PARIC CORPORATION
77 Westport Plaza Suite 250
St. Louis, MO 63146
TEL: 636-561-9500
FAX: 636-561-9501

REQUEST FOR INFORMATION

DATE: May 04, 2016 **NO.:** RFI-062

To: Cannon Design

Attn: Kelvin Patel

From: Paric Corporation

Requested By: Devin Gates

Project Name: Webster University Interdisciplinary Science Building Project No.: 15051

Subject: STC rating on doors 231 and 233

Response Required By: May 11, 2016

Drawing / Spec Reference:

Information Requested:

YKK XP door assembly has been tested and will achieve an STC rating of 30, however 1" insulated glass needs to be utilized. See attached product information. Please confirm if this is acceptale

Response:

The YKK 35XT series door assembly is acceptable.

.

ARCHITECT'S RESPONSE:
This information is provided as an interpretation of the Contract Documents for implementation. It is not an authorization for change to the Contract Sum or Contract Time. If this information results in a claim for a change to the Contract, the Contractor shall notify the [Construction Manager][Architect] of a change through the change process.

Answered By: Kelvin Patel Date: 05/11/2016

Architectural Testing

ASTM E 1425 SOUND TRANSMISSION LOSS TEST REPORT

Rendered to:

YKK AP AMERICA

SERIES/MODEL: 35XT

TYPE: Single Storefront Door

Summary of Test Results					
ATI Data File No.	**Glazing (Nominal Dimensions)**	***Air Infiltration**	**Latching Force**	**STC**	**OITC**
94931.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	Pass	Pass	33	29

**The maximum allowable air leakage rate, as specified by the manufacturer, is 0.5 cfm/ft^2 when the test pressure is 1.57 psf for aluminum storefront assemblies.*

Reference should be made to Architectural Testing, Inc. Report No. 94931.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.

130 Derry Court
York, PA 17406-8405
phone: 717-764-7700
fax: 717-764-4129
www.archtest.com

Architectural Testing

ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

YKK AP AMERICA
332 Firetower Road
Dublin, Georgia 31021

Report No:	94931.01-113-11
Revision 1:	11/10/09
Test Date:	10/21/09
Report Date:	11/06/09
Expiration Date:	10/21/13

Test Sample Identification:

Series/Model: 35XT

Type: Single Storefront Door

Overall Size: 39-3/8" by 78-3/4"

Glazing (Nominal Dimensions): 1" IG (1/4" Tempered, 1/2" Air Space, 1/4" Tempered)

Project Scope: Architectural Testing, Inc. was contracted by YKK AP America to conduct operating force, air leakage, and sound transmission loss tests on a Series/Model 35XT, single storefront door. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report. The sample was provided by the client.

Test Methods: The acoustical test was conducted in accordance with the following:

ASTM E 1425-07, *Standard Practice for Determining the Acoustical Performance of Exterior Windows and Doors.*

ASTM E 90-09, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*.

ASTM E 413-04, *Classification for Rating Sound Insulation.*

ASTM E 1332-90 (Re-approved 2003), *Standard Classification for Determination of Outdoor-Indoor Transmission Class.*

ASTM E 283-04, *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.*

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fax: 717-764-4129
www.archtest.com

Test Methods: (Continued)

ASTM E 2235-04^{e1}, *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*.

ASTM E 2068-00, *Standard Test Method for Determination of Operating Force of Sliding Windows and Doors.*

Test Equipment: The equipment used to conduct this test meets the requirements of ASTM E 90. The microphones were calibrated before conducting the sound transmission loss test. The test equipment and test chamber descriptions are listed in Appendix A.

Sample Installation: Sound transmission loss tests were initially performed on a filler wall that was designed to test 40" by 86" and 80" by 86" test specimens. The filler wall achieved an STC rating of 67.

The 40" by 86" plug was removed from the filler wall assembly. The sample was placed on a foam isolation pad in the test opening. Duct seal was used to seal the perimeter of the sample to the test opening on both sides. The interior side of the sample, when installed, was approximately 1/4" from being flush with the receiving room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. The door panel was opened and closed at least five times prior to testing.

Test Procedure:

Operating Force Test: The Type B method, which utilizes a force gauge, was used to determine force required to lock and unlock the storefront system.

Air Leakage Test: The door was closed and locked for this test. A negative pressure of 1.57 psf was applied inside the chamber that was placed around the interior side of the door. The total air leakage and extraneous air leakage measurements were used to calculate the specimen air leakage. Barometric pressure corrections were applied to the air leakage calculations.

Sound Transmission Loss Test: The sample also was closed and locked for this test. The sound transmission loss test consisted of the following measurements: One background noise sound pressure level and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

Sample Descriptions:

Frame Construction:

		Frame
Size		39-3/8" by 78-3/4"
Thickness		4-1/2"
Corners		Butted
	Fasteners	Screws
	Seal Method	Sealant
Material		Thermally broken aluminum
	Reinforcement	N/A
	Thermal Break Material	Insulbar

Sash Construction:

		Panel
Size		34-3/8" by 75-3/4"
Thickness		2-3/8"
Corners		Butted
	Fasteners	Screws
	Seal Method	Sealant
Material		Thermally broken aluminum
	Reinforcement	N/A
	Thermal Break Material	Insulbar
Daylight Opening Size		25-3/4" by 61-3/4"

N/A-Non Applicable

Sample Descriptions: (Continued)

Glazing:

Measured Overall Insulation Glass Unit Thickness	0.951"
Spacer Type	Aluminum

	Exterior Sheet	**Gap**	**Interior Sheet**
Measured Thickness	0.225"	0.501"	0.225"
Muntin Pattern	N/A	N/A	N/A
Material	Tempered	Air*	Tempered
Laminate Material	N/A	N/A	N/A

Glazing Method	Interior
Glazing Material	Flexible gasket
Glazing Bead Material	Aluminum with flexible wedge gasket

Components:

	TYPE	**QUANTITY**	**LOCATION**
Weatherstrip			
	1/4" diameter hollow bulb gasket	1 Row	Head and jambs
	Polypile with center fin	1 Row	Head and stiles
	3/16" adjustable leaf gasket	2 Rows	Bottom rail
Hardware			
	Deadbolt lock assembly	1	Lock stile
	Panic bar handle	1	Door interior at center
	Standard handle	1	Door exterior lock stile
	Metal hinge	3	Hinge jamb
Drainage			
	Sloped sill		

** - Stated per Client/Manufacturer, N/A-Non Applicable*

Comments: The total weight of the sample was 156 lbs. The design drawings (included in Appendix C) supplied by the client, accurately describe the Series/Model 35XT, single storefront door. The dimensions on the drawings that are circled and/or checked were verified against the test specimen. The door was disassembled, and the components will be retained by Architectural Testing for four years. A photograph of the test specimen is included in Appendix D.

Test Results: The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332. A summary of the air leakage, and sound transmission loss test results on the Series/Model 35XT, single storefront door is listed below.

