“G”

The Grove
Event Noise Study

Silverado Resort & Spa Project
Minor Modification to Non-Winery Use Permit
P24-00141-MM
Planning Commission Hearing – October 15, 2025

2 June 2025

Scott Greenwood-Meinert
Coblentz Patch Duffy & Bass LLP
sgreenwood-meinert@coblentzlaw.com

Subject: **The Grove at Silverado Resort –Noise Study**
Salter Project 24-0381

Dear Scott:

This report studies noise of indoor events within the proposed Grove Pavilion Building of Silverado Resort in Napa, CA. We conducted continuous exterior noise measurements onsite between 28 August and 3 September 2024 which included three separate outdoor events. We have also reviewed the 100% CD drawing set received on 5 May 2025. This letter summarizes our observations and site conditions, outdoor event types, measurement results, and noise projections.

Site Conditions

Refer to **Appendix A** for an aerial view of the entire Silverado Resort and Golf Course which is bounded by Atlas Peak Road, Hillcrest Drive, and Westgate Drive. The current outdoor event area is outlined in red. The resort encompasses most of the adjacent area to the north, west, and south. Within the boundary of Silverado Resort are multiple residential communities including The Grove to the east, the Oak Creek East to the Northeast, and Silver Trail residences to the Southwest. **Figure 1** below shows a closer view of the event area, adjacencies, and two noise measurement locations LT-1 and LT-2.

Figure 1: Site Plan

The current event courtyard includes an outdoor stage and seating area. Measurement kit LT-1 was attached to the courtyard perimeter fence between the stage and residences to the east. The second measurement kit LT-2 was attached to a tree further east.

To the south of the courtyard and stage is an additional outdoor pavilion which includes a small platform stage and seating area along the dry creek bed.

Measured Event Noise Levels

Current event sizes range from small groups to over 600 people. Typical ceremonies include reinforced speech or amplified program audio. Some larger events may include live DJs and bands.

Noise levels were collected between 28 August and 3 September 2024. Refer to **Figure 1** for measurement locations. During the long-term measurements three separate events took place in the courtyard event area between 5 and 10 PM on August 28th and 31st, and September 1st. The event types, headcount, and entertainment information is summarized below in addition to the maximum noise levels measured during those events at location LT-2.

Event Type	Date	Headcount	Maximum Leq (30min) LT-2	Notes
Dinner	Aug 28th	25	57 dBA	Amplified Violin & Background Music
Wedding	Aug 31st	200	78 dBA	14-piece Amplified Band
Wedding	Sept 1st	100	73 dBA	DJ

The measured events above included headcounts of 25 to 200 people with a larger 14-piece band. This represents a good range of event sizes, specifically, the August 31st event would represent the upper limit of anticipated amplified noise levels.

Future Building Summary

Two new future buildings include a lounge further west and a pavilion building in the location of the current outdoor courtyard and stage (measurement location LT-1). Refer to **Figure 2** below.

The smaller lounge building includes bride and groom rooms which will not be sources of noise during events.

The “Grove Event Lawn” in the figure below is in the same location as the current open-air pavilion and seating area.

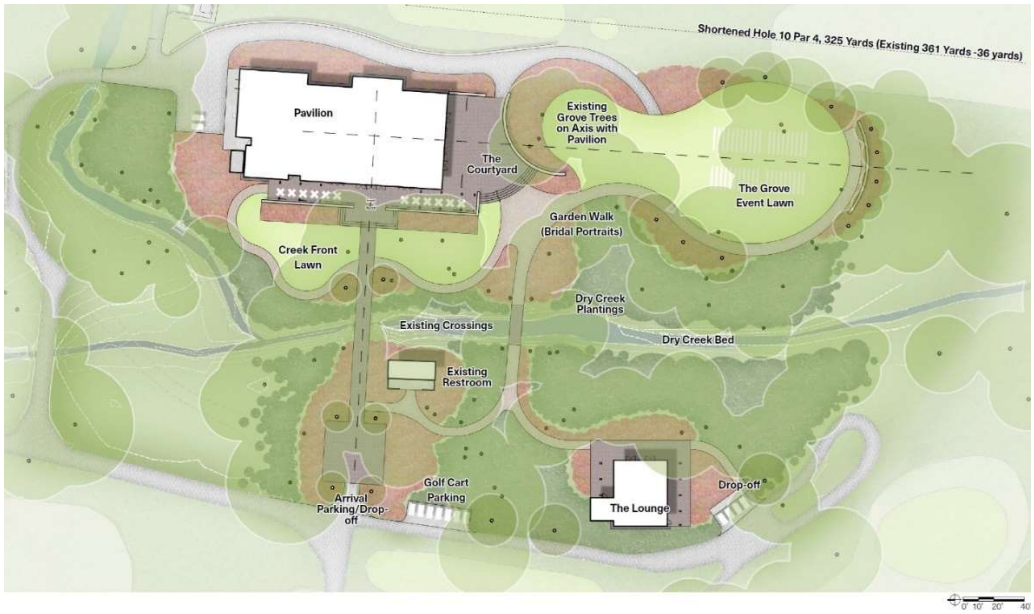


Figure 2: Lounge and Pavilion Building Locations

Noise Reduction of Pavilion Treatment and Exterior Shell

From discussions with Silverado Resort we understand amplified events will primarily be moved indoors to the new Pavilion Building event space. From review of the 100% CD drawing set, the exterior shell of the pavilion building includes gypsum board walls, glass entry doors, and glass walls on the south and west facades. Corresponding test reports for the chosen windows and doors are included in Appendix B.

Interior Acoustic Treatment

Per the Sheet A6.12 event space reflected ceiling plan, acoustic panel Type AP-1 will be used which is specified as Armstrong Woodworks. MechoShade blackout shades are also planned for exterior glazing. The ceiling panels and window shades will effectively reduce overall noise buildup within the space. Once the event space is occupied, the human bodies will further reduce noise buildup.

Exterior Gypsum Board Walls

These walls are tagged as Type W1. Per Detail 1 on Sheet A8.03, this is an insulated single metal stud wall with one layer of gypsum board on the interior. The exterior face is comprised of plywood, one-inch-thick sheathing, and polyash siding finish.

Based on laboratory test reports for a standard three-layer interior wall, we expect this assembly to be STC 45.

Exterior Glass Swing Doors

Exterior swing doors 102, 103, 104, 106, and 108 will be Sierra Pacific model C-OD-3684-1, which is STC 33 per the **Appendix B** Western Electro Acoustic Lab Test TL03-261. The installed doors shall match the tested product (glass assembly, hardware, frame etc.).

Specifically, the tested STC 33 system is comprised of 3/4-inch-thick glass with the following build-up:

- 7/32-inch laminated glass with 0.03-inch interlayer
- 3/8-inch airspace
- 1/8-inch double strength glass

The door hardware includes perimeter kerfed gaskets, door sweep, door shoe, weather stripping etc. per the test report.

Exterior Glass BiFold Doors

Exterior BiFold doors 101, 105, and 107 will be Nanawall model SL70, which is STC 41 per the **Appendix B** SG-Bauakustik Test Report Number 1821-003-19 Annex 16. The installed doors shall match the tested product (glass assembly, hardware, frame etc.).

Specifically, the tested STC 41 system is comprised of the SGG Climaplus XN (43 dB) with the following build-up:

- VSG STADIP Silence - 44.2
- 20 mm glass interspace (Argon-filling)
- ESG SECURIT XN II 6 mm

Exterior Glazing

Exterior windows 1 to 14 will be Sierra Pacific aluminum clad fixed windows, which are STC 34 per the **Appendix B** Element Materials Technology Lab report ESP029747P-3. The installed windows shall match the tested product (glass assembly, hardware, frame etc.).

Specifically, the tested STC 34 system is comprised of 15/16-inch insulated laminated glass with 3/16-inch glass, 1/2-inch airspace, and 1/4-inch laminated glass.

Aggregate Performance of Exterior Walls

Aggregate STC performance was calculated for each Event Space wall per the attached **Appendix B** test reports and exterior elevations.

- East Wall – STC 44
- North Wall – STC 35
- West Wall – STC 35

Summary Comments

General Comments

Per discussions with Silverado Resort we understand there will be no change in event types, maximum size, or duration compared to existing operations.

Resultant Indoor Event Noise Levels at Property Line

Refer to Figure 3. Noise of indoor events is projected to the property line assuming exterior doors and windows shut. At the nearest property line at the Grove community (near LT-2 in Figure 1), the measured event noise levels are expected to be reduced by approximately 35 dB based on the anticipated aggregate noise reduction of the exterior shell.

Figure 3: Resultant Noise at LT-2

* * *

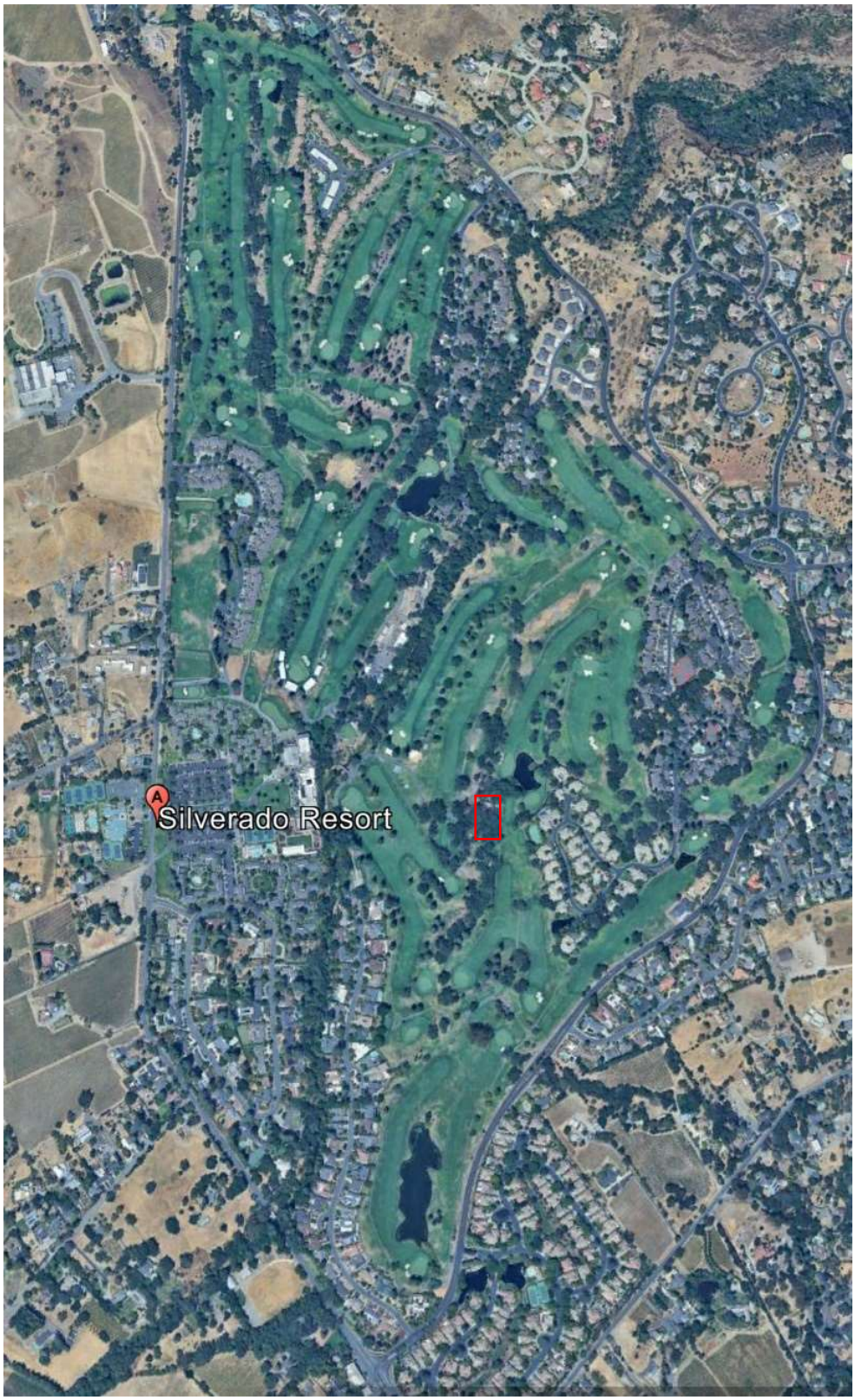
This concludes our comments. Please call if you have any questions.

