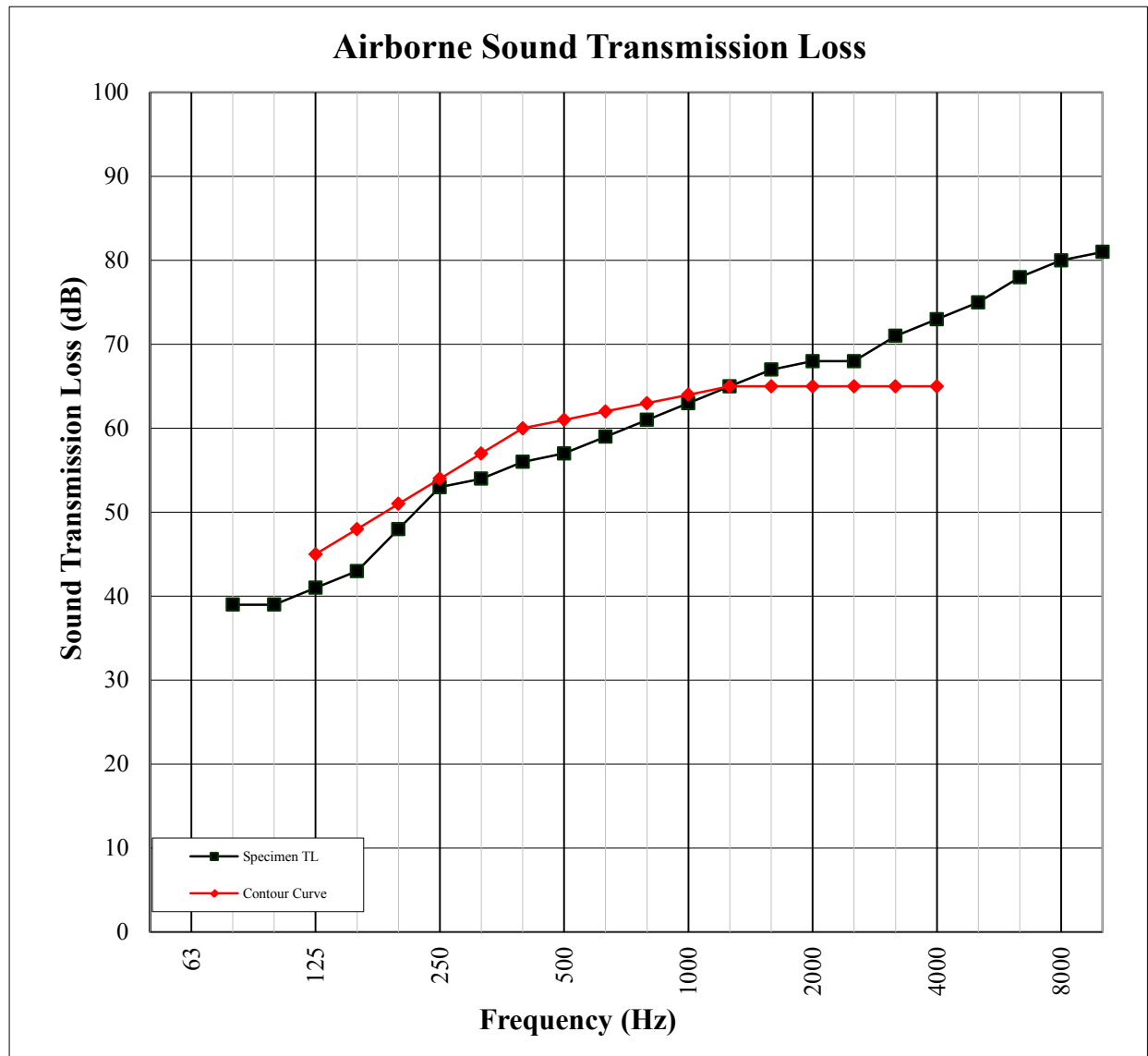


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AIRBORNE SOUND TRANSMISSION LOSS ASTM E 90

Test Date	04/30/15
Data File No.	E6968.08
Client	PAC International, LLC
Description	6.9 mm E CORE International Forest rx Rubber Back Sheet Vinyl, 18.8 mm Oriented Strand Board Sheathing, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm CertainTeed R-11 Fiberglass Insulation, 301.63 mm Weyerhaeuser TrusJoist® 360 TJI Joist, 28 mm PAC International RSIC-1 Classic Isolation Clips, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m ²
Technician	Leeland S. Hoover





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IMPACT SOUND TRANSMISSION
ASTM E 492

Test Date	04/30/15
Data File No.	E6968.08
Client	PAC International, LLC
Description	6.9 mm E CORE International Forest rx Rubber Back Sheet Vinyl, 18.8 mm Oriented Strand Board Sheathing, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm CertainTeed R-11 Fiberglass Insulation, 301.63 mm Weyerhaeuser TrusJoist® 360 TJI Joist, 28 mm PAC International RSIC-1 Classic Isolation Clips, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m ²
Technician	Leeland S. Hoover