Summary of Test Results					
ATI Data File No.	**Glazing (Nominal Dimensions)**	***Air Infiltration**	**Latching Force**	**STC**	**OITC**
94931.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	Pass	Pass	33	29

**The maximum allowable air leakage rate, as specified by the manufacturer, is 0.5 cfm/ft^2 when the test pressure is 1.57 psf for aluminum storefront assemblies.*

***Note**: Transmission loss coefficient differences less than 6 indicate the lower limit of the transmission loss for this specimen. On each data sheet listed in Appendix B, the cells are highlighted red for the transmission loss values limited in this way. Due to the calculations and sample size, transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. On each data sheet listed in Appendix B, cells highlighted in green indicate transmission loss values affected in this way.*

The complete air infiltration, operating force, and sound transmission loss test results are listed in Appendix B. Flanking limit tests and reference specimen tests are available upon request.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. Results obtained are tested values and were secured by using the designated test methods. 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 may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:

Digitally Signed by: Brandon C. Ward

Brandon C. Ward
Senior Technician - Acoustical Testing

Digitally Signed by: Todd D. Kister

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

BCW:jmcs

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Equipment description (1)
- Appendix-B: Complete test results (4)
- Appendix-C: Drawings (3)
- Appendix-D: Photograph (1)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	11/06/09	N/A	Original Report Issue
1	11/10/09	Cover Page, Page 1, Page 5, Appendix B Data Sheets	Changed Series/Model Number from YOW 35XT to 35XT
		Page 2, Page 5	Replaced "window" with "door"

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Last Calibrated
Analyzer	Agilent Technologies	35670A	Dynamic signal analyzer	Y002929	01/02/08*
Data Acquisition Unit	Agilent Technologies	34970A	Data Acquisition Unit	62211	07/29/09
Receive Room Microphone	G.R.A.S.	40AR	1/2", Pressure type, condenser microphone	Y003246	08/18/09
Source Room Microphone	G.R.A.S.	40AR	1/2", Pressure type, condenser microphone	Y003245	08/18/09
Receive Room Preamp	G.R.A.S.	26AK	1/2" Preamplifier	Y003249	08/08/09
Source Room Preamp	G.R.A.S.	26AK	1/2" Preamplifier	Y003248	08/18/09
Microphone Calibrator	Bruel & Kjaer	4228	Pistonphone calibrator	Y002816	02/10/09
Noise Source	Delta Electronics	SNG-1	Two, Uncorrelated "Pink" noise signals	Y002181	N/A
Equalizer	Rane	RPE228	Programmable EQ	Y002180	N/A
Power Amplifiers	Renkus-Heinz	P2000	Two, Amplifiers	Y002179 Y001779	N/A
Receive Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	Two, Loudspeakers	Y001784 Y001785	N/A
Source Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	Two, Loudspeakers	Y002649 Y002650	N/A
Receiving Room Environmental Indicator	Vaisala	HMW60Y	Temperature / Humidity Indicator	Y002653	08/13/08
Source Room Environmental Indicator	Vaisala	HMW60Y	Temperature / Humidity Indicator	Y002652	08/18/09
Weather Station	Davis Instruments	6150C	Laboratory Barometric Pressure, Temperature, and Humidity	Y003257	03/26/09
Lab Pack	ATI	N/A	Air leakage apparatus	Y0001622	05/06/09
Force Gauge	Chatillon	DPP50	Force Gauge	Y0000565	04/30/09

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

Test Chamber:

	Volume	Description
Receiving Room	234 m^3 (8291.3 ft^3)	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m^3 (7296.3 ft^3)	Stationary diffusers only Temperature and humidity controlled

	Maximum Size	Description
TL Test Opening	4.27 m (14 ft) wide by 3.05 m (10 ft) high	Vibration break between source and receive rooms

N/A-Non Applicable

Appendix B

Complete Test Results

Architectural Testing

SOUND TRANSMISSION LOSS

ASTM E 90

ATI No.	94931.01	**Date**	10/21/09
Client	YKK AP America		
Specimen	Series/Model: 35XT, single storefront door with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)		
Specimen Area	21.53 Sq Ft		
Filler Area	118.47 Sq Ft		
Operator	Brandon C. Ward		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	71.9	73.8	74.2	72.7	74.4	73.1
RH %	40.9	38.5	41.6	39.8	43.6	40.2

Freq (Hz)	Bkgrd SPL (dB)	Absorp (Sabines /Sq Ft)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Defici-encies	Trans Coef Diff
80	42.9	54.9	85.9	59.8	31.0	23	2.82	0	1.6
100	40.2	61.3	88.8	60.8	35.2	25	2.89	0	4.3
125	41.8	52.7	92.5	63.5	43.7	25	1.70	0	11.2
160	43.5	48.5	94.7	69.0	46.8	22	0.85	0	17.2
200	41.4	55.5	99.1	70.1	55.3	25	1.43	0	23.0
250	40.5	55.0	100.2	69.0	60.2	27	1.29	0	25.7
315	40.2	55.2	98.3	68.5	62.7	26	0.70	3	29.5
400	39.8	58.4	97.7	63.6	62.8	30	0.57	2	25.6
500	39.4	60.7	99.3	64.0	63.2	31	0.32	2	25.0
630	35.7	59.6	102.2	64.2	67.1	34	0.35	0	26.2
800	37.2	61.5	101.4	61.4	67.8	35	0.24	0	25.0
1000	34.4	62.6	100.7	62.0	70.3	34	0.34	2	28.9
1250	34.0	69.9	103.9	64.6	72.1	34	0.29	3	30.6
1600	31.4	71.6	110.1	72.3	75.2	33	0.32	4	35.2
2000	22.1	77.6	106.3	68.9	75.8	32	0.23	5	36.7
2500	13.0	89.3	104.7	66.2	77.1	32	0.20	5	37.4
3150	12.3	109.7	105.4	63.0	78.5	35	0.48	2	35.7
4000	10.2	135.3	103.8	57.0	81.8	39	0.34	0	35.6
5000	8.2	179.8	102.1	51.5	85.1	41	0.56	0	36.4

STC Rating =	**33**	*(Sound Transmission Class)*
Deficiencies =	**28**	*(Number of deficiencies versus contour curve)*
OITC Rating =	**29**	*(Outdoor/Indoor Transmission Class)*

Notes:

1) The acoustical chambers are qualified for measurements down to 80 hertz. Data reported below 80 hertz is for reference only.

