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3/17/2022

Re: Storm Related Structural Glazing Assessment

[redacted]

TSSA Project # [redacted] **- 2021-10-29**
Date of Loss: September 16th, 2020
Final Report Dated – 3/17/2022

Dear Mr.& Mrs. [redacted]

As requested by Mr. [redacted] TSSA Storm Safe DAC Inc. (TSSA) conducted a glazing damage assessment of the [redacted] residence on 12/3/2021. The purpose of this inspection was to evaluate the condition of the installed glazed systems (listed below) as they currently exist following the effects of [redacted] (a powerful Hurricane that passed through the area on September 16th, 2020.)

Single Hung Window System with Colonial Grid - 35" X 71"
Double Mulled Single Hung Window System - 71" X 60"
Single Hung Window System - 34" X 58"
Single Hung Window System - 30" X 35"
Single Hung Window System - 31" X 35"
Single Hung Window System with Colonial Grid - 31" X 35"
Single Hung Window System - 29" X 34"
Single Hung Window System - 29" X 34"
Entry Door with Picture Window Glass Insert - 36" X 79"
Double Mulled Single Hung Window System - 70" X 59"
Two Panel Sliding Glass Door System - 72" X 80"

Present during our TSSA inspection of the [redacted] Residence was Ivan Browner (President) and Steven Browner (Vice President) from TSSA Storm Safe DAC Inc., and Consultant - Nick O'Halloran GC (O'Halloran Construction Services LLC.) The homeowners, Mr. and Mrs. [redacted] were also present during the inspection.

Inspection Protocol: TSSA employed a systematic inspection protocol to document and notate the physical damage profile seen on the installed glazed systems. The inspection protocol considered system installation, operational capacity, frame disposition, glazing disposition, and adherence to the main structure.

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Inspection Protocol, Methodology, and Compliance:

T e TSSA Storm Safe DAC Inc. inspection protocol, field inspection methodology, an ysis, and reporting were performed in general compliance with standards and recommendations set forth by ASCE, FEMA, ASTM, and FGIA/AAMA.

Insp tion Protocol: In general compliance with ASCE/SEI 30-14 "Guideline for Conditio Assessment of the Building Envelope," TSSA employed a systematic inspe tio protocol to document and notate the physical damage profile seen on the install d gla ed systems. The inspection protocol considered system installation, ope ationa capac y, frame disposition, glazing disposition, and adherence to the main structu .

During the valuation of the [redacted] Residence, TSSA inspectors employed the following protocol and proce ures.

- Conducted a isual, non-dest uctive assessment of the residence to document, photograp , and evalu te th damage.
- Collected field dime sions f the [redacted] Residence to illustrate the structure's general configuration and t e loc tio of all the observed damage to the windows.
- Reviewed published weather data and subseq e t analysis for the effects of [redacted] in [redacted] Florida.
- Prepare an in-depth inspection analysi of eac glaz d opening, notating each specific type of storm-related physical damage w nessed during our site visit.
- Prepared Executive Findings report summarizing the field i vestigation results and our storm damage evaluation and conclusions.
- Make a repair/replace recommendation after analyzing the damage wit essed and applying glazing science, technology, and standard practice ncepts.

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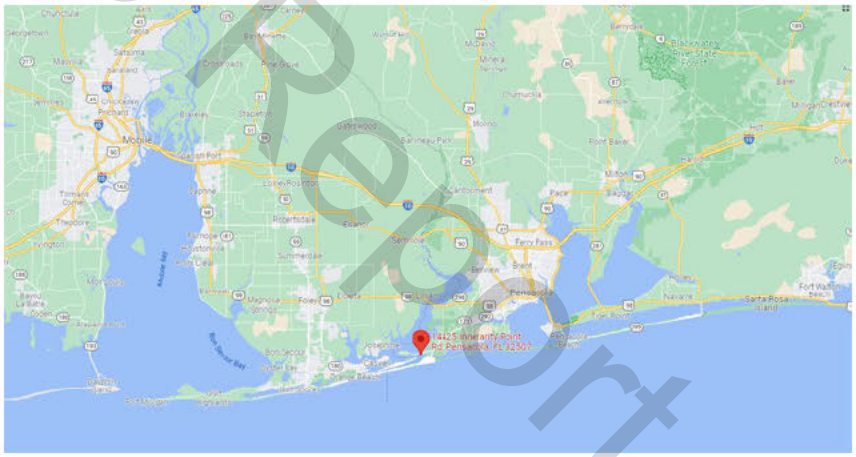
Overview of Site Conditions