Sincerely,

SALTER

Dennis Mill
Senior Associate

Appendix A – Aerial View of Silverado Resort



Appendix B – Laboratory Test Reports for Event Space Exterior Windows & Doors

SG-Bauakustik

Institut für schalltechnische Produktoptimierung

Test report with assessment

No. 1821-003-19 dated 20th August 2019

Airborne Sound Insulation of the Acoustic SL70 (Acoustical 70) Folding Glass Wall in Laboratory

Manufacturer: Solarlux GmbH
Industriepark 1
49324 Melle

Client: Nana Wall Systems, Inc.
100 Meadowcreek Dr. #250
Corte Madera, CA 94925
United States of America

Test Object: Folding Glass Wall, type Acoustic SL70 (Acoustical 70) with flush sill options, dimensions 3.000 mm x 2.500 mm

Contract: Ascertainment of Airborne Sound Insulation according to DIN EN ISO 10140-2 in Laboratory

Author: M. Eng. Laszlo Pobloth

SG-Bauakustik
Institut für schalltechnische Produktoptimierung
Mainstraße 15
45478 Mülheim an der Ruhr

1. Definition of Project and General Details

1.1 Definition of project

Solarlux GmbH, Melle, manufactures and sells (among others) Folding Glass Walls which can be used as partitions in the interior of buildings or for closing off heated living quarters from the outside area.

The system to be tested, type Acoustic SL70 (Acoustical 70), is a Folding Glass Wall consisting of aluminum with an installation depth of 70 mm, which is equipped with concealed fittings and sliding locking-system. The tested 3-panel wall construction is provided with a top-track as well as a flush sill and has vertical seals at the wing joints as well as horizontal seals above and below on the top-track and flush sill.

The airborne sound insulation of the construction in different configurations in direct transmission in a functional state according to DIN EN ISO 10140-2 in the test stand with suppressed flanking transmission according to DIN EN ISO 10140-5 is to be ascertained.

1.2 Manufacturer of test arrangement

Solarlux GmbH
Industriepark 1
49324 Melle

1.3 Client requesting test

Nana Wall Systems, Inc.
100 Meadowcreek Dr. #250
Corte Madera, CA 94925
United States of America

2. Set-up of Test Objects and Test Arrangements

2.1 Laboratory

The sample element was installed in the test stand belonging to the test institute by the manufacturer's installers in order to ascertain the airborne sound insulation with suppressed flanking transmission in accordance to

DIN EN ISO 10140-5.

The maximum sound reduction index $R`_{max}$ of the test stand when a type A wall (lightweight wall) was installed in accordance to DIN EN ISO 10140-5, Appendix A.2.2.1.1 amounted to:

f_{Terz} in Hz	**50**	**63**	**80**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**
$R`_{max}$ in dB	29,2	40,8	34,6	44,1	44,3	49,6	55,7	59,6	61,6	63,8	68,1

f_{Terz} in Hz	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**
$R`_{max}$ in dB	70,6	72,0	75,1	74,6	73,2	73,3	78,7	83	86,2	90,5

The rated sound reduction index amounted to:

$R`_{w, max}$ = 68 dB.

The enclosing wall of the test object was manufactured by skilled test institute employees. In order to achieve an adequately high level of sound insulation, the wall panels of the altogether approx. d (= thickness) = 500 mm thick wall were built up on both sides of the butt joint with freestanding metal stands.

2.2 Set-up of test object

The tested sample element is a Folding Glass Wall made of aluminum with a construction depth of 70 mm. The construction consists of three panels, with side stop profiles, one flush sill, one top-track as well as a sliding lock. The Folding sliding-panels which relate to one another (Panel joint width 157 mm including mullion) are moved through a roller carriage system (with concealed fittings) in the top-track and flush sill. The connection to the side wall connection is carried out with a vertical connection profile.

All tests were carried out with a flush sill (type 5-60-23-x). In order to simulate a recessed or barrier-free installation (integrated in the floor) of the flush sill, it was covered with wooden strips (d = 25 mm) in the transmission and receiving room.

The element was delivered with a surrounding frame made of wooden beams and was built-in flat in the wall of the test stand. The dimension's amount width x height = 3.000 mm x 2,500 mm or 3.250 mm x 2,750 mm with surrounding wood frame.

The Folding Glass Wall has a surface of approx. S = 7,50 m² and has a glass surface proportion of approx. 80%.

The glazing units used were provided with glass stickers. The following glazing units were used:

Type:	**SGG Climaplus XN (32 dB)**
Build-up:	ESG SECURIT 4 mm klar
	16 mm glass interspace (Argon-filling)
	ESG SECURIT XN II 4 mm

Type:	**SGG Climaplus XN (43 dB)**
Build-up:	VSG STADIP Silence - 44.2
	20 mm glass interspace (Argon-filling)
	ESG SECURIT XN II 6 mm

Type:	**SGG Climaplus XN (48 dB)**
Build-up:	VSG STADIP Silence - 55.2
	18 mm glass interspace (Argon-filling)
	VSG STADIP Silence XN - 44.2

The following build-ups were tested:

Measurement 1: Folding Glass Wall, type Acoustic SL70 (Acoustical 70)
Glazing: **SGG Climaplus XN (32 dB)**
Measurement as found

Measurement 2: Folding Glass Wall, type Acoustic SL70 (Acoustical 70)
Glazing: **SGG Climaplus XN (43 dB)**
Measurement as found

Measurement 3: Folding Glass Wall, type Acoustic SL70 (Acoustical 70)
Glazing: **SGG Climaplus XN (48 dB)**
Measurement as found

The surrounding joints between test object and test opening were sealed using silicon compound or with durable elastic filling mass respectively.

The detailed build-up of the construction can be seen in the manufacturer's construction drawings, annex 1 to 8. Annex 9 and 10 show the construction characteristics of the glazing units (stickers on glass). Annexes 11 and 12 contain photo documentation of the set-ups in the laboratory. A schematic diagram of the test set-up in the test stand is shown in annex 13.

3. Measurement and Execution of Measuring

The measurements of the rated sound reduction index R_w in dB of the test object were carried out in accordance with the requirements of the standard

- DIN EN ISO 10140-2
  "Laboratory measurement of sound insulation of building elements"
  Part 2: "Measurement of airborne sound insulation"

The measurement set-up as well as a description of measuring can be seen in annex 14 of this test report.

4. Measurement Results

The rated sound reduction index of the setups (detailed structure, see section 2.2 and Annexes 1 to 10) tested on 8th August 2019, installed in functional condition, without any influence from flanking structures can be found in the following table:

Table 1: Measurements from 8th August 2019

Measurement	Test object	R_w in dB
1 **Annex 15**	Folding Glass Wall, type Acoustic SL70 (Acoustical 70) **Glazing: SGG Climaplus XN (32 dB)** Measurement as found	**33** (33,8)
2 **Annex 16**	Folding Glass Wall, type Acoustic SL70 (Acoustical 70) **Glazing: SGG Climaplus XN (43 dB)** Measurement as found	**41** (41,6)
3 **Annex 17**	Folding Glass Wall, type Acoustic SL70 (Acoustical 70) **Glazing: SGG Climaplus XN (48 dB)** Measurement as found	**43** (43,5)

In brackets the unrounded values are given with decimal place for orientation.

The frequency dependent curve progress of the sound insulation measurements can be seen in annex 15 to 17.

5. Assessment

Nana Wall Systems, Inc., Corte Madera (USA), plans to equip the Folding Glass Wall, type Acoustic SL70 (Acoustical 70) with appropriate glazing units, depending on the requirements of the system's airborne sound insulation. Based on the measurement results obtained on configurations with different glazing's (see section 4), appropriate conclusions can be drawn on the required glazing.

Table 2: Rated sound reduction index glazing unit or overall construction

Rated sound reduction index of the glazing unit R_w [dB]	**Rated sound reduction index of the Folding Glass Wall Acoustic SL70 (Acoustical 70) R_w [dB]**
32	33
33	34
34	34
35	35
36	36
37	37
38	37
39	38
40	39
41	40
42	41
43	41
44	42
45	42
46	42
47	43
48	43

The values shown are estimated values determined based on empirical values for similar constructions as well as the measurement results.

Appendix 3 (detail 70e-2-4) shows the tested structure of the Folding Glass Wall Acoustic SL70 (Acoustical 70) with two brush seals (25-0-1065-x) on the flush sill, type 5-60-23-x. A comparable structure of the flush sill as shown in Appendix 6 and 7 (detail 70-2-12 and detail 70e-2-22) should be offered as an alternative to the tested configuration. The sealing of the two brush seals on the flush sill is carried out acoustically comparable to the tested construction on the profile of the respective flush sill (type 5-0-1001-x and type 5-0-1003-x). An influence on the rated sound reduction index of the Folding Glass Wall Acoustic SL70 (Acoustical 70) is not expected.