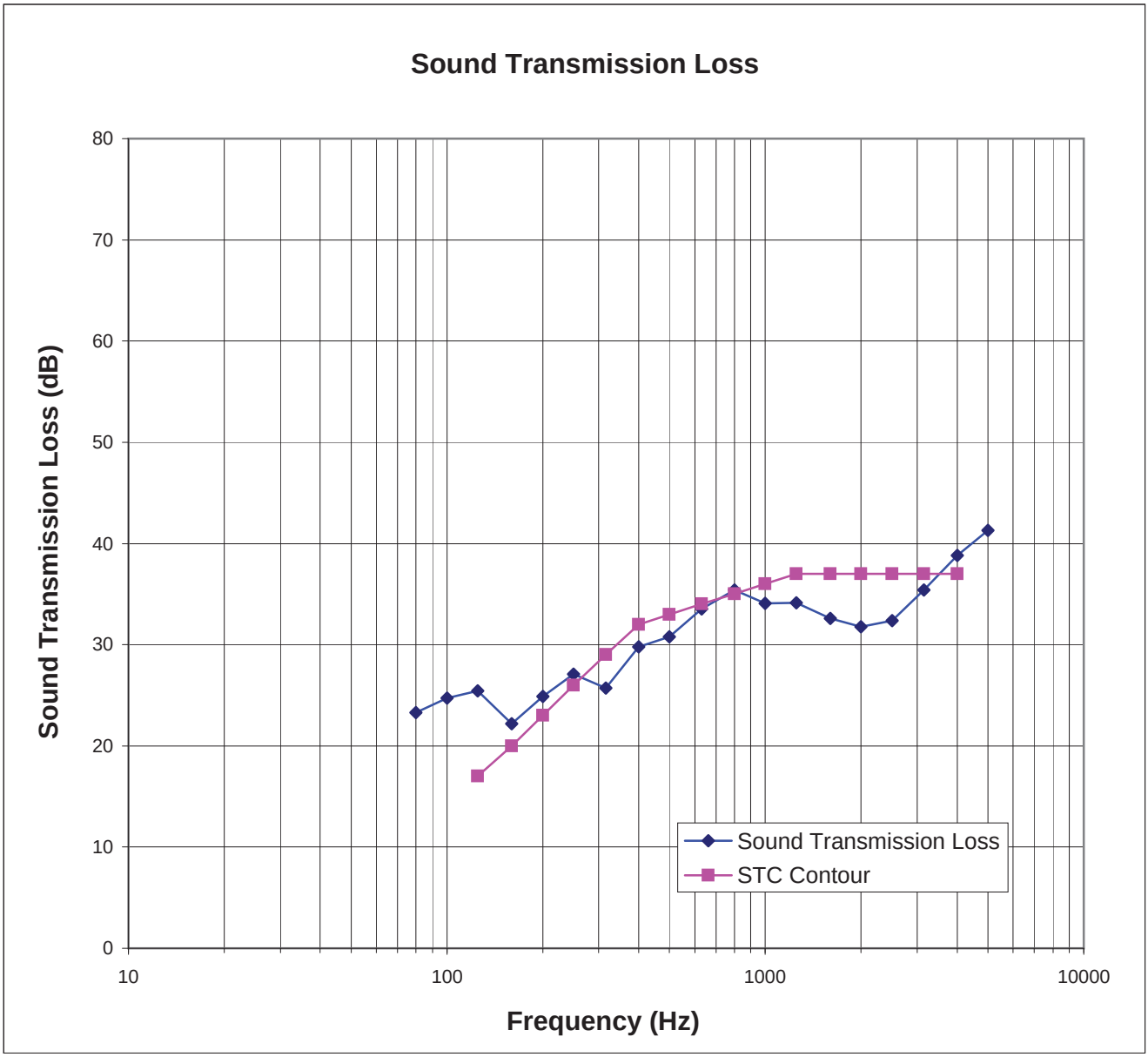
2) Transmission loss coefficient differences less than 6 indicate the lower limit of the transmission loss for this specimen. These cells are highlighted red.

3) Transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. These cells are highlighted green.

4) Receive Room levels less than 5dB above the Background levels are highlighted in yellow.

Architectural Testing

ATI No.	94931.01	**Date**	10/21/09
Client	YKK AP America		
Specimen	Series/Model: 35XT, single storefront door with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)		
Specimen Area	21.53 Sq Ft		
Filler Area	118.47 Sq Ft		
Operator	Brandon C. Ward		



ACCREDITED

Architectural Testing, Inc. is accredited by the International Accreditation Service, Inc. (IAS) under the specific test methods listed under lab code TL-144, in accordance with the recognized International Standard ISO/IEC 17025:2005. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by IAS. This test report applies only to the specimen that was tested.

ASTM E 1425 Data Sheets

ATI Job Number :	94931.01
Client Name :	YKK AP America
Test Date :	10/21/09
Tests Performed by:	Brandon C. Ward
Specimen Type :	Single Storefront Door
Series/Model Number :	35XT
Sample Size :	39-3/8" by 78-3/4"

Architectural Testing

Air Infiltration per ASTM test method ASTM E 283

Total Air flow (ft^3/min) :	23.0		
Extraneous Leakage (ft3/min) :	17		
Temperature (^oF) at Specimen:	75		
Barometric Pressure at Specimen (in mbar):	1013	(Inches of Hg) :	29.91
Specimen Area in square feet :	21.53		
Density of air at reference standard conditions (lb/ft^3)	0.075		

Total air flow w/ air density correction (ft3/min)	Extraneous leakage with air density correction (ft3/min)	Air leakage through the specimen with air density correction (ft3/min)	Rate of air leakage per unit area (ft3/min)/sq.ft.
22.868	16.902	5.966	0.28

ATI Job Number : 94931.01
Client Name : YKK AP America
Test Date : 10/21/09
Tests Performed by: Brandon C. Ward
Specimen Type : Single Storefront Door
Series/Model Number : 35XT
Sample Size : 39-3/8" by 78-3/4"