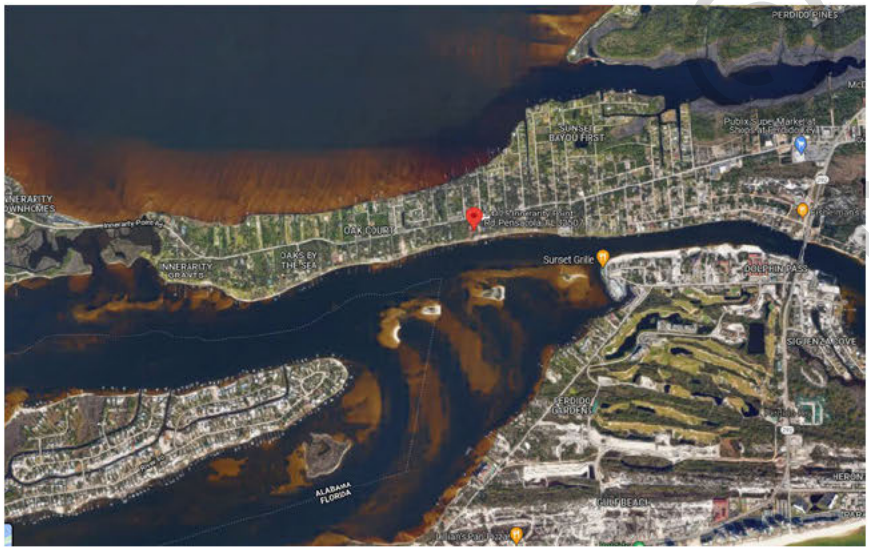
The [redacted] Residence is a two-story single-family home located at [redacted]

Background Information

The two-story structure was constructed via a slab-on-grade foundation, wood framing system, gable/hip shingled roof, and an exterior stucco finish. According to the [redacted] County Property Appraisers Office, the two-story family house was built in 1997 with a total gross square footage of 7,312 (5,278 sq. ft. under air conditioning.)

[redacted] Residence - [redacted]





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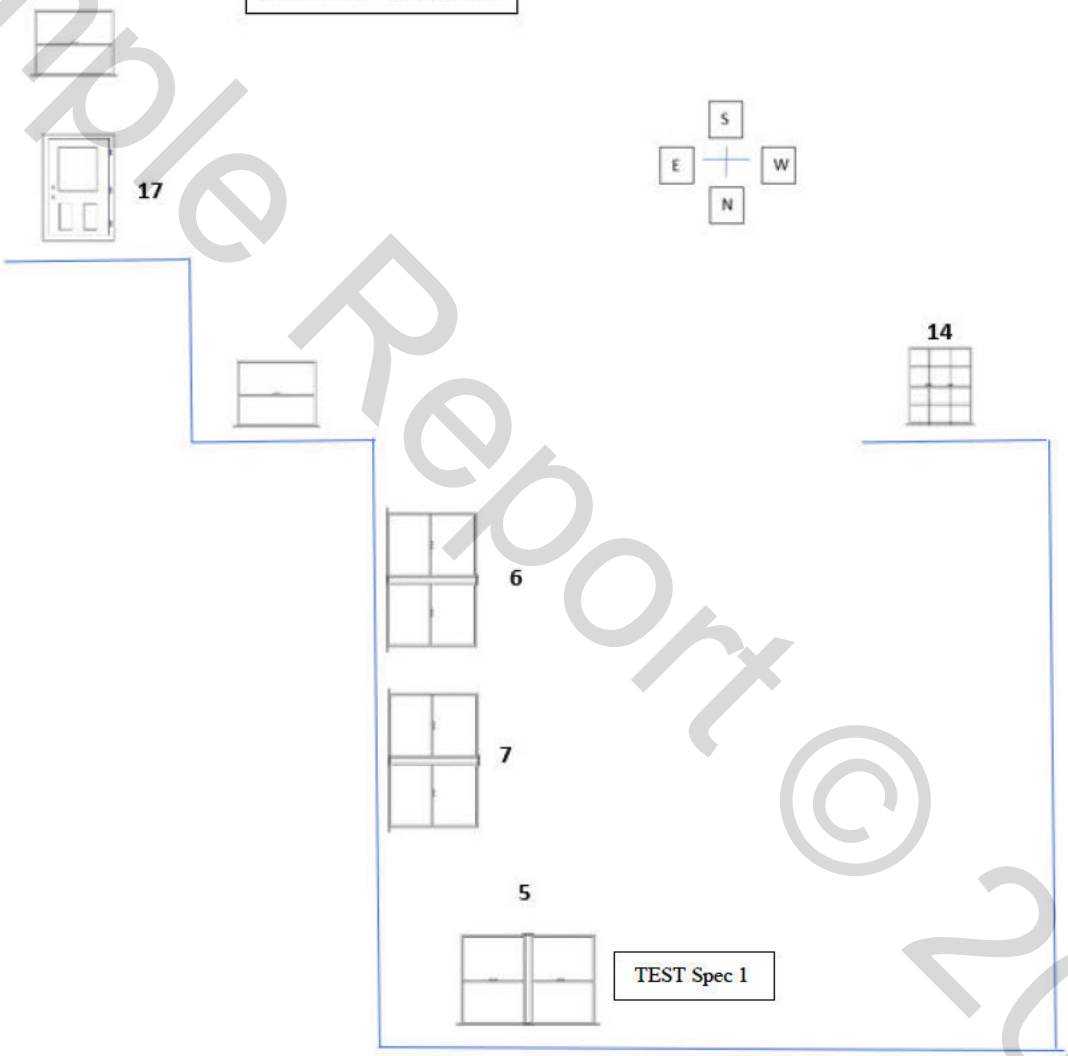
[redacted] – Wall Map