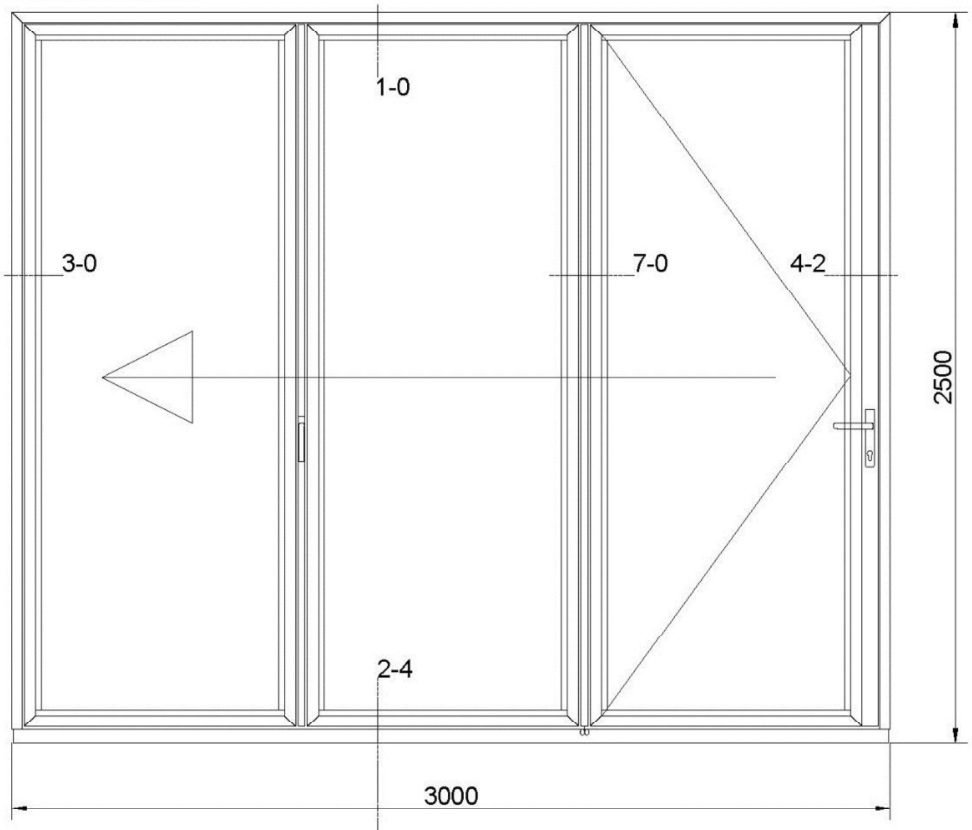
Mülheim an der Ruhr, 20th August 2019

Stefan Grüll

Laszlo Pobloth

SOLARLUX®

SL 70e
Innenansicht



Gutachterliche Stellungnahme für:
2-2
2-12
2-22

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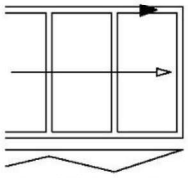
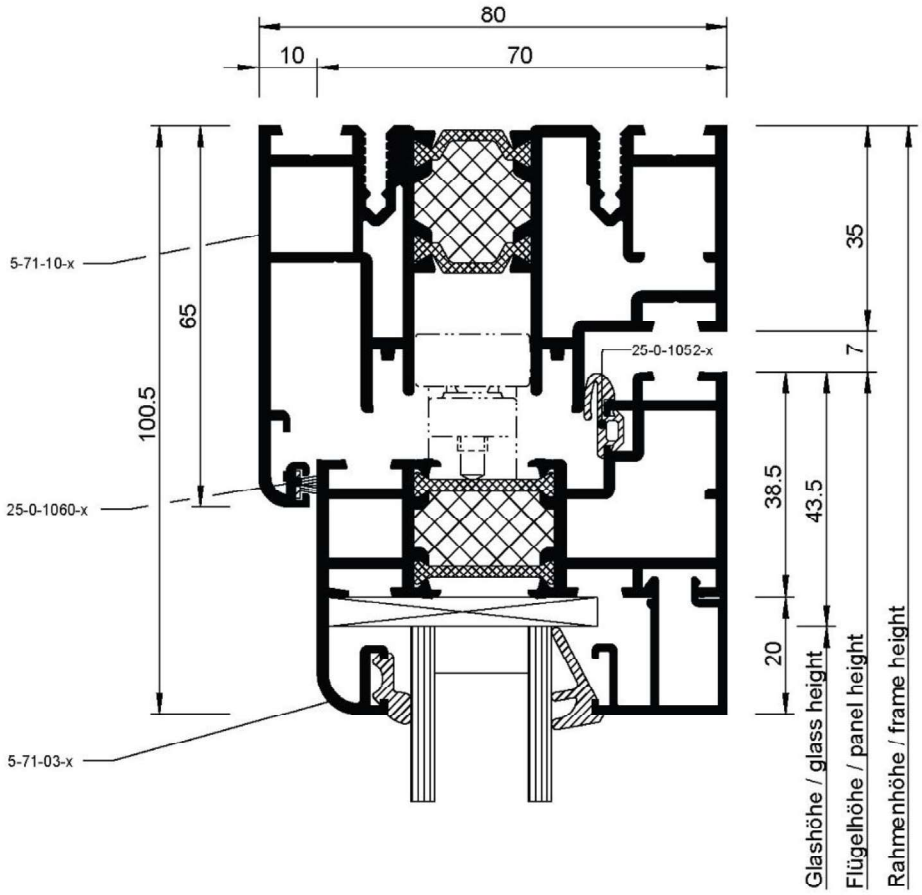
Detailschnitte / Detail Sections
Glas-Faltwand / Folding Glass Door



Detail 70e-1-0



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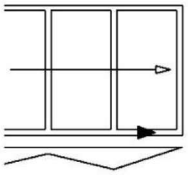
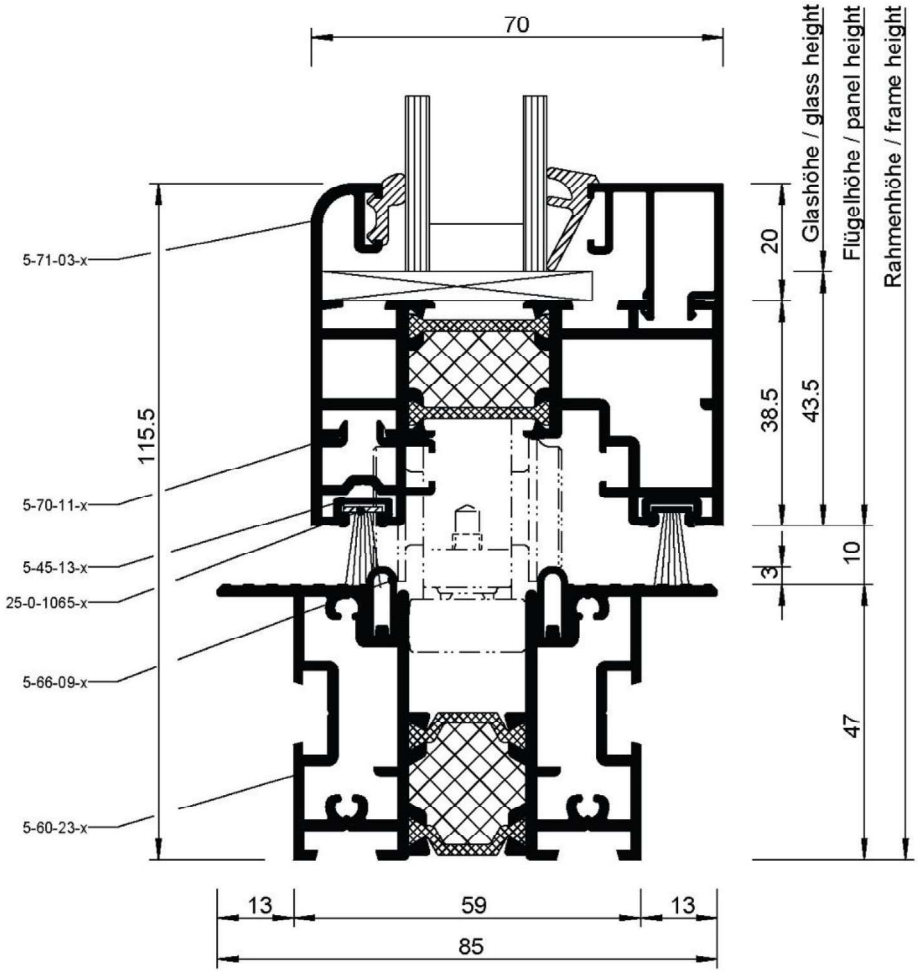


Detail 70e-2-4



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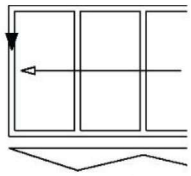
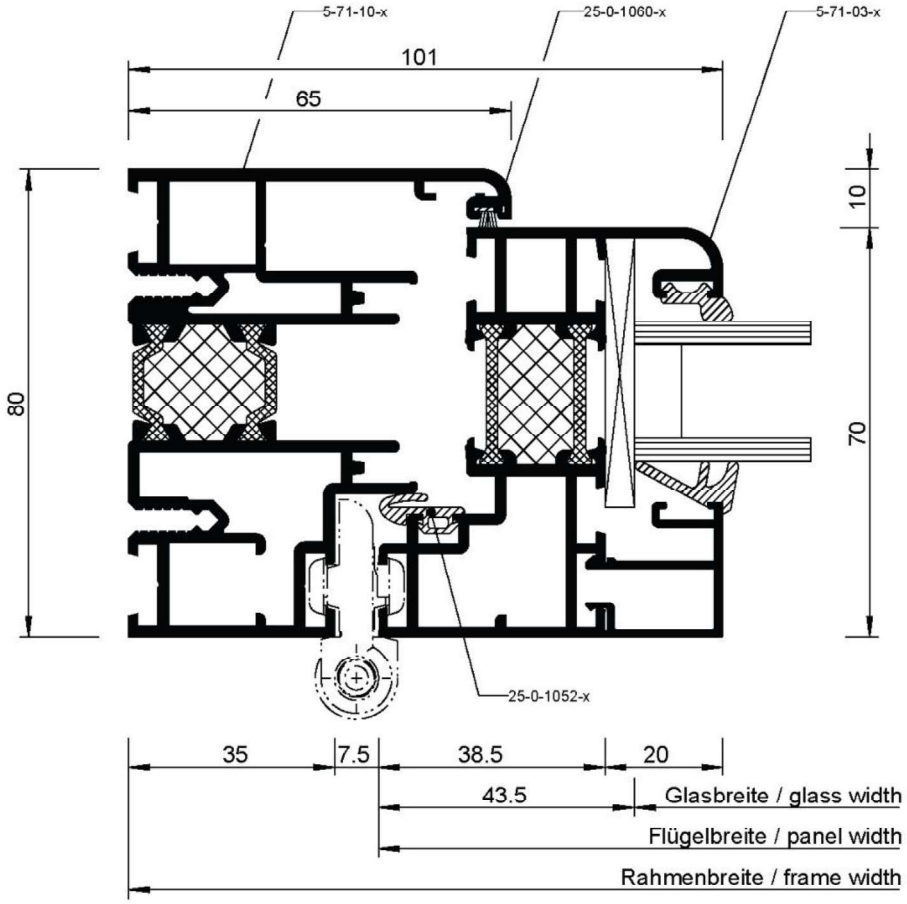