Operating Force per ASTM test method E 2068 Method B - Force Gauge

Panel Deadbolt

Trial No.	Locking	Unlocking
1	5	5
2	5	5
3	5	5

3 Trial Ave.	5.00	5.00
10% of 3 trial avg	0.5	0.5
8 Trial Average w/o high & low	5.0	5.0

Appendix C

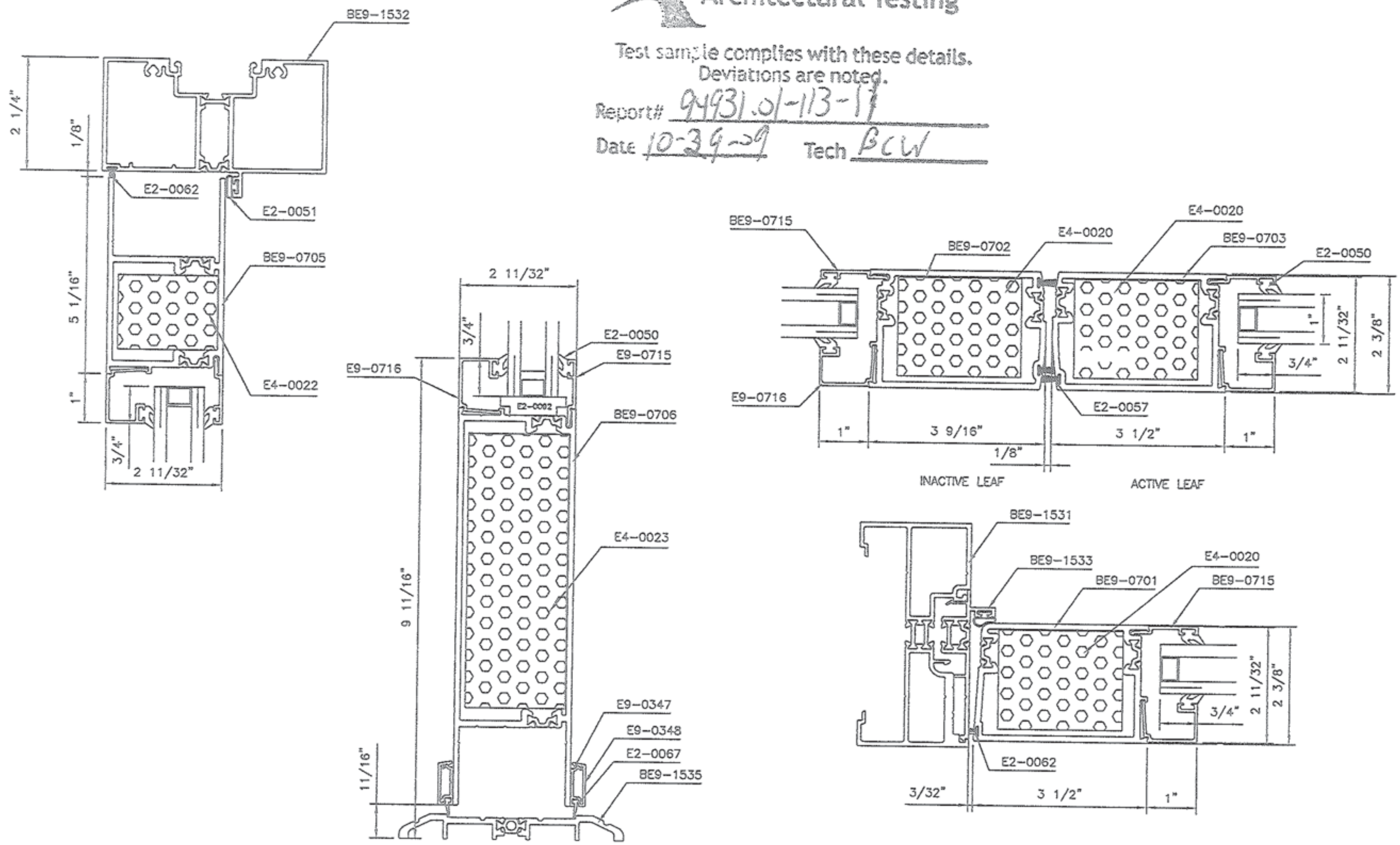
Design Drawings

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 94931.01-113-17

Date 10-29-09 Tech BCW



YKK AP

YKK AP AMERICA INC.
HEADQUARTERS:
7680 The Bluffs, Suite 100 PH:(678)838-6000
Austell, GA 30168 FAX:(678)838-6056
DUBLIN PLANT:
335 Firetower Road PH:(478)277-1855
Dublin, GA 31021 FAX:(478)277-2500

NO.	REVISION	DATE	BY

DESCRIPTION: DETAIL SHEET FOR FORMAL TESTING

SYSTEM: 35T DOOR THERMAL ENTRANCE DOOR

DRAWING NUMBER: 35T THERMAL

FINISH: PAINTED

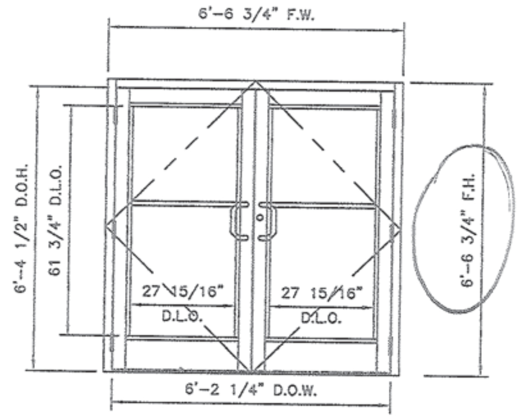
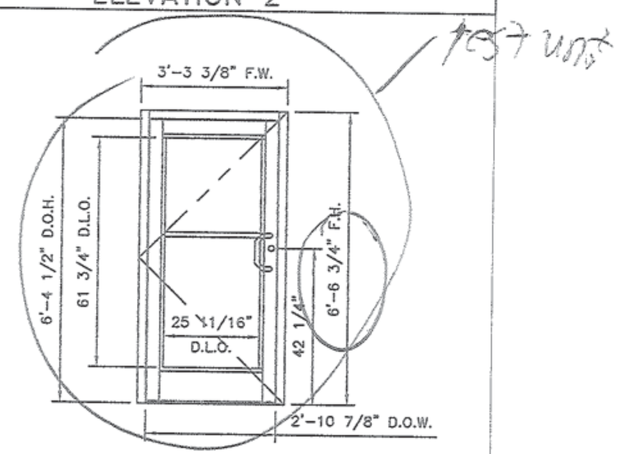
SCALE: AS NOTED	GLAZING:
DRAWN BY: DCM	REV:
APPROVED BY: RB	SHEET NO.: 3
DATE: 9/9/09	

Architectural Testing

~~Test sample complies with these details.~~
Deviations are noted.

Report# 94931.01-113-11

Date 10-29-09 Tech BCW

ELEVATION #	ELEVATION 1	ELEVATION 2
ELEVATION GLASS & IMPACT LOCATIONS		
DESIGN PRESSURE	+50psf/-50psf	+50psf/-50psf
GLAZING	EXTERIOR: SNAP IN GLASS STOP WITH GASKET INTERIOR: SNAP IN GLASS STOP WITH GASKET	EXTERIOR: SNAP IN GLASS STOP WITH GASKET INTERIOR: SNAP IN GLASS STOP WITH GASKET
HARDWARE	SINGLE POINT MS 1850 ACTIVE FLUSHBOLTS INACTIVE BUTT HINGES	SINGLE POINT MS 1850 BUTT HINGES
TESTS TO BE PERFORMED	NFRC 102, AAMA 1503, AAMA 507 AAMA 1801/ASTM E90	NFRC 102, AAMA 1503, AAMA 507 AAMA 1801/ASTM E90

GLASS TYPE:

GLASS TYPE: 1" NOMINAL: 1/4" CLEAR TEMPERED + 1/2" AIR + 1/4" CLEAR TEMPERED.

GLASS SIZE IS D.L.O. + 1.500"

YKK AP

YKK AP AMERICA INC.
HEADQUARTERS: 7680 The Bluffs, Suite 100, Austell, GA 30168
DUBLIN PLANT: 352 Firetower Road, Dublin, GA 31021

DESCRIPTION: SUMMARY SHEET FOR FORMAL TESTING

SYSTEM: 35T DOOR THERMAL ENTRANCE DOOR

DRAWING NUMBER: 35T THERMAL

FINISH: PAINTED

SCALE: AS NOTED

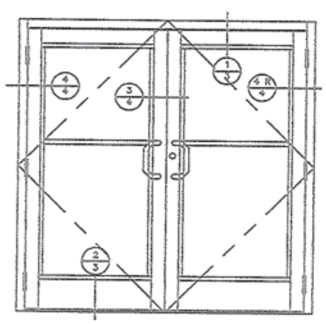
SHEET NO.: 1

Architectural Testing

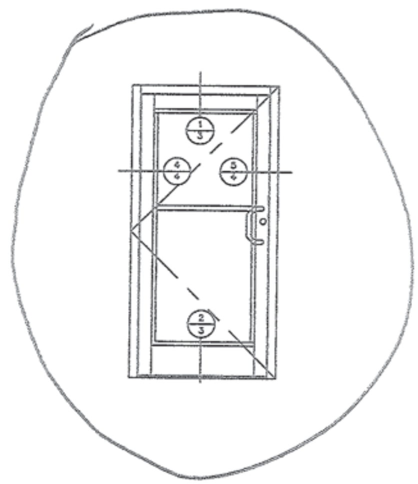
Test sample complies with these details.
Deviations are noted.