[redacted]
Front View – North Face



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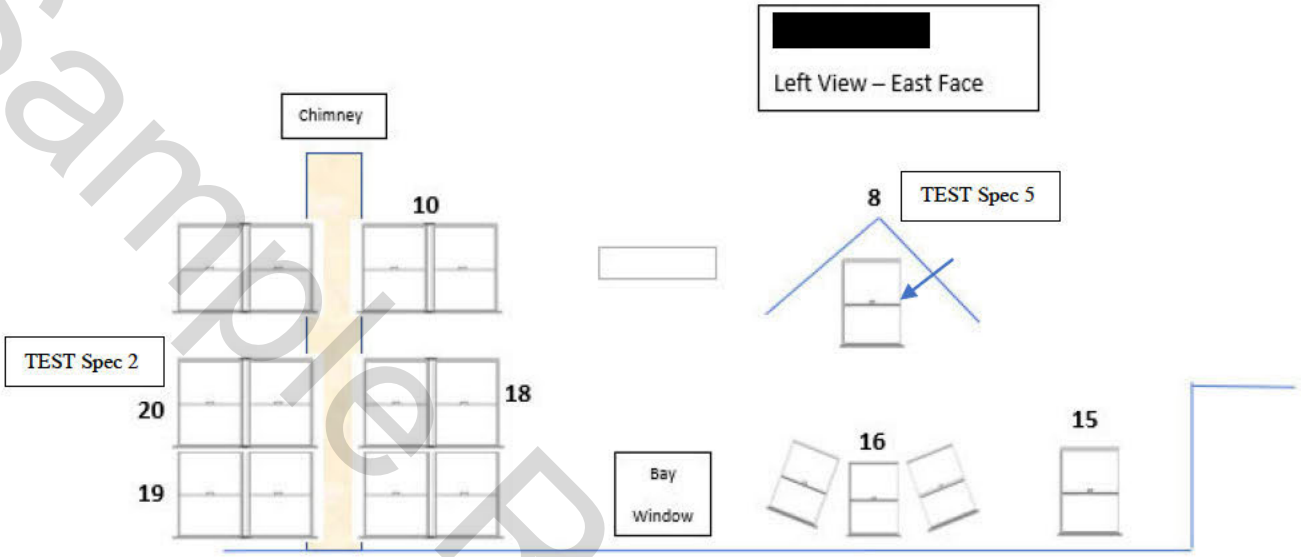