Freq (Hz)	Background SPL (dB)	Absorption (m²)	Normalized Impact SPL (dB)	95% Confidence Limit	Number of Deficiencies
80	66.0	18.2	67	3.1	-
100	48.1	12.2	64	1.9	8
125	39.1	9.4	63	2.5	7
160	37.5	9.3	60	0.6	4
200	33.1	10.6	60	1.0	4
250	31.7	11.3	56	1.1	0
315	31.9	10.8	54	0.9	0
400	29.7	9.6	49	1.0	0
500	28.8	8.9	44	1.1	0
630	29.1	8.9	41	0.8	0
800	29.1	8.6	36	1.0	0
1000	28.0	8.8	30	0.3	0
1250	28.7	9.1	27	0.9	0
1600	23.4	8.9	22	0.4	0
2000	15.6	9.8	18	0.5	0
2500	10.2	10.7	13	0.4	0
3150	8.3	11.6	10	0.7	0
4000	6.9	13.3	9	0.5	-
5000	6.2	15.8	8	0.7	-
6300	6.4	19.9	8	0.9	-
8000	7.0	26.3	9	0.9	-
10000	6.4	32.5	9	0.9	-

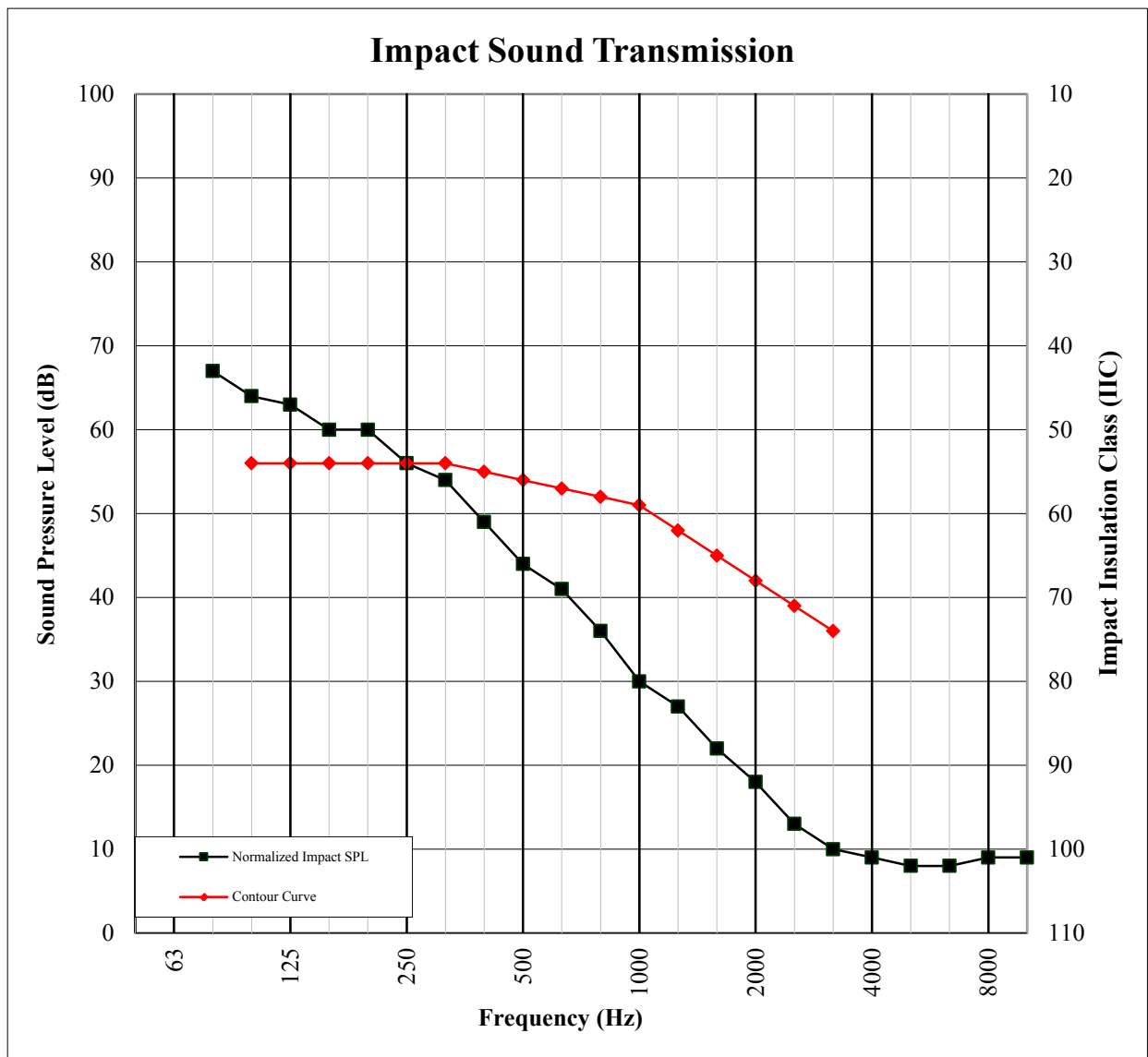
IIC Rating **56** *(Impact Insulation Class)*
Deficiencies **23** *(Sum of Deficiencies)*

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

IMPACT SOUND TRANSMISSION

ASTM E 492

Test Date	04/30/15
Data File No.	E6968.08
Client	PAC International, LLC
Description	6.9 mm E CORE International Forest rx Rubber Back Sheet Vinyl, 18.8 mm Oriented Strand Board Sheathing, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm CertainTeed R-11 Fiberglass Insulation, 301.63 mm Weyerhaeuser TrusJoist® 360 TJI Joist, 28 mm PAC International RSIC-1 Classic Isolation Clips, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m ²
Technician	Leeland S. Hoover



Photographs



Source Room View of Test Specimen Installation



Receive Room View of Test Specimen Installation