Detail 70e-3-0



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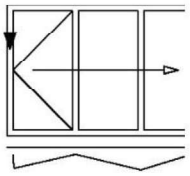
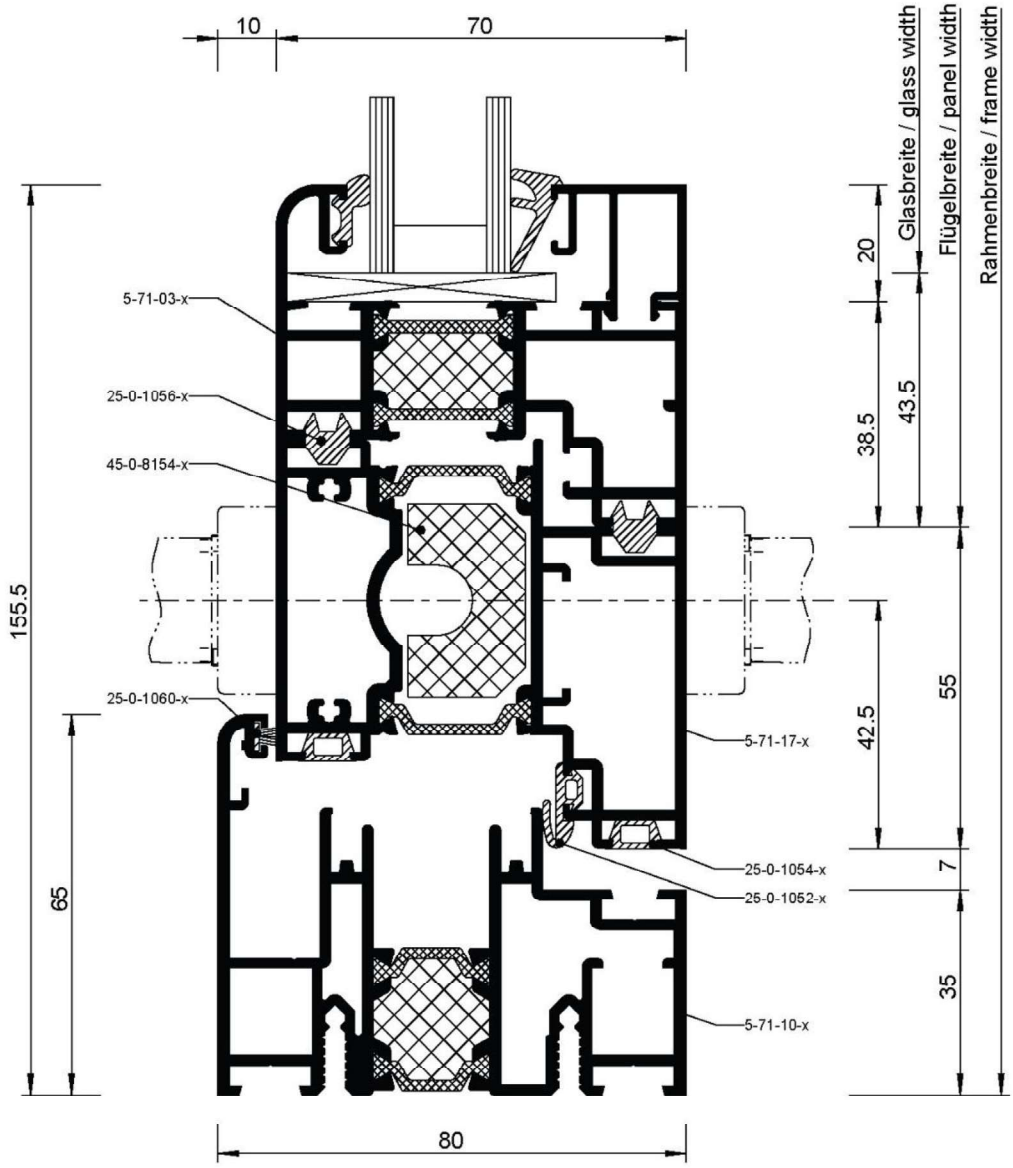


Detail 70e-4-2



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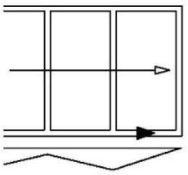
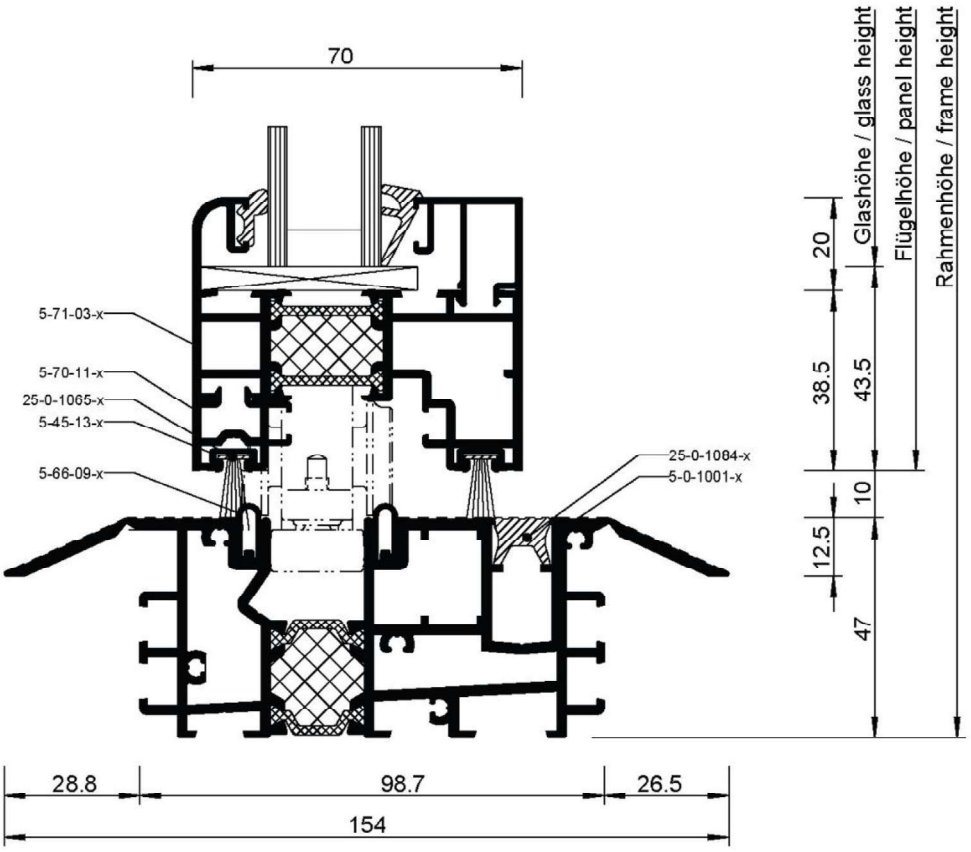


Detail 70-2-12



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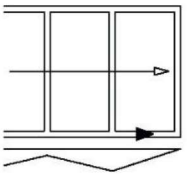
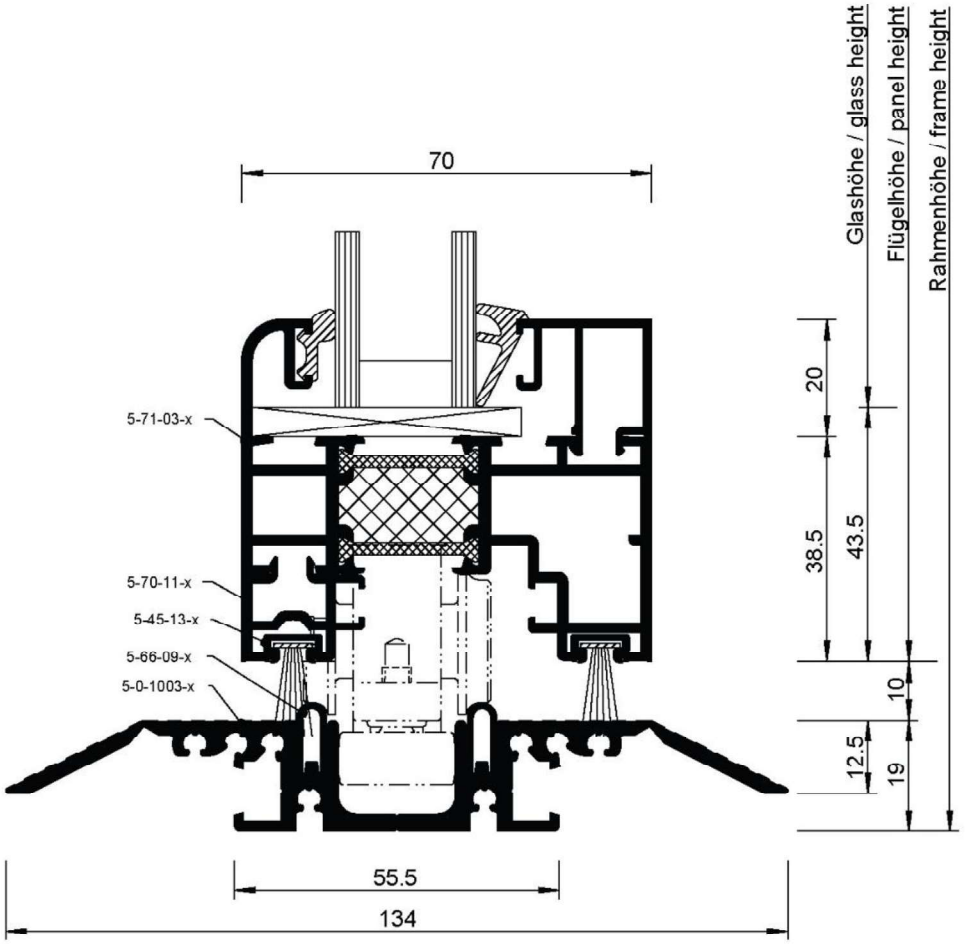