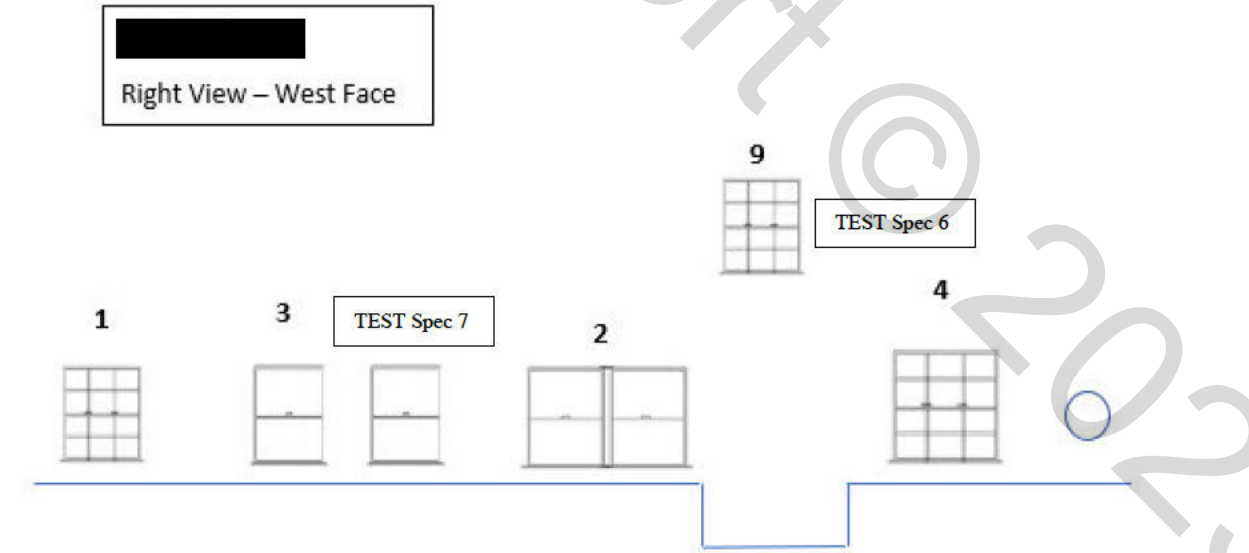

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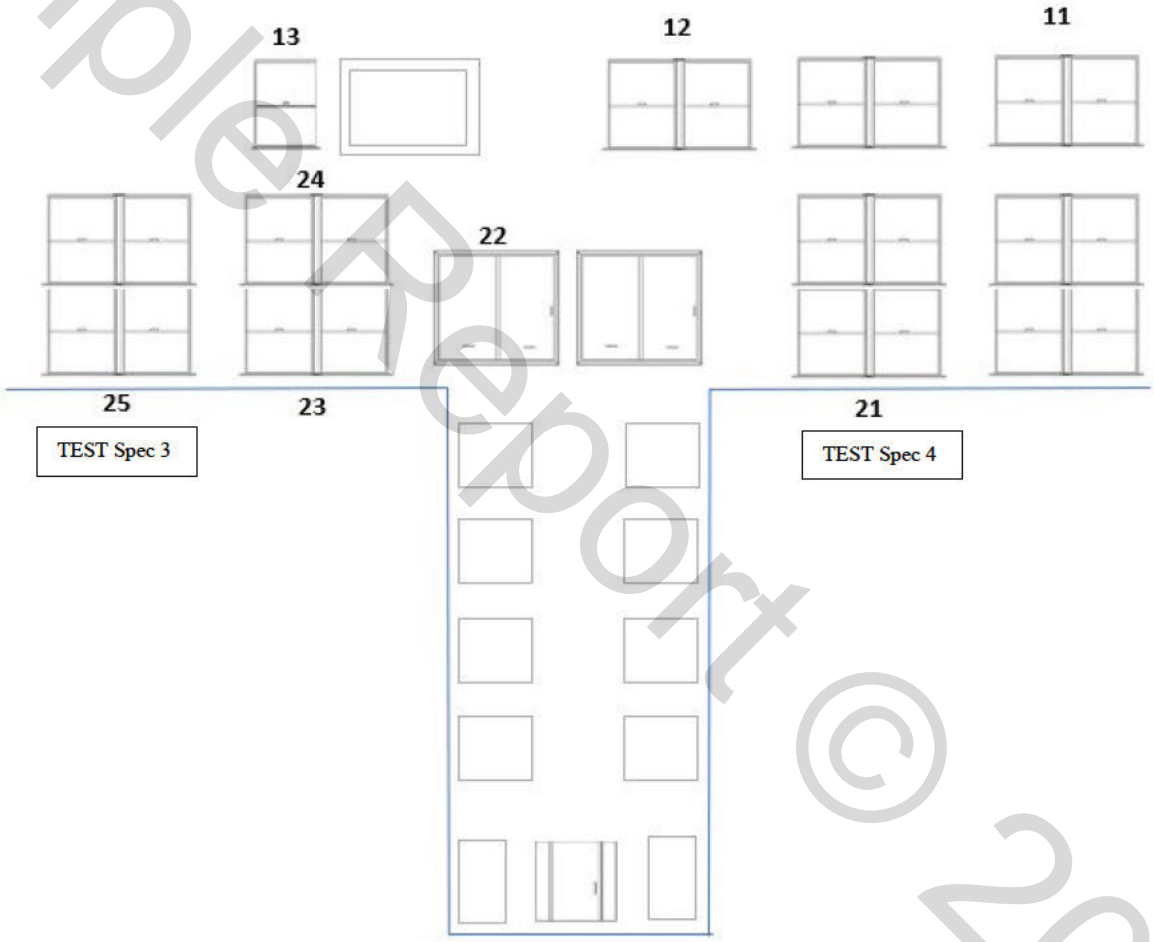
[redacted]
Back View – South Face



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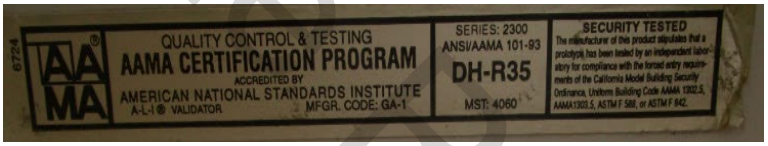
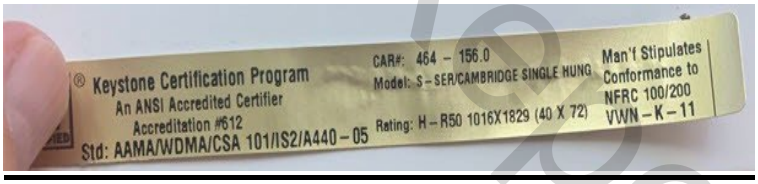
Manufacturer's Installed and System Nomenclature:

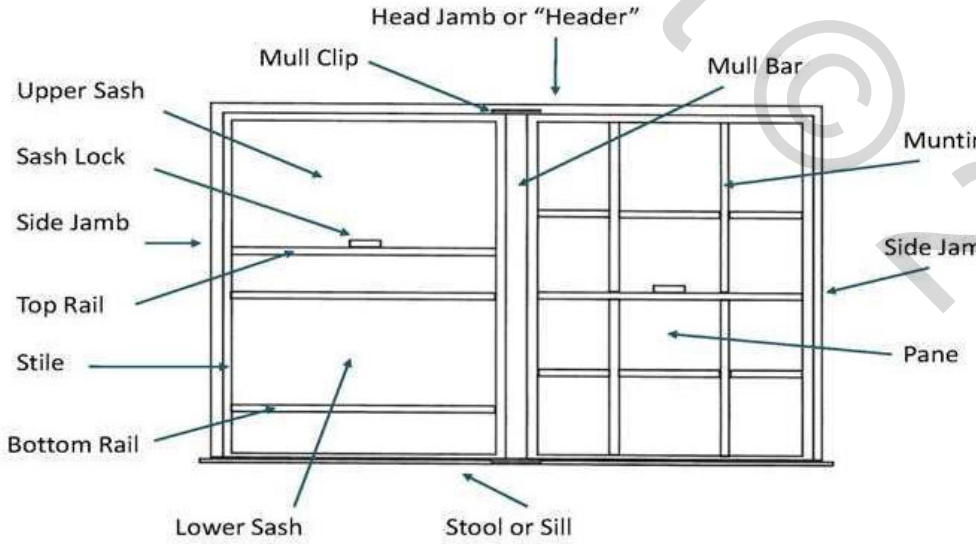
Danvid Windows – Single Hung Windows



General Aluminum – Series 2300 Single Hung Windows



Vi Win Tech Windows & Doors – Cambridge Model Single Hung Windows



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Mr. [redacted]

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Number of Systems Inspected:

Th re are 53 glazed openings in the [redacted] Residence consisting of the following Window Types:

S ngle Hung Window System with Colonial Grid
Doub Mulled Single Hung Window System
Si gle Hu g Window System
Entry D or with icture Window Glass Insert
Two Panel Slid ng Glass Door System

TSSA was able o inv tigate each type of window and door system installed in the structure.