Report# 94931.01-113-11

Date 10-29-09 Tech BCW



ELEVATION 1



ELEVATION 2

YKK AP	YKK AP AMERICA INC. HEADQUARTERS: 7680 The Bluffs, Suite 100 PH:(678)838-6000 Austell, GA 30168 FAX:(678)838-6056 DUBLIN PLANT: 332 Firetower Road PH:(478)277-1668 Dublin, GA 31021 FAX:(478)277-2500
NO. / REVISION / DATE / BY	
DESCRIPTION:	ELEVATION SHEET FOR FORMAL TESTING
SYSTEM:	35T DOOR THERMAL ENTRANCE DOOR
DRAWING NUMBER	35T THERMAL
FINISH:	PAINTED
SCALE: AS NOTED	GLAZING:
DRAWN BY: BCM	REV.:
APPROVED BY: RB	SHEET NO.: 2
DATE: 9/9/09	

Appendix D

Photograph

Sample Installed in Test Chamber

Architectural Testing

ASTM E 1425 SOUND TRANSMISSION LOSS TEST REPORT

Rendered to:

YKK AP AMERICA

SERIES/MODEL: 35XT

TYPE: Single Storefront Door

Summary of Test Results					
ATI Data File No.	**Glazing (Nominal Dimensions)**	***Air Infiltration**	**Latching Force**	**STC**	**OITC**
94932.01	1" IG (5/16" laminated exterior, 7/16" air space, 1/4" tempered interior), Glass temperature 75ºF	Pass	Pass	36	32

**The maximum allowable air leakage rate, as specified by the manufacturer, is 0.5 cfm/ft^2 when the test pressure is 1.57 psf for aluminum storefront assemblies.*

Reference should be made to Architectural Testing, Inc. Report No. 94932.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.

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York, PA 17406-8405
phone: 717-764-7700
fax: 717-764-4129
www.archtest.com

Architectural Testing

ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

YKK AP AMERICA
332 Firetower Road
Dublin, Georgia 31021

Report No:	94932.01-113-11
Revision 1:	11/10/09
Test Date:	10/21/09
Report Date:	11/06/09
Expiration Date:	10/21/13

Test Sample Identification:

Series/Model: 35XT

Type: Single Storefront Door

Overall Size: 39-3/8" by 78-3/4"

Glazing (Nominal Dimensions): 1" IG (5/16" Laminated Exterior, 7/16" Air Space, 1/4" Tempered Exterior), Glass Temperature 75°F

Project Scope: Architectural Testing, Inc. was contracted by YKK AP America to conduct operating force, air leakage, and sound transmission loss tests on a Series/Model 35XT, single storefront door. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report. The sample was provided by the client.

Test Methods: The acoustical test was conducted in accordance with the following:

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ASTM E 1332-90 (Re-approved 2003), *Standard Classification for Determination of Outdoor-Indoor Transmission Class.*

ASTM E 283-04, *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.*

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phone: 717-764-7700
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Test Methods: (Continued)

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ASTM E 2068-00, *Standard Test Method for Determination of Operating Force of Sliding Windows and Doors.*

Test Equipment: The equipment used to conduct this test meets the requirements of ASTM E 90. The microphones were calibrated before conducting the sound transmission loss test. The test equipment and test chamber descriptions are listed in Appendix A.

Sample Installation: Sound transmission loss tests were initially performed on a filler wall that was designed to test 40" by 86" and 80" by 86" test specimens. The filler wall achieved an STC rating of 67.

The 40" by 86" plug was removed from the filler wall assembly. The sample was placed on a foam isolation pad in the test opening. Duct seal was used to seal the perimeter of the sample to the test opening on both sides. The interior side of the sample, when installed, was approximately 1/4" from being flush with the receiving room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. The door panel was opened and closed at least five times prior to testing.

Test Procedure:

Operating Force Test: The Type B method, which utilizes a force gauge, was used to determine force required to lock and unlock the storefront system.

Air Leakage Test: The door was closed and locked for this test. A negative pressure of 1.57 psf was applied inside the chamber that was placed around the interior side of the door. The total air leakage and extraneous air leakage measurements were used to calculate the specimen air leakage. Barometric pressure corrections were applied to the air leakage calculations.

Sound Transmission Loss Test: The sample was also closed and locked for this test. The sound transmission loss test consisted of the following measurements: One background noise sound pressure level and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

Sample Descriptions:

Frame Construction:

		Frame
Size		39-3/8" by 78-3/4"
Thickness		4-1/2"
Corners		Butted
	Fasteners	Screws
	Seal Method	Sealant
Material		Thermally broken aluminum
	Reinforcement	N/A
	Thermal Break Material	Insulbar

Sash Construction:

		Panel
Size		34-3/8" by 75-3/4"
Thickness		2-3/8"
Corners		Butted
	Fasteners	Screws
	Seal Method	Sealant
Material		Thermally broken aluminum
	Reinforcement	N/A
	Thermal Break Material	Insulbar
Daylight Opening Size		25-3/4" by 61-3/4"

N/A-Non Applicable

Sample Descriptions: (Continued)

Glazing:

Measured Overall Insulation Glass Unit Thickness	0.983"
Spacer Type	Aluminum

	Exterior Sheet	**Gap**	**Interior Sheet**
Measured Thickness	0.312"	0.446"	0.225"
Muntin Pattern	N/A	N/A	N/A
Material	Laminated	Air*	Tempered
Laminate Material	PVB	N/A	N/A

Glazing Method	Interior
Glazing Material	Flexible gasket
Glazing Bead Material	Aluminum with flexible wedge gasket

Components:

	TYPE	**QUANTITY**	**LOCATION**
Weatherstrip			
	1/4" Diameter hollow bulb gasket	1 Row	Head and jambs
	Polypile with center fin	1 Row	Head and stiles
	3/16" adjustable leaf gasket	2 Rows	Bottom rail
Hardware			
	Deadbolt lock assembly	1	Lock stile
	Panic bar handle	1	Door interior at center
	Standard handle	1	Door exterior lock stile
	Metal hinge	3	Hinge jamb
Drainage			
	Sloped sill		

** - Stated per Client/Manufacturer, N/A-Non Applicable*

Comments: The total weight of the sample was 176 lbs. The design drawings (included in Appendix C) supplied by the client, accurately describe the Series/Model 35XT, single storefront door. The dimensions on the drawings that are circled and/or checked were verified against the test specimen. The door was disassembled, and the components will be retained by Architectural Testing for four years. A photograph of the test specimen is included in Appendix D.

Test Results: The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332. A summary of the air leakage, and sound transmission loss test results on the Series/Model 35XT, single storefront door is listed below.

Summary of Test Results					
ATI Data File No.	**Glazing (Nominal Dimensions)**	***Air Infiltration**	**Latching Force**	**STC**	**OITC**
94932.01	1" IG (5/16" laminated exterior, 7/16" air space, 1/4" tempered interior), Glass temperature 75ºF	Pass	Pass	36	32

**The maximum allowable air leakage rate, as specified by the manufacturer, is 0.5 cfm/ft^2 when the test pressure is 1.57 psf for aluminum storefront assemblies.*

***Note**: Transmission loss coefficient differences less than 6 indicate the lower limit of the transmission loss for this specimen. On each data sheet listed in Appendix B, the cells are highlighted red for the transmission loss values limited in this way. Due to the calculations and sample size, transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. On each data sheet listed in Appendix B, cells highlighted in green indicate transmission loss values affected in this way.*

The complete air infiltration, operating force, and sound transmission loss test results are listed in Appendix B. Flanking limit tests and reference specimen tests are available upon request.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. Results obtained are tested values and were secured by using the designated test methods. 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 may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:

Digitally Signed by: Brandon C. Ward

Brandon C. Ward
Senior Technician - Acoustical Testing

Digitally Signed by: Todd D. Kister

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

BCW:jmcs

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Equipment description (1)
- Appendix-B: Complete test results (4)
- Appendix-C: Drawings (3)
- Appendix-D: Photograph (1)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	11/06/09	N/A	Original Report Issue
1	11/10/09	Cover Page, Page 1, Page 5, Appendix B Data Sheets	Changed Series/Model Number from YOW 35XT to 35XT
		Page 2, Page 5	Replaced "window" with "door"