Detail 70e-2-22



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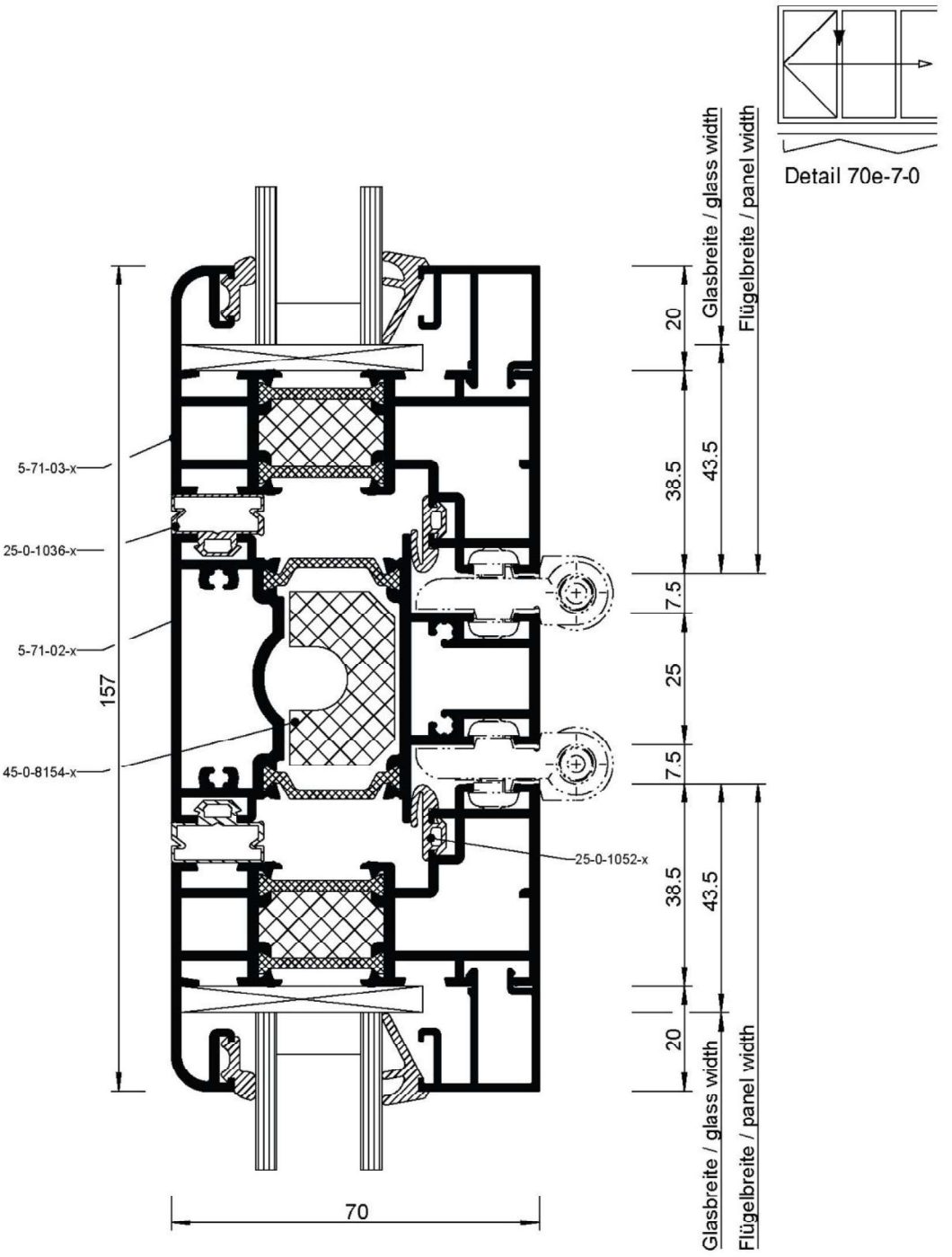

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Photo 4: Folding glass wall Acoustic SL70, view transmission room

Photo 5: Folding glass wall Acoustic SL70, detail flush sill

Photo 6: Folding glass wall Acoustic SL70, view receiving room

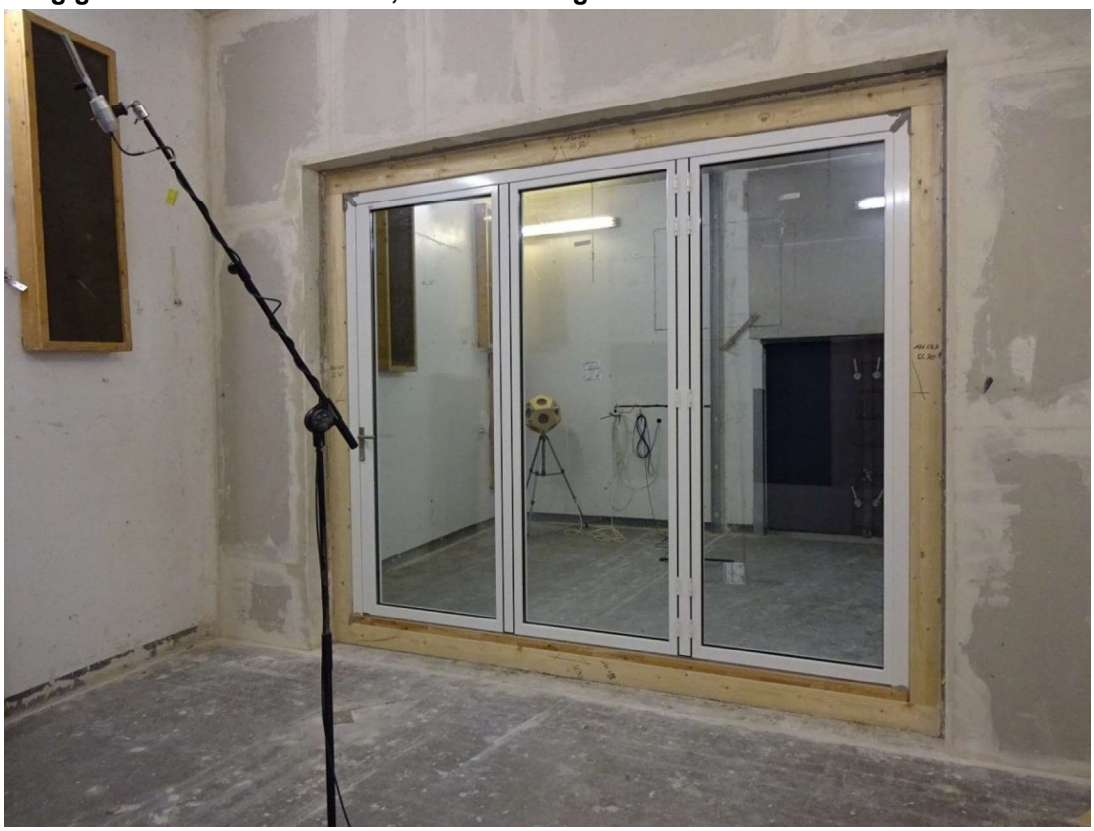

Photo 7: Folding glass wall Acoustic SL70, detail vertical mullion

Airborne Sound Measurement according to DIN EN ISO 10140-2

Ascertainment of Airborne Sound Insulation of Building Elements in Laboratory

Annex 15

Manufacturer:	Solarlux GmbH, Melle	Name of Product:	Acoustic SL70
Client:	Nana Wall Systems, Inc., Corte Madera	Test Rooms:	Laboratory
Test object installed by:	Client	Test Date:	08.08.2019

Description of Test Object: **Measurement 1**

Folding glass wall, **type Acoustic SL70 (Acoustical 70)**, Brand Solarlux, sliding-system with top-track and flush sill made of aluminum with 3 glass-sliding-panels, glazing each: **SGG Climaplus XN (32 dB)**, Build-up: ESG SECURIT 4 mm klar, 16 mm glass interspace (Argon-filling), ESG SECURIT XN II 4 mm, installed in wooden frame construction, build-up see section 2.2 as well as annexes 1 to 10, dimensions width x height = 3.000 mm x 2.500 mm,

Measurement as found

Surface S test object:	7,50 m²
Mass per unit area:	
Air temp. in test rooms:	21,2°C
Air humidity in test rooms:	54,1 %
Volume transmission room:	81,5 m³
Volume receiving room:	74,5 m³

Frequency Hz	*R* Terz dB
50	17,6
63	25,5
80	18,7
100	25,3
125	22,6
160	24,5
200	19,9
250	18,7
315	21,8
400	28,7
500	32,3
630	34,4
800	37,2
1000	38,5
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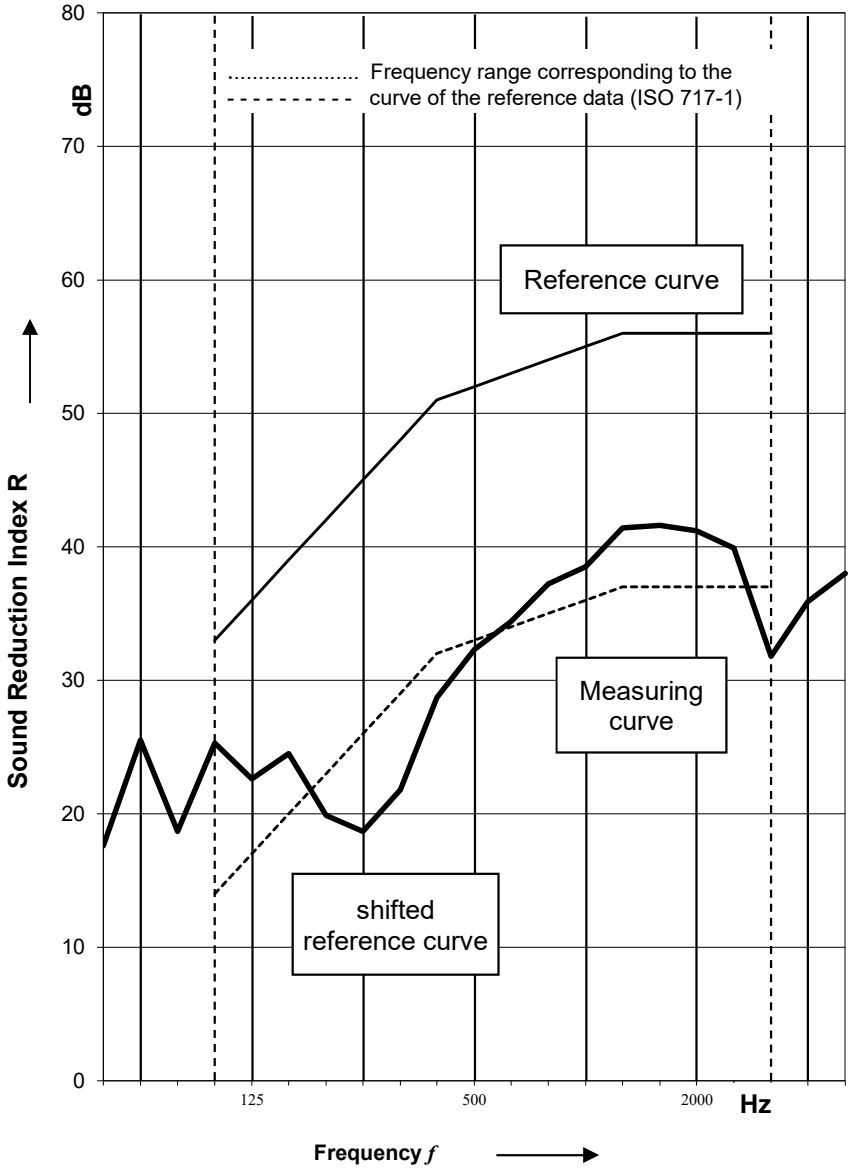
1600	41,6
2000	41,2
2500	39,9
3150	31,8
4000	35,9
5000	38,0