TSSA inspectors were able to ph ically inspect 25 out of the 53 (47.1%) or the glazing openings in the [redacted] Residence and th foll wing was observed:

Explanation of Major Damages Identified -

The purpose of the following section is to id ntify nd exp ain the Major Repeated Damage types that were witnessed throughout the enti e mpus of the [redacted] Residence inspection. In our professional opinion, TSSA Storm Safe DAC Inc. defines Major Damage as damage identified on the glazed system which jeopa dizes the structural integrity of the building envelope. The following explanat ns f ma or damage (Frame Separation, Frame Rotation, Interior Finish Distress, Exte or Finish Distress, Moisture Intrusion, Sealant Disruption, Deglazing, Spacer Damage, Gl ss Stop D ge, and Seal Failure) were discovered repetitively on all the major directional faci gs, elev tions, and exposures of the campus.

The glazed systems installed were stressed, buffeted, and exposed to t e intens Hurricane-created wind force and came to rest in a damaged state howing a diminishment of capacity to keep a congruent glazed envelope of protect on and a weather-tight barrier

These physical damages are an example of what occurs when windows that share the characteristics of assembly and installation, such as the systems installed in the [redacted] Residence, are overstressed and affected by intense Hurricane-created wind pressure.

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Summary of Glazing Damages Observed

Frame Separation

During our investigation of the [redacted] Residence, TSSA Storm Safe DAC Inc. inspectors witnessed frame separation seen at adjoined framing components of the installed Single Hung Window Systems. High wind created buffeting of the glazed systems and adverse framing system movement allowed the assembly systems to separate between adjoining frame members causing a diminishment of the window's capacity to keep a congruent envelope of protection. The glazed systems currently sit in a diminished state and are susceptible to moisture intrusion between the opened joints.

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Frame Rotation

During our investigation of the [redacted] Residence, TSSA Storm Safe DAC Inc. inspectors witnessed frame rotation seen at adjoined framing components of the installed Single Hung Window Systems. High wind created buffeting of the glazed systems and adverse framing system movement allowed the assembly systems to separate between adjoining frame members causing a diminishment of the window's capacity to keep a congruent envelope of protection. The glazed systems currently sit in a diminished state and are susceptible to moisture intrusion between the opened joints.

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INTERIOR FINISH DISTRESS

Throug out the TSSA Storm Safe Inc. Glazing Damage Assessment of the [redacted] Re id ce, our inspectors witnessed interior fi h distr ss. The buffeting of the syst ms du ing a high wind event allowed th gla d syst ms to vibrate and move within their in talled p sition. This movement affe ted the i stallation fastening system and created system movement which disrupted th interior finish between the systems ramin d its interior finish reveal.

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EXTERIOR FINISH DISTRESS

Throug out the TSSA Storm Safe Inc. Glazing Damage Assessment of the [redacted] Re id ce, our inspectors witnessed exterior fi h distr ss. The buffeting of the syst ms du ing a high wind event allowed th gla d syst ms to vibrate and move within their in talled p sition. This movement affe ted the i stallation fastening system and created system movement which disrupted th exterior finish between the systems ramin d its exterior finish.

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Moisture Intrusion

During our investigation of the [redacted] Resid nce, our inspectors witnessed moisture intru ion seen around the perim er of the nstalled glazed systems. A combinatio of sy tem movement and fin disrupti n allow d m isture to intrude between the in talled s stems and the weather barrier finding its w y into the interior living space

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Sealant Disruption

Durin our investigation of the [redacted] R dence, ou inspectors witnessed Sealan Disrupti n created from high wind uffetin and system movement. The buffeti g of th systems during a high wind event allowed he glazed lites and frame systems to v brate and move within their installed positi n. This movement allowed the glazi g seal nt to avulse from its installed p sition betw en the glass lite and the glazing st e.

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Deglazing

rough ut the TSSA Storm Safe Inc. Gl zing amage Assessment of the [redacted] Res dence, our inspectors witnessed wid spread deglazing observed between the glazing ch nnel and glass panes of the nstall d window systems. The sealant edge etween the framing system and the g ass pa e was used to set the primary glazing seal in e same manner the primary seal i set round the installation flang of th window framing system. Wh n a indow system's glass pane is acted upon by cyclical movement such during an interaction with a high win event the glass pane moves violently within th glazing channel severely weakenin if not completely separating its adherence to the framing system. This is a dangerous combination which leaves the envelope of protection in a state that is no longer performing its function to protect the interior living space from the exterior elements.

(NOTE – the depth gauge is used only to show the deglazed panel and is not depicting a depth of penet atio between the glazing stile and glass l e.)