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Last Calibrated
Analyzer	Agilent Technologies	35670A	Dynamic signal analyzer	Y002929	01/02/08*
Data Acquisition Unit	Agilent Technologies	34970A	Data Acquisition Unit	62211	07/29/09
Receive Room Microphone	G.R.A.S.	40AR	1/2", Pressure type, condenser microphone	Y003246	08/18/09
Source Room Microphone	G.R.A.S.	40AR	1/2", Pressure type, condenser microphone	Y003245	08/18/09
Receive Room Preamp	G.R.A.S.	26AK	1/2" Preamplifier	Y003249	08/08/09
Source Room Preamp	G.R.A.S.	26AK	1/2" Preamplifier	Y003248	08/18/09
Microphone Calibrator	Bruel & Kjaer	4228	Pistonphone calibrator	Y002816	02/10/09
Noise Source	Delta Electronics	SNG-1	Two, Uncorrelated "Pink" noise signals	Y002181	N/A
Equalizer	Rane	RPE228	Programmable EQ	Y002180	N/A
Power Amplifiers	Renkus-Heinz	P2000	Two, Amplifiers	Y002179 Y001779	N/A
Receive Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	Two, Loudspeakers	Y001784 Y001785	N/A
Source Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	Two, Loudspeakers	Y002649 Y002650	N/A
Receiving Room Environmental Indicator	Vaisala	HMW60Y	Temperature / Humidity Indicator	Y002653	08/13/08
Source Room Environmental Indicator	Vaisala	HMW60Y	Temperature / Humidity Indicator	Y002652	08/18/09
Weather Station	Davis Instruments	6150C	Laboratory Barometric Pressure, Temperature, and Humidity	Y003257	03/26/09
Lab Pack	ATI	N/A	Air leakage apparatus	Y0001622	05/06/09
Force Gauge	Chatillon	DPP50	Force Gauge	Y0000565	04/30/09

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

Test Chamber:

	Volume	Description
Receiving Room	234 m^3 (8291.3 ft^3)	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m^3 (7296.3 ft^3)	Stationary diffusers only Temperature and humidity controlled

	Maximum Size	Description
TL Test Opening	4.27 m (14 ft) wide by 3.05 m (10 ft) high	Vibration break between source and receive rooms

N/A-Non Applicable

Appendix B

Complete Test Results

SOUND TRANSMISSION LOSS

ASTM E 90

Architectural Testing

ATI No.	94932.01	**Date**	10/22/09
Client	YKK AP America		
Specimen	Series/Model: 35XT, single storefront door with 1" IG (5/16" laminated exterior, 7/16" air space, 1/4" tempered interior), Glass temperature 75°F		
Specimen Area	21.53 Sq Ft		
Filler Area	118.47 Sq Ft		
Operator	Brandon C. Ward		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	74.5	75.7	76.6	75.0	74.4	75.5
RH %	44.6	42.6	42.9	43.4	43.6	43.4

Freq (Hz)	Bkgrd SPL (dB)	Absorp (Sabines /Sq Ft)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Defici-encies	Trans Coef Diff
80	40.7	50.6	84.2	57.8	31.0	24	2.38	0	0.9
100	38.8	51.2	87.8	58.9	35.2	26	3.05	0	2.7
125	40.9	55.1	91.9	60.4	43.7	28	1.85	0	8.9
160	42.4	55.6	94.2	65.7	46.8	25	1.73	0	15.0
200	40.6	54.5	98.7	65.4	55.3	29	1.11	0	18.7
250	40.3	53.7	99.9	64.2	60.2	32	1.41	0	21.1
315	39.4	59.1	98.1	63.0	62.7	31	0.82	1	24.6
400	38.6	58.1	97.4	60.6	62.8	32	0.61	3	22.9
500	38.2	59.4	98.7	60.5	63.2	34	0.19	2	22.0
630	34.1	57.4	101.2	61.4	67.1	36	0.35	1	24.2
800	35.6	60.2	101.0	59.4	67.8	37	0.20	1	23.2
1000	33.0	63.3	100.3	60.2	70.3	35	0.36	4	27.6
1250	33.0	71.3	103.5	63.2	72.1	35	0.28	5	29.7
1600	31.0	70.8	109.8	70.1	75.2	35	0.37	5	33.3
2000	21.4	76.2	106.0	65.4	75.8	35	0.31	5	33.3
2500	12.1	87.9	104.3	62.0	77.1	36	0.29	4	33.6
3150	11.8	102.9	105.0	58.4	78.5	40	0.28	0	31.4
4000	9.7	127.2	103.6	53.3	81.8	43	0.33	0	31.7
5000	7.6	170.6	101.9	50.1	85.1	43	0.28	0	35.0

STC Rating =	**36**	*(Sound Transmission Class)*
Deficiencies =	**31**	*(Number of deficiencies versus contour curve)*
OITC Rating =	**32**	*(Outdoor/Indoor Transmission Class)*

Notes:

1) The acoustical chambers are qualified for measurements down to 80 hertz. Data reported below 80 hertz is for reference only.

2) Transmission loss coefficient differences less than 6 indicate the lower limit of the transmission loss for this specimen. These cells are highlighted red.

3) Transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. These cells are highlighted green.

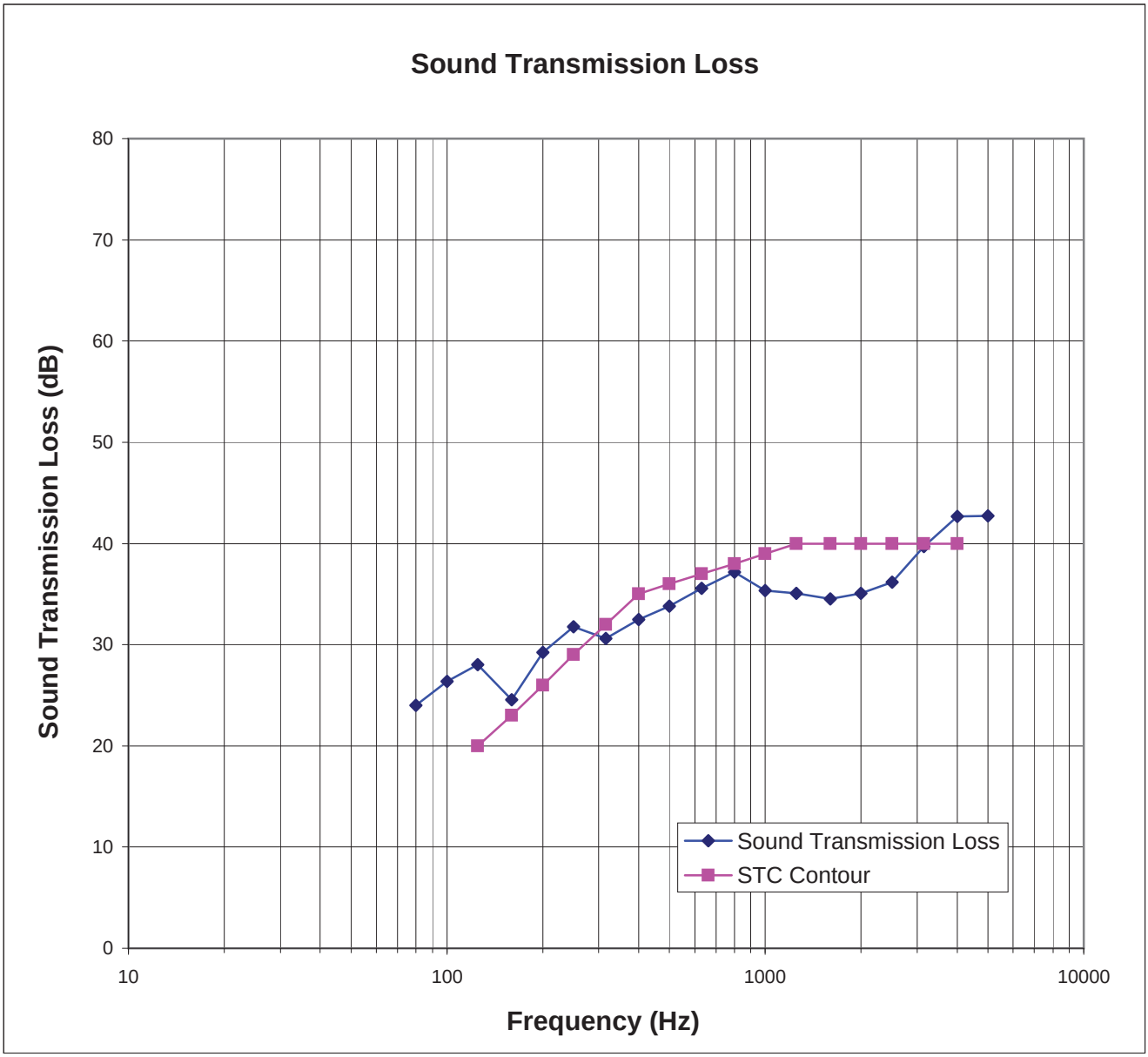
4) Receive Room levels less than 5dB above the Background levels are highlighted in yellow.