Evaluation according to ISO 717-1:

R_w (C;Ctr) = 33 (-1;-4) dB

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = -1 dB $C_{100\text{-}5000}$ = 0 dB

$C_{tr50\text{-}3150}$ = -5 dB $C_{tr50\text{-}5000}$ = -5 dB $C_{tr100\text{-}5000}$ = -4 dB

The ascertainment is based on test stand measuring results, which were measured in 1/3 octave bands

Test Resport No.: 1821-003-19

SG-Bauakustik
Institut für schalltechnische Produktoptimierung
Mainstrasse 15
45478 Mülheim an der Ruhr, 20th August 2019

Laszlo Pobloth

Airborne Sound Measurement according to DIN EN ISO 10140-2

Ascertainment of Airborne Sound Insulation of Building Elements in Laboratory

Annex 16

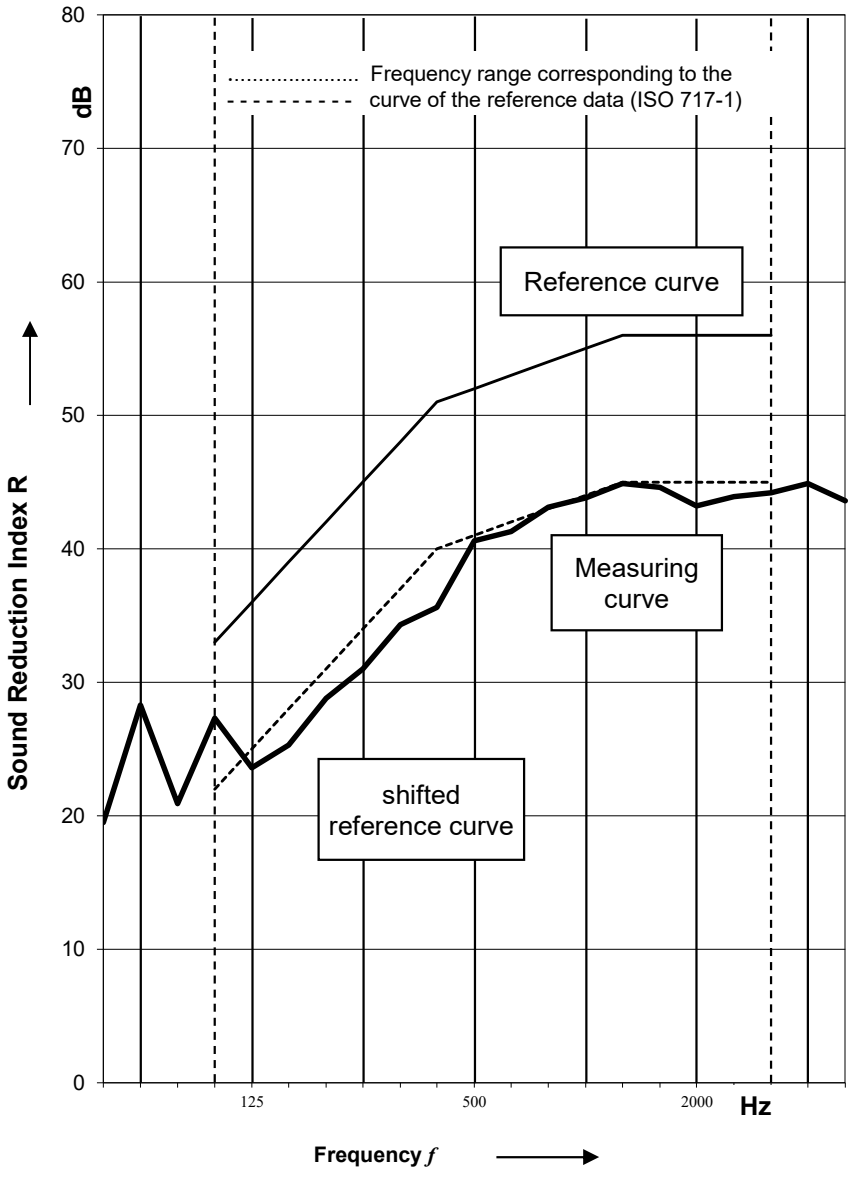
Manufacturer:	Solarlux GmbH, Melle	Name of Product:	Acoustic SL70
Client:	Nana Wall Systems, Inc., Corte Madera	Test Rooms:	Laboratory
Test object installed by:	Client	Test Date:	08.08.2019

Description of Test Object: **Measurement 2**

Folding glass wall, **type Acoustic SL70 (Acoustical 70)**, Brand Solarlux, sliding-system with top-track and flush sill made of aluminum with 3 glass-sliding-panels, glazing each: **SGG Climaplus XN (43 dB)**, Build-up: VSG STADIP Silence - 44.2, 20 mm glass interspace (Argon-filling), ESG SECURIT XN II 6 mm, installed in wooden frame construction, build-up see section 2.2 as well as annexes 1 to 10, dimensions width x height = 3.000 mm x 2.500 mm, **Measurement as found**

Surface S test object:	7,50 m²
Mass per unit area:	
Air temp. in test rooms:	21,2°C
Air humidity in test rooms:	54,1 %
Volume transmission room:	81,5 m³
Volume receiving room:	74,5 m³

Frequency Hz	*R* Terz dB
50	19,5
63	28,3
80	20,9
100	27,3
125	23,6
160	25,3
200	28,8
250	31,0
315	34,3
400	35,6
500	40,6
630	41,3
800	43,1
1000	43,8
1250	44,9
1600	44,6
2000	43,2
2500	43,9
3150	44,2
4000	44,9
5000	43,6



Evaluation according to ISO 717-1:

R_w (C;Ctr) = 41 (-1;-5) dB

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = -1 dB $C_{100\text{-}5000}$ = -1 dB

$C_{tr50\text{-}3150}$ = -6 dB $C_{tr50\text{-}5000}$ = -6 dB $C_{tr100\text{-}5000}$ = -5 dB

The ascertainment is based on test stand measuring results, which were measured in 1/3 octave bands

Test Resport No.: 1821-003-19

SG-Bauakustik
Institut für schalltechnische Produktoptimierung
Mainstrasse 15
45478 Mülheim an der Ruhr, 20th August 2019

Laszlo Pobloth

Airborne Sound Measurement according to DIN EN ISO 10140-2

Ascertainment of Airborne Sound Insulation of Building Elements in Laboratory

Annex 17

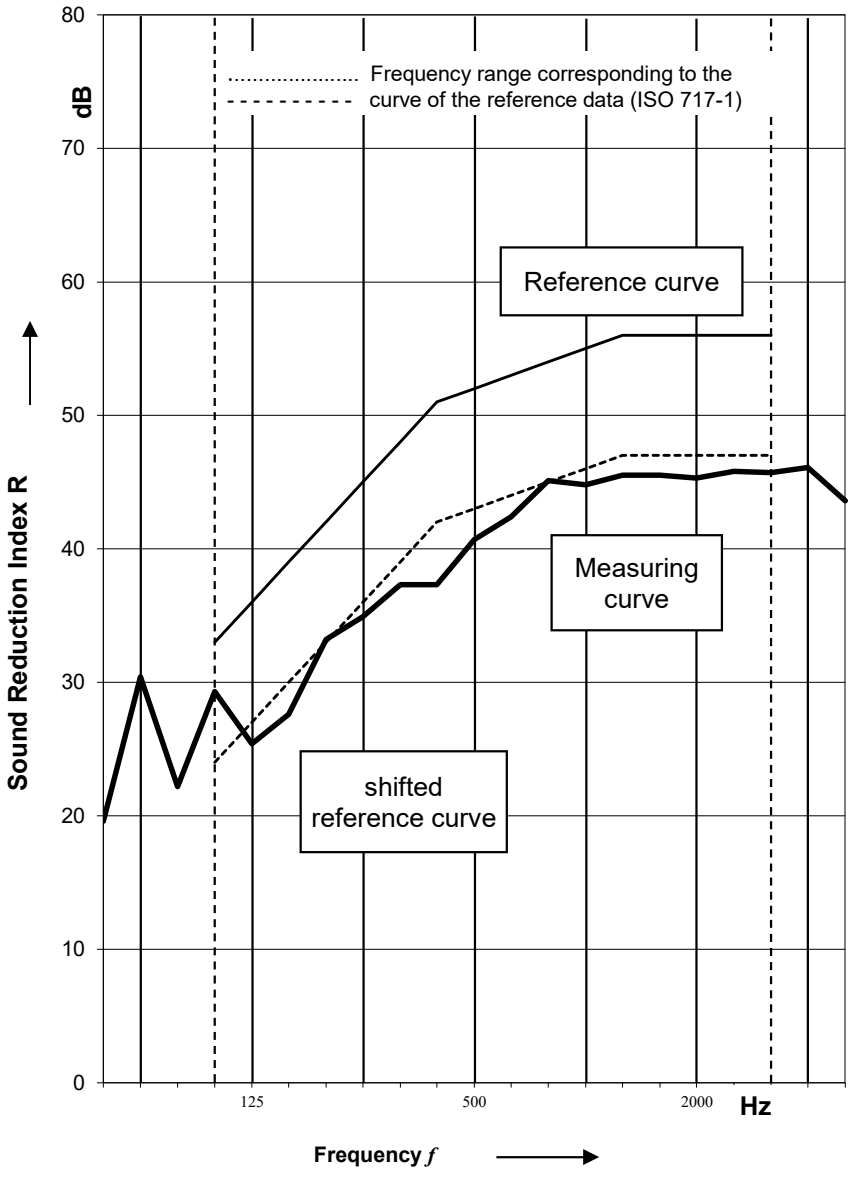
Manufacturer:	Solarlux GmbH, Melle	Name of Product:	Acoustic SL70
Client:	Nana Wall Systems, Inc., Corte Madera	Test Rooms:	Laboratory
Test object installed by:	Client	Test Date:	08.08.2019