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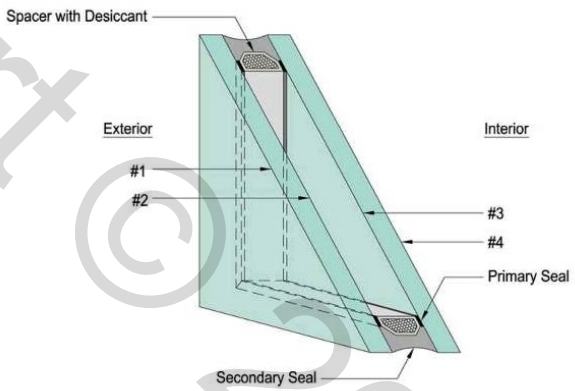
Damaged Spacer

During our investigation of the [redacted] Residence, our inspectors witnessed disruption of the Spacer found within the installed Insulating Glazing. Wind Buffeting and Pressure created during a high wind event effects the IGU Air Space, as well as the adherence of the IGU within its glazing pocket. Spacer Migration, Spacer Sealant Disruption, and Deglazing are all indicative of IGU glass movement and damage created during a high wind event.



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Glass Stop Damage

During our investigation of [redacted] Residence, our inspectors witnessed disruption of exterior Glass Stop system components. A Glass Stop a molding used to hold glazing infills in position, as well as keep the glazing pocket clean of debris. When high wind created buffeting vibrates a glass infill, the exterior glass stops become avulsed from their installed position no longer protecting the glazing channel and glass lite from the exterior elements. This damage will eventually lead to deglazing and moisture damage leaving the exterior envelope in a diminished and compromised state.

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Seal Failure

Throughout the TSSA Storm Safe Inc. Glazing Damage Assessment of the [redacted] Residence, our inspectors witnessed Seal Failure of the IGU "Insulated Glazing Unit." High wind buffeting, system movement, and wind-created pressure allowed the IGU to move within its installed position. This movement creates separations between the two panes of glass and the internal warm edge spacer, allowing moisture to intrude within the sealed airspace. If there is a gas fill (O2, Argon, or Krypton) charged within the sealed air space, the Gas vacates the system, and the moisture remains. The desiccant found within the warm edge spacer is consumed by the excess moisture, which leaves the IGU in a compromised state. Eventually, internal fogging of the IGU demonstrates the seal failure damage rendering the glass pane unable to perform its function.

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ASTM E-1105 Water Penetration Resistance Testing

T sting Plan

History:

In estig tive Water Penetration Resistance Testing was conducted on Wedn sday October 12th, 2021, through Thursday, October 13th, 2021. Pre ent uring the testing activities were Ivan Browner (President) and Steven Brown (Vice President), and Nick O'Halloran (Project Director) from TSSA torm Safe DAC Inc. Mr. and Mrs. [redacted] was also present during the time testing w s being performed

Planning:

TSSA Storm Safe DAC In was requested to test 7 of the 53 (13.21%) window specimens installed at e [redacted] Residence.

TSSA Storm Safe DAC Inc as the specifying authority performing the testing activities onsite created a testing plan ons dering all the structures' elevations, compass headings, and installed ystem types.

Also, TSSA Storm Safe DAC Inc created a s mple set with systems that were inspected during our physical evaluation, as well systems that were not inspected during our physical evaluation.

Test Sample Data Set:

Physically inspected:	6 out of 7 systems (85.71%)
Not Physically Inspected:	1 out of 7 systems (14.29%)

Testing Protocol:

When planning the testing of the glazed systems selected at [redacted] Residence, the steps put forth in section 5.1.1 of the ASTM E-2128 document titled "Sequence of Activities" were taken into consideration:

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5 1.1.1 Review of project documents.
5. 1.2 Evaluation of design concept.
5. .1.3 Determination of service history.
5.1.1.4 Inspection.
5.1 1.5 Investigative testing.
5.1 1.6 nalysis.
5.1.1 7 Report preparation.

After r viewin the project details and design concept discussing the service history of th instal ed windows, it was determined that the appropriate test protocol to employ would be:

ASTM E-1105 – P ocedure B "Te t under cyclic static air pressure difference." To be applied n conformity with the protocol established by ASTM E-2128 "Standard Gu de for Evaluating Water Leakage in Building Walls."

TSSA Storm Safe DAC Inc. created the following testing plan to conform with the applied testing standards:

Testing Plan Explanation:

The glazed systems installed at the [redacted] Resid nce w certified and rated according to the AAMA Certification Program. Ea h manufacturer submitted systems to be laboratory tested accord ng t tringent AAMA guidelines. Upon successfully completing the certifi ation pro ess, were rated by AAMA to comply with a specified Performan e Grade and In-Service Requirements. The AAMA certification pr c ss tes s glazing systems according to their Design Pressure, Structural Load Test Pressure, Water Penetration Resistance, and Air Infiltration Resistance. The efore, the AAMA Certification is an important data point to consider when planning an ASTM E-1105 Water Penetration Resistance Investigation.