IAS ACCREDITED

Architectural Testing, Inc. is accredited by the International Accreditation Service, Inc. (IAS) under the specific test methods listed under lab code TL-144, in accordance with the recognized International Standard ISO/IEC 17025:2005. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by IAS. This test report applies only to the specimen that was tested.

Architectural Testing

ATI No.	94932.01	**Date**	10/22/09
Client	YKK AP America		
Specimen	Series/Model: 35XT, single storefront door with 1" IG (5/16" laminated exterior, 7/16" air space, 1/4" tempered interior), Glass temperature 75°F		
Specimen Area	21.53 Sq Ft		
Filler Area	118.47 Sq Ft		
Operator	Brandon C. Ward		



ACCREDITED

Architectural Testing, Inc. is accredited by the International Accreditation Service, Inc. (IAS) under the specific test methods listed under lab code TL-144, in accordance with the recognized International Standard ISO/IEC 17025:2005. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by IAS. This test report applies only to the specimen that was tested.

ASTM E 1425 Data Sheets

ATI Job Number :	94932.01
Client Name :	YKK AP America
Test Date :	10/21/09
Tests Performed by:	Brandon C. Ward
Specimen Type :	Single Storefront Door
Series/Model Number :	35XT
Sample Size :	39-3/8" by 78-3/4"

Architectural Testing

Air Infiltration per ASTM test method ASTM E 283

Total Air flow (ft^3/min) :	17.0		
Extraneous Leakage (ft3/min) :	11		
Temperature (^oF) at Specimen:	75		
Barometric Pressure at Specimen (in mbar):	1013	(Inches of Hg) :	29.91
Specimen Area in square feet :	21.53		
Density of air at reference standard conditions (lb/ft^3)	0.075		

Total air flow w/ air density correction (ft3/min)	Extraneous leakage with air density correction (ft3/min)	Air leakage through the specimen with air density correction (ft3/min)	Rate of air leakage per unit area (ft3/min)/sq.ft.
16.902	10.937	5.966	0.28

94932.01

Client Name : YKK AP America
Test Date : 10/21/09
Tests Performed by: Brandon C. Ward
Specimen Type : Single Storefront Door
Series/Model Number : 35XT
Sample Size : 39-3/8" by 78-3/4"

Operating Force per ASTM test method E 2068 Method B - Force Gauge

Panel Deadbolt

Trial No.	Locking	Unlocking
1	5	5
2	5	5
3	5	5

3 Trial Ave.	5.00	5.00
10% of 3 trial avg	0.5	0.5
8 Trial Average w/o high & low	5.0	5.0

Appendix C

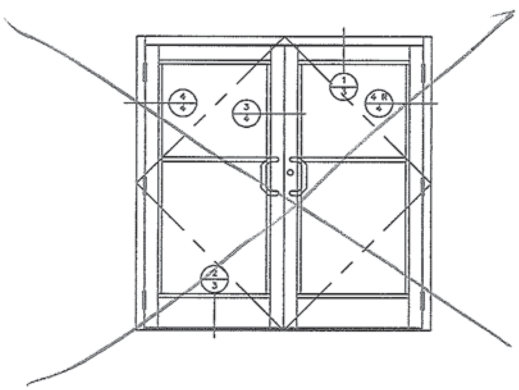
Design Drawings

Architectural Testing

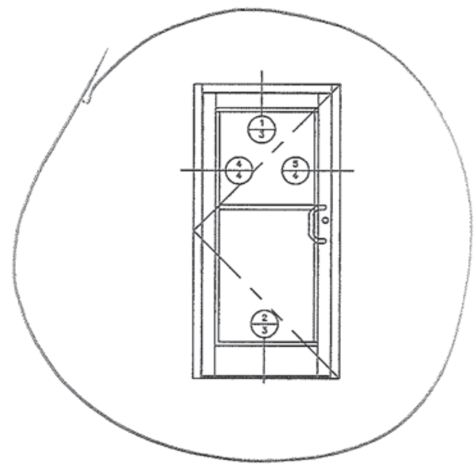
Test sample complies with these details.
Deviations are noted.

Report# 94932.01-113-11

Date 10-30-09 Tech BCW



ELEVATION 1



ELEVATION 2

YKK AP

YKK AP AMERICA INC.

HEADQUARTERS:
7680 The Bluffs, Suite 100 PH:(678)838-6000
Austell, GA 30168 FAX:(678)838-6056

DUBLIN PLANT:
332 Firetower Road PH:(478)277-1855
Dublin, GA 31021 FAX:(478)277-2500

NO.	REVISION	DATE	BY

DESCRIPTION:
ELEVATION SHEET
FOR FORMAL TESTING

SYSTEM:
35T DOOR
THERMAL ENTRANCE DOOR

DRAWING NUMBER: 35T THERMAL

FINISH: PAINTED

SCALE: AS NOTED | GLAZING:

DRAWN BY: BCM | REV.:

APPROVED BY: RB | SHEET NO.: 2

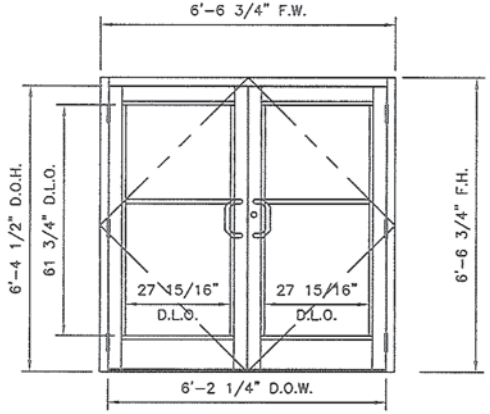
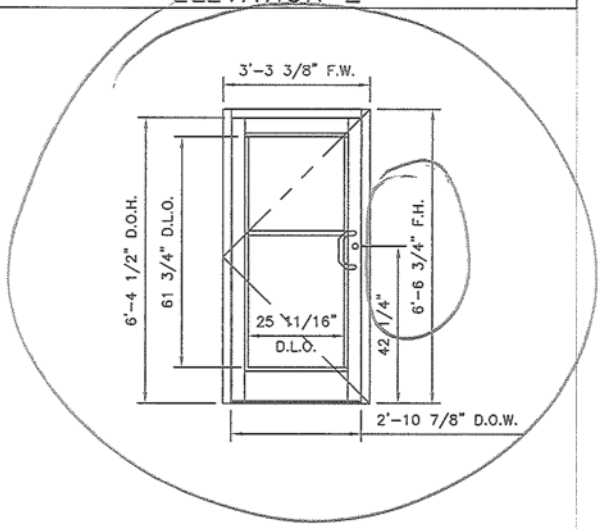
DATE: 9/9/09