Description of Test Object: **Measurement 3**

Folding glass wall, **type Acoustic SL70 (Acoustical 70)**, Brand Solarlux, sliding-system with top-track and flush sill made of aluminum with 3 glass-sliding-panels, glazing each: **SGG Climaplus XN (48 dB)**, Build-up: VSG STADIP Silence - 55.2, 18 mm glass interspace (Argon-filling), VSG STADIP Silence XN - 44.2, installed in wooden frame construction, build-up see section 2.2 as well as annexes 1 to 10, dimensions width x height = 3.000 mm x 2.500 mm, **Measurement as found**

Surface S test object:	7,50 m²
Mass per unit area:	
Air temp. in test rooms:	21,2°C
Air humidity in test rooms:	54,1 %
Volume transmission room:	81,5 m³
Volume receiving room:	74,5 m³

Frequency Hz	*R* Terz dB
50	19,6
63	30,4
80	22,2
100	29,3
125	25,4
160	27,6
200	33,2
250	34,9
315	37,3
400	37,3
500	40,7
630	42,4
800	45,1
1000	44,8
1250	45,5
1600	45,5
2000	45,3
2500	45,8
3150	45,7
4000	46,1
5000	43,6



Evaluation according to ISO 717-1:

R_w (C;Ctr) = 43 (-1;-4) dB

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = -1 dB $C_{100\text{-}5000}$ = -1 dB

$C_{tr50\text{-}3150}$ = -6 dB $C_{tr50\text{-}5000}$ = -6 dB $C_{tr100\text{-}5000}$ = -4 dB

The ascertainment is based on test stand measuring results, which were measured in 1/3 octave bands

Test Resport No.: 1821-003-19

SG-Bauakustik
Institut für schalltechnische Produktoptimierung
Mainstrasse 15
45478 Mülheim an der Ruhr, 20th August 2019

Laszlo Pobloth

C-OD 3684 w/ std laminate

WESTERN ELECTRO - ACOUSTIC LABORATORY, INC.

TESTING • CALIBRATION • RESEARCH

25132 Rye Canyon Loop Santa Clarita, California 91355 Tel: (661) 775-3741 Fax: (661) 775-3742 www.weal.com

SOUND TRANSMISSION LOSS TEST REPORT NO. TL03-261

CLIENT: SIERRA PACIFIC WINDOWS
11605 Reading Road
P.O. Box 8489
Red Bluff, California 96080

7 August 2003

TEST DATE: 19 June 2003

INTRODUCTION

The methods and procedures used for this test conform to the provisions and requirements of ASTM E 90-02, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*. Details of the procedure will be furnished upon request. The test chamber source and receiving room volumes are 204 and 148.4 cubic meters respectively. Western Electro-Acoustic Laboratory is accredited by NVLAP (National Voluntary Laboratory Accreditation Program) Lab Code 100256-0 for this test procedure. NVLAP is part of the United States Department of Commerce, National Institute of Standards and Technology (NIST). This test report relates only to the item(s) tested. Any advertising that utilizes this test report or test data must not imply product certification or endorsement by WEAL, NVLAP, NIST or the U.S. Government.

DESCRIPTION OF TEST SPECIMEN

The test specimen was a Sierra Pacific C-OD-3684-1 Series aluminum clad wood out swing vision door assembly. The standard 4-9/16 inch (116 mm) douglas fir frame had a thermally broken Combo sill threshold with a 1-1/4 inch (31.8 mm) high wood saddle. The specimen was installed by screwing the nailing fin around the entire perimeter to the wood edge of the test chamber opening. The specimen was sealed into the test chamber opening with a heavy duct seal putty around the entire interior perimeter and vinyl latex caulking on the entire exterior perimeter. The overall thickness of the door panel was 1-3/4 inches (44.5 mm) and it was hung on three 4 inch (102 mm) hinges. The glazing consisted of a 3/4 inch (19.1 mm) dual glazed unit which was 7/32 inch (5.6 mm) laminated glass, 3/8 inch (9.5 mm) air space, and 1/8 inch (3.2 mm) double strength glass. The laminated glass utilized a .030 inch (.76 mm) interlayer. The unit was glazed into the douglas fir door panel using silicone on the full exterior perimeter, urethane sealant on the full interior perimeter, and wood stops. A GU 3-Point Mortise Locking System was used with a 1-1/2 inch (38.1 mm) backset. The weather stripping used on the frame was a Q Lon compression seal at both jambs and at the head. The weather stripping used on the panel was a kerfed leaf seal at the head, a five fingered door shoe, and a fastened door bottom sweep at the sill. The weather stripping used on the Combo sill was a Q Lon compression seal. The net outside frame dimensions of the door assembly were 37-3/4 inches (.959 m) wide by 86 inches (2.18 m) high. The dimensions of the door panel were 36 inches (0.91 m) wide by 83-1/2 inches (2.12 m) high by 1-3/4 inches thick. The overall weight of the door panel was 118.5 lbs. (53.8 kg) for a calculated surface density of 5.68 lbs./ft^2 (27.7 kg/m^2). The operable portion of the assembly was opened and closed five times immediately prior to the test.

RESULTS OF THE MEASUREMENTS

One-third octave band sound transmission loss values are tabulated on the attached sheet. ASTM minimum volume requirements are met at 125 Hz and above. The Sound Transmission Class rating determined in accordance with ASTM E 413-87 (Reapproved 1994) was STC-33.

Approved:

Gary E. Mange
Laboratory Manager

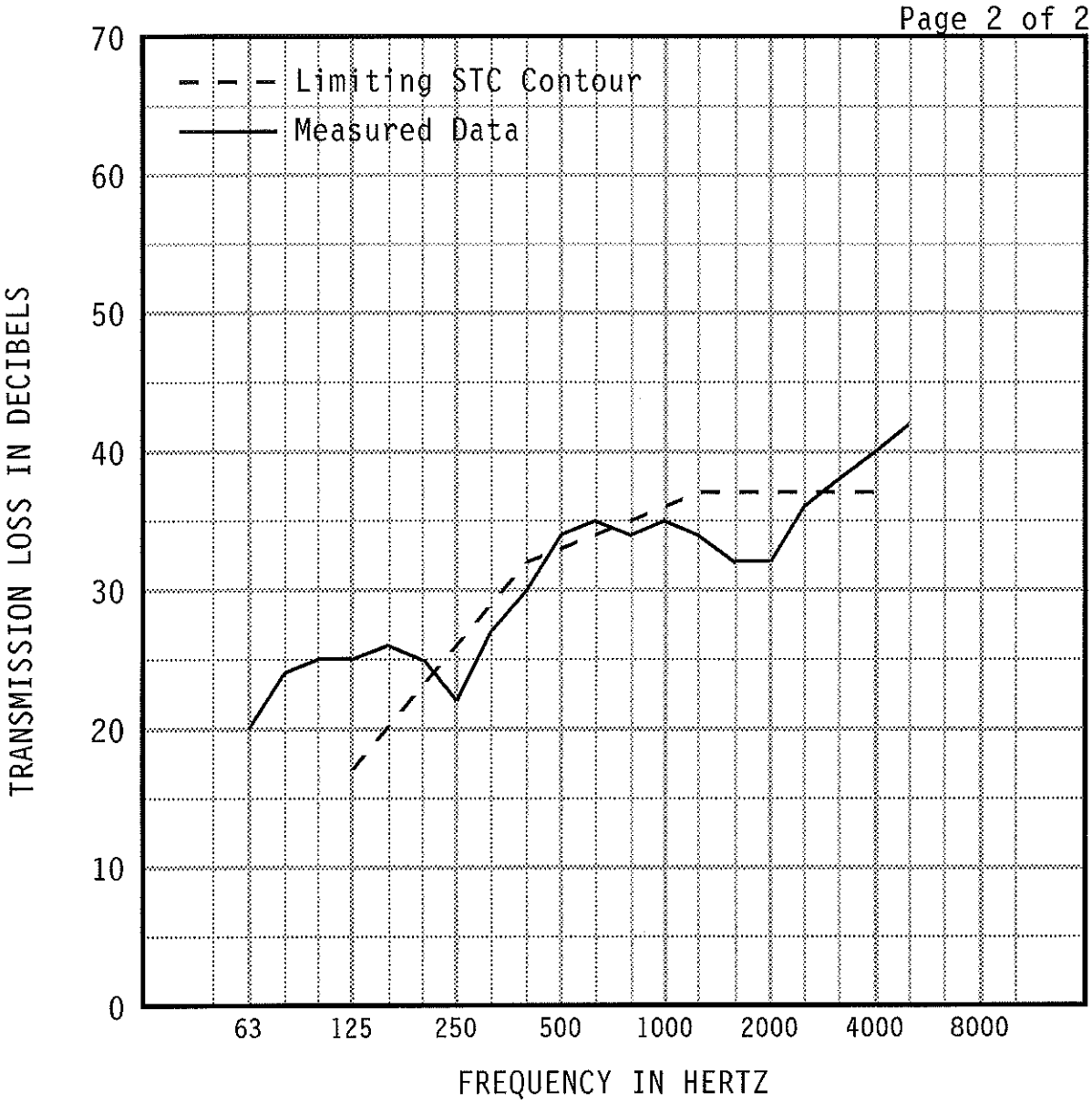
Respectfully submitted,
Western Electro-Acoustic Laboratory, Inc.

Leo Amezcua
Acoustical Test Technician

NVLAP LAB CODE 100256-0

WESTERN ELECTRO-ACOUSTIC LABORATORY, INC.