The following section explains the testing plan and execution of testing activities performed at the [redacted] Residence:

Single Hung Window System – (Test Specimens – 1, 2, 3, & 4)

Specified Performance Grade

Design Pressure	30	PSF
Structural Load Test Pressure	45	PSF
Water Penetration Resistance	4.5	PSF
Water Test Pressure Inches per Water	0.87	In/H2O

The systems in this c egory were rated by AAMA at a Design Pressure of 30 PSF.

According to the AAMA 511 08 St ndard Section 4.2.1.1 "point 4" to find the appropriate Field-Testing Pressure, it is rec mmended to calculate a 2/3 deduction from the specified design pressure

30 PSF (rated design pressure) * 0.66667 20 00 PSF (field testing pressure)

The water infiltration resistance testing pressure is t b determined by calculating 15% (R, LC, C, HC) or 20% (AW) of the Field Test ng Pressure:

20.00 * 15% = 3.00 PSF water resistance testing pressure

The Testing Plan was specified to follow the ASTM E-1105 – Procedure B utilizing a cyclic static pressure difference. In addition, TSSA S orm Sa e DAC Inc. as the specifying authority created a testing protocol that incrementally raised the testing pressure each testing cycle to reach the ultimate calculated testing pressure. This method is common in the industry to produce statistical data to track the pressure level achieved when a failure is recorded and determine if the glazed systems are adequately performing

their function to protect the interior occupied space from the exterior elements.

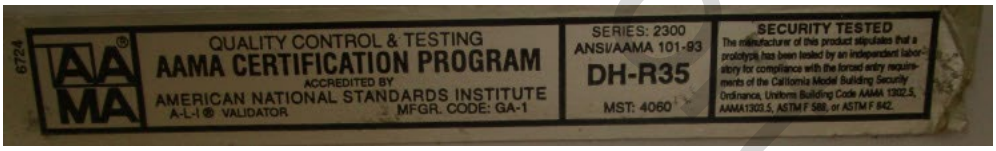
The following calculated testing pressures were employed to achieve the sp cified testing plan.

Single Hung Window System

Testing Plan		
Total Water Resistance	3.00	PSF
Water Test Pressure Inches per water	0.58	In/H2O

	Field Test Water Infiltration (PSF)		Field Test Water Infiltration (In/H2O)		Pascal		Time Duration	
Cycle 1	0.00	PSF	0.00	In/H2O	0.00	Pa	5:00	min
Cycle 2	1.00	PSF	0.19	In/H2O	47.88	Pa	5:00	min
	0.00	PSF	0.00	In/H2O	0.00	Pa	< 1:00	min
Cycle 3	2.00	PSF	0.39	In/H2O	95.76	Pa	5:00	min
	0.00	PSF	0.00	In/H2O	0.00	Pa	< 1:00	min
Cycle 4	3.00	PSF	0.58	In/H2O	143.64	Pa	5:00	min

Single Hung Window System – (Test Specimen 5 & 6)



Specified Performance Grade

Design Pressure	35	PSF
Structural Load Test Pressure	52.5	PSF
Water Penetration Resistance	5.25	PSF
Water Test Pressure Inches per Water	1.01	In/H2O

The systems in this category were rated by AAMA at a Design Pres e of 35 PSF.

According to the AAMA 511-08 Standard Section 4.2.1.1 "point 4" to find the appropriate Field-Testing Pressure, it is recommended to calculate a 2/3 deduction from the specified design pressure.

35 PSF (rated design pressure) * 0.66667 = 23.33 PSF (field testing pressure)

The water infiltration resistance testing pressure is to be determined by calculating 15% (R, LC, C, HC) or 20% (AW) of the Field-Testing Pressure:

23 33 * 5% = 3.50 PSF water resistance testing pressure.

Single Hung Window System

Testing Plan		
Total Water Resistance	3.50	PSF
Water Test Pressure Inches per water	0.68	In/H2O

	Field Test Water Infiltration (PSF)		Field Test Water Infiltration (In/H2O)		Pascal		Time Duration	
Cycle 1	0.00	PSF	0.00	In/H2O	0	Pa	5:00	min
Cycle 2	1.17	PSF	0.23	In/H2O	55.860	Pa	5:00	min
	0.00	PSF	0.00	In/H2O	0.000	Pa	< 1:00	min
Cycle 3	2.33	PSF	0.45	In/H2O	111.720	Pa	5:00	min
	0.00	PSF	0.00	In/H2O	0.000	Pa	< 1:00	min
Cycle 4	3.50	PSF	0.68	In/H2O	167.581	Pa	5:00	min

Vinyl Single Hung Window System – (Test Specimen – 7)

Specified Performance Grade

Design Pressure	50	PSF
Structural Load Test Pressure	75	PSF
Water Penetration Resistance	7.5	PSF
Water Test Pressure Inches per Water	1.45	In/H2O

The systems in this category were rated by AAMA at a Design Pressure of 50 PSF.

According to the AAMA 511-08 Standard Section 4.2.1.1 "point 4" to find the appropriate Field-Testing Pressure, it is recommended to calculate a 2/3 deduction from the specified design pressure.

50 PSF (rated design pressure) * 0.66667 = 33.33 PSF (field testing pressure)

The wa er infiltration resistance testing pressure is to be determined by calcu ting 15% (R, LC, C, HC) or 20% (AW) of the Field-Testing Pressure:

33.33 * 15% = 00 PSF water resistance testing pressure.