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 94932.01-113-11

Date 10-30-09 Tech BCA

ELEVATION #	ELEVATION 1	ELEVATION 2
ELEVATION GLASS & IMPACT LOCATIONS		
DESIGN PRESSURE	+50psf/-50psf	+50psf/-50psf
GLAZING	EXTERIOR: SNAP IN GLASS STOP WITH GASKET	EXTERIOR: SNAP IN GLASS STOP WITH GASKET
	INTERIOR: SNAP IN GLASS STOP WITH GASKET	INTERIOR: SNAP IN GLASS STOP WITH GASKET
HARDWARE	SINGLE POINT MS 1850 ACTIVE FLUSHBOLTS INACTIVE BUTT HINGES	SINGLE POINT MS 1850 BUTT HINGES
TESTS TO BE PERFORMED	NFRC 102, AAMA 1503, AAMA 507 AAMA 1801/ASTM E90	NFRC 102, AAMA 1503, AAMA 507 AAMA 1801/ASTM E90

GLASS TYPE:

GLASS TYPE: 1" NOMINAL: 1/4" CLEAR TEMPERED
+ 1/2" AIR + 1/4" CLEAR TEMPERED.

GLASS SIZE IS D.L.O. + 1.500"

YKK AP

YKK AP AMERICA INC.
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DUBLIN PLANT: 333 Flatover Road Dublin, GA 31021 PH:(478)277-1655 FAX:(478)272-6668

NO.	REVISION	DATE	BY

DESCRIPTION: SUMMARY SHEET FOR FORMAL TESTING

SYSTEM: 35T 0000 THERMAL ENTRANCE DOOR

DRAWING NUMBER: 35T THERMAL

FINISH: PAINTED

SCALE: AS NOTED

GLAZING:

DRAWN BY: BCM

REV.:

APPROVED BY: RB

SHEET NO.: 1

DATE: 9/29/09

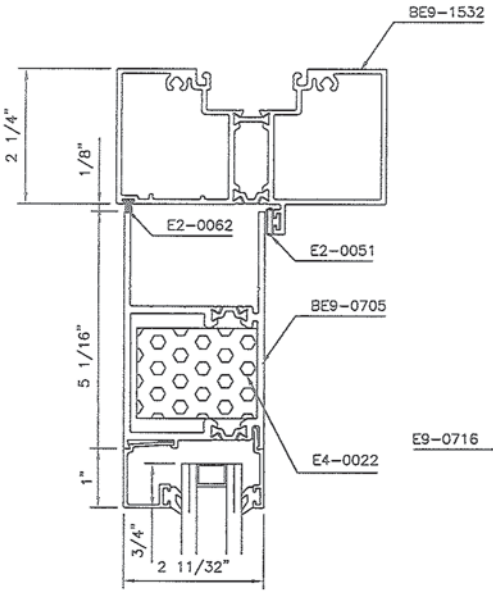
P:\Submittals\DRAWINGS\35T THERMAL DOOR\DRAWING\35T THERMAL.dwg

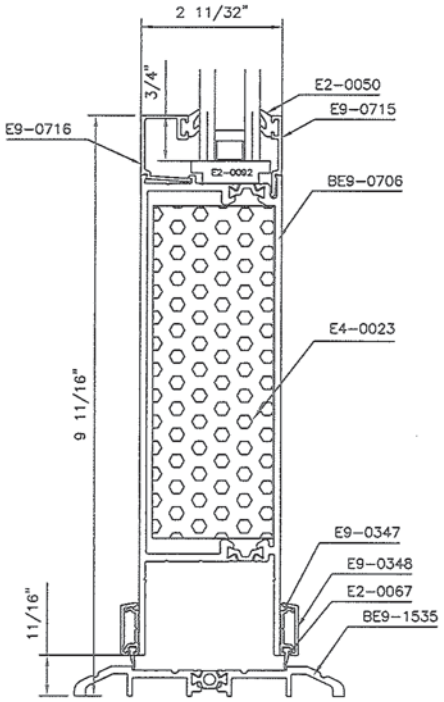
Architectural Testing

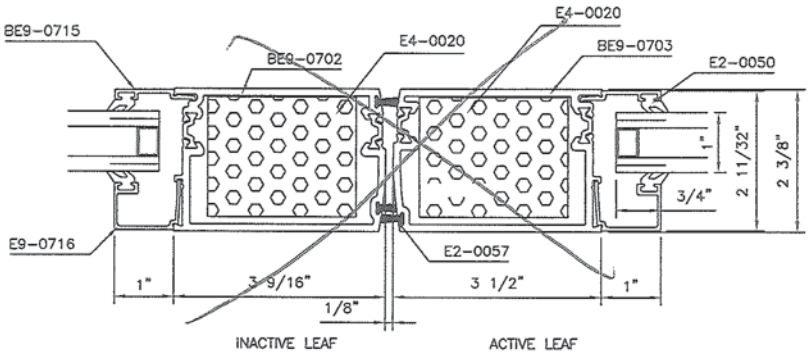
Test sample complies with these details.
Deviations are noted.

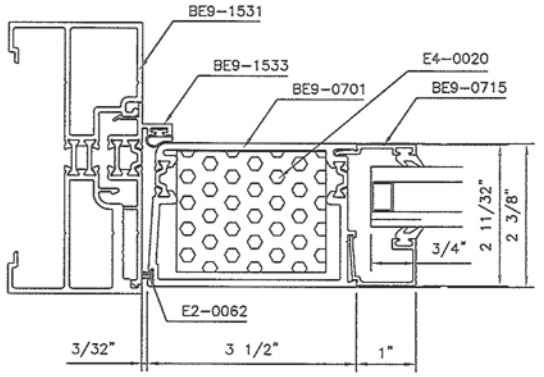
Report# 94932.01-113-11

Date 10-31-09 Tech BCW









YKK AP

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DUBLIN PLANT: 332 Flexlover Road Dublin, GA 31021 PH:(478)277-1655 FAX:(478)277-2500

NO.	REVISION	DATE	BY

DESCRIPTION: DETAIL SHEET FOR FORMAL TESTING

SYSTEM: 35T DOOR THERMAL ENTRANCE DOOR

DRAWING NUMBER: 35T THERMAL

FINISH: PAINTED

SCALE: AS NOTED

GLAZING:

DRAWN BY: SCM

REV.:

APPROVED BY: RB

SHEET NO.: 3

DATE: 9/9/09

F:\LIBRARY\ENTRANCES\35T DOOR THERMAL DOOR\DRAWINGS\DOOR DRAWINGS\35THERMAL.dwg

Appendix D

Photograph

Sample Installed in Test Chamber