Report No. TL03-261



1/3 OCT BND CNTR FREQ	63	80	100	125	160	200	250	315	400	500
TL in dB	20	24	25	25	26	25	22	27	30	34
95% Confidence in dB deficiencies	1.42	1.92	2.07	1.47	0.89	0.76	0.80 (4)	0.52 (2)	0.36 (2)	0.38
1/3 OCT BND CNTR FREQ	630	800	1000	1250	1600	2000	2500	3150	4000	5000
TL in dB	35	34	35	34	32	32	36	38	40	42
95% Confidence in dB deficiencies	0.29	0.44 (1)	0.38 (1)	0.39 (3)	0.36 (5)	0.56 (5)	0.55 (1)	0.31	0.32	0.50

EWR	OITC
35	30

Specimen Area: 22.55 sq.ft.
Temperature: 73 deg. F
Relative Humidity: 57 %
Test Date: 19 June 2003

STC
33 (24)

NVLAP

NVLAP LAB CODE 100256-0

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Report Date: 12/26/2018

ACOUSTIC

SOUND TRANSMISSION CLASS TEST REPORT

Series/Model: Aluminum Clad Direct Glaze Plus Fixed Window

Prepared for:

Sierra Pacific Windows and Doors
Attn: Ms. Cheryl Wibben
575 South Whelen Ave.
Medford, WI 54451
United States

Customer PO: 66-0116417

Prepared by:

John Wegscheider
Manager
Product Validation
Telephone: (651) 659-7353

A2LA ACCREDITED
TESTING CERT #1479.01

AIRBORNE SOUND TRANSMISSION LOSS (STC) ASTM E90-09

INTRODUCTION:

This report presents the sound transmission results of a:

Aluminum Clad Direct Glaze Plus Fixed Window

The testing and data analysis were completed on: **Friday, December 14, 2018**

This report must not be reproduced except in full without the approval of Element Materials Technology. The data in this report relates only to the items tested.

The results stated in this report represent only the specific construction and acoustic conditions present at the time of the test. Measurements performed in accordance with this standard on nominally identical constructions and acoustical conditions may produce different results.

Summary of Results

Aluminum Clad Direct Glaze Plus Fixed Window

Glazing Description		Test Results		
		STC	Def	OITC
Glass Type:	**15/16" (23.8mm) Insulated Laminated Glass Unit (IG)**	***34***	**26**	**29**
Exterior Lite:	3/16" (4.7mm)			
Gap / Airspace:	1/2" (12.7 mm)			
Interior Lite:	1/4" (6.4mm) Laminated			

SPECIMEN DESCRIPTION:

Manufacturer:	Sierra Pacific Windows and Doors	**Specimen:**	Fixed Window
Model # / Series:	Aluminum Clad Direct Glaze Plus	**Material:**	Aluminum Clad Wood
Size:	48.00" W x 60.06" H	**Area:**	20.0 $-ft^2$
Weight:	129.5-lbs	**Weight (psf):**	6.5 $-lb/ft^2$

Glazing Details: **15/16" (23.8mm) Insulated Laminated Glass Unit (IG)**
(Measured Thickness)

Exterior Lite:	3/16" (4.7mm)
Space/Gap:	1/2" (12.7 mm)
Interior Lite:	1/4" (6.4mm) Laminated

Sash Size: N/A

Daylight Opening: 44 5/8" x 56 3/4"

Additional Details: Specimen was identified as Aluminum Clad Direct Glaze Plus

Hardware: N/A

Drainage: Sloped Sill

Weatherstripping: N/A

TEST METHOD:

Sound Transmission Test

ASTM:E90(09), "Laboratory Measurement of Airborne Sound Transmission of Building Partitions," was followed in every respect. The STC value was obtained by applying the Transmission Loss (TL) values to the STC reference contour of ASTM: E413(16), “Determination of Sound Transmission Class.” The actual transmission loss at each frequency was calculated by the following equations:

$$TL = NR + 10 \log S - 10 \log A2$$

where: TL = Transmission Loss (dB)
NR = Noise Reduction (dB)
S = Surface area common to both sides (sq. ft.)
A2 = Sound absorption of the receiving room with the sample in place (sabins)

OITC Procedure

ASTM:E1332(16), "Determination of Outdoor-Indoor Transmission Class", was followed in every respect. Basically, the OITC was calculated by using the sound transmission loss values in the 80 to 4000 Hz range as measured in accordance with ASTM E-90(09). These transmission loss data are then used to determine the A-weighted sound level reduction of the specimen for the reference source spectrum specified in Table 1 of ASTM E1332(16). The appropriate calculations were made to determine the OITC value. TL measurements were obtained in a single direction, from Source Room to the Receiving room. The source room has a volume of 2948-ft3 (83-m3) and the receiving room has a volume of 5825-ft3 (165-m3).

Windows & Doors: Windows and Doors are operated at least 5-times prior to testing. The test unit is operational unless otherwise stated. The temperatures and relative humidity of the termination room met the requirements of the standard during and after the test. All frequencies met the requirements for 95% confidence established by the standard unless noted. Noise reduction measurements were performed in a single direction (source room to receiving room).

TEST EQUIPMENT:

Item Description	ID#	Manufacturer/Model	Serial #	Cal. Due	Location
1/2" Pressure Condensor Mic	PT-162-075	GRAS/40AD	19220-1244	6/12/2019	Reverberation Chamber
1/2" Pressure Condensor Mic	PT-162-108	GRAS/46AD	167994	1/11/2019	Source Chamber
Microphone Calibrator	PT-162-076	Norsonic/1251	29144	6/12/2019	N/A
Data Acquisition Module	PT-162-107	National Instruments/NI9234	1735986-1893EB3	6/6/2019	Control Center
Temp/Humidity Sensor	PT-162-077	Dwyer/Series RH	M90714-e4SV-Y	5/31/2019	Reverberation Chamber
Temp/Humidity Sensor	PT-162-079	Dwyer/Series RH	m93237-E09w-A	5/31/2019	Source Chamber

REMARKS:

The test sample will be retained for a period of 10-days and then discarded if no written return-request received.

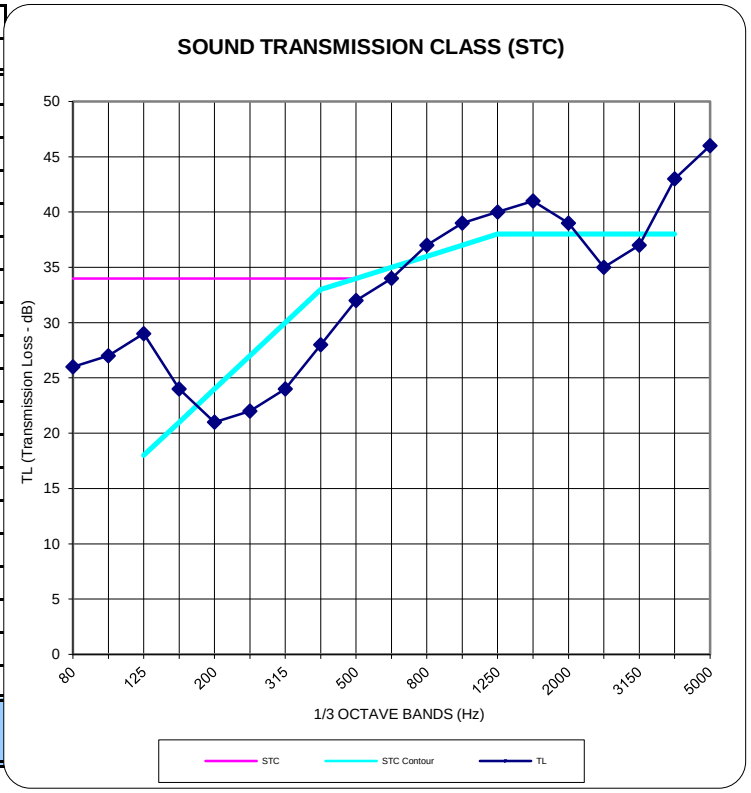
TEST RESULTS

1/3 Oct. Band, Hz	L_1 (dB)	L_2 (dB)	Bkgd (dB)	A_2 (m^2 Sabins)	TL (dB)	Def (dB)	95% Conf.	Notes 1	Notes 2
80	96.4	66.4	41.6	5.3	**26**	-	2.8		
100	100.9	70.0	38.4	5.3	**27**	-	1.5		
125	103.3	70.5	42.5	4.3	**29**	0	1.4		
160	98.5	71.0	37.2	4.4	**24**	0	1.8		
200	95.1	69.9	33.1	4.9	**21**	3	1.3		
250	99.7	73.5	32.6	4.7	**22**	5	0.7		
315	100.4	72.5	27.8	4.4	**24**	6	0.6		
400	101.2	69.0	28.9	4.6	**28**	5	0.6		
500	103.5	67.4	28.8	4.8	**32**	2	0.4		
630	102.6	64.1	25.9	5.2	**34**	1	0.3		
800	100.4	59.1	24.1	5.4	**37**	0	0.3		
1000	98.1	54.1	23.5	5.6	**39**	0	0.3		
1250	96.6	51.1	22.0	6.2	**40**	0	0.3		
1600	97.5	51.3	20.1	7.0	**41**	0	0.3		
2000	96.8	51.6	20.5	8.0	**39**	0	0.3		
2500	94.8	52.7	20.0	8.8	**35**	3	0.2		
3150	90.2	46.2	20.1	10.2	**37**	1	0.4		
4000	87.3	36.2	20.9	12.0	**43**	0	0.4		
5000	88.4	33.2	21.8	14.7	**46**	-	0.4		

STC Rating: *34*

Deficiency: 26

OITC Rating: 29



TL = Transmission Loss (dB)
Def = Deficiencies (below STC contour)

Note #1: Noise Level was less than 10dB above ambient.

Note #2: Confidence Level Exceeded

Test Conditions:

Laminated Glass	Temp(°C):
Exterior:	N/A
Interior:	22.2

	Temp(°C):	% RH:	ATM (hPa)
Source Room:	22.6	48	987
Receive Room:	22.2	47	987

SPECIMEN IDENTIFICATION:

Type: Fixed Window
Series: Aluminum Clad Direct Glaze Plus Fixed Window
Size: 48.00" W x 60.06" H **Area:** 20.0 -ft^2
Depth: 5.75
Mass: 130 -lbs **Mass (psf):** 6.5 -lb/ft^2

Test Date: *14-Dec-18*
Time Stamp: *10:13 AM*
Tested by: MJC

Glazing Description

15/16" (23.8mm) Insulated Laminated Glass Unit (IG)	
Exterior Lite:	3/16" (4.7mm)
Gap / Space:	1/2" (12.7 mm)
Interior Lite:	1/4" (6.4mm) Laminated

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* As stated by Manufacturer.