The Testing Plan was specified to follow the ASTM E-1105 – Procedure B. utilizing a cyclic static pressure difference. In addition, TSSA Storm Safe DAC Inc. as the specify ng authority created a testing protocol that incrementally r ised the esting pressure each testing cycle to reach the ultimate calculated testing p essure This method is common in the industry to produce statistical data o tra k the pressure level achieved when a failure is recorded and determine if he glaz d systems are adequately performing their function to protect the interior occupied space from the exterior elements.

The following calculated testing pressu es we e em loyed to achieve the specified testing plan.

Single Hung Window Systems - (New Vinyl)

Testing Plan		
Total Water Resistance	5.00	PSF
Water Test Pressure Inches per water	0.97	In/H2O

	Field Test Water		Field Test Water		Pascal		Time Duration	
Cycle 1	0.00	PSF	0.00	In/H2O	0	Pa	5:00	min
Cycle 2	1.67	PSF	0.32	In/H2O	79.800	Pa	5:00	min
	0.00	PSF	0.00	In/H2O	0.000	Pa	< 1:00	min
Cycle 3	3.33	PSF	0.64	In/H2O	159.601	Pa	5:00	min
	0.00	PSF	0.00	In/H2O	0.000	Pa	< 1:00	min
Cycle 4	5.00	PSF	0.97	In/H2O	239.401	Pa	5:00	min

To Achieve the proper Chamber Pressure, the procedure listed on pg. 3 of he ASTM E-1105-15 document was followed.

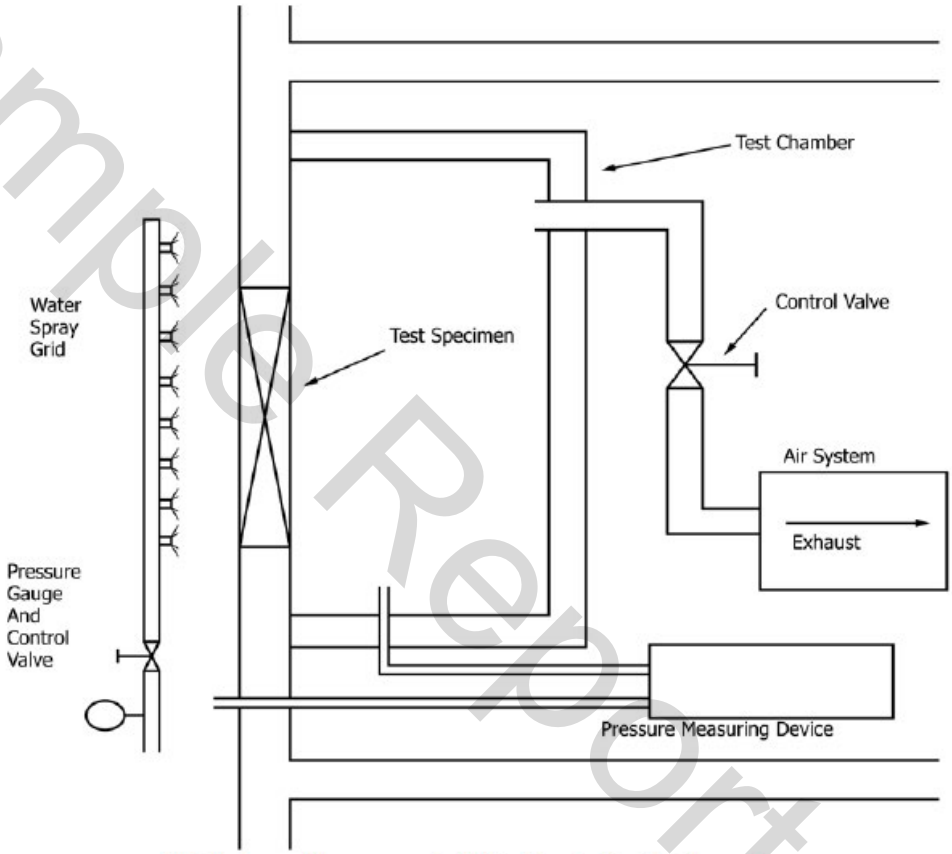


FIG. 1 General Arrangement of Water Penetration Test Apparatus

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Testing Apparatus Used:

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Testing Results – Analysis

The following chart displays the results of the E-1105 Water Penetration Resistance testing performed at the [redacted] Residence.

NOTE For a complete description of each specimen recorded testing data, see he ection titled: "Exhibit A – Field Inspection Notes and Photos."

	Location	System Type:	Window Obervation Cycle Number:	Flow Rate (Gal/min)	Water Pressure (PSI)	Vacuum Pressure (in of H^2O)	Result	Time
Spec 1	GA	2SH	2	7.5	12 PSI	0.19	F	1:49
Spec 2	LR	2SH	1	7.5	12 PSI	0	F	1:48
Spec 3	LR	2SH	3	7.5	12 PSI	0.39	F	0:37
Spec 4	LR	2SH	4	7.5	12 PSI	0.58	P	5:00
Spec 5	D	SH	4	7.5	12 PSI	0.68	F	3:40
Spec 6	D	SH	4	7.5	12 PSI	0.68	P	5:00
Spec 7	3BR	SH	3	7.5	12 PSI	0.65	F	1:49

Testing activities performed onsite pr duced the following results:

5 of the 7 (71%) units tested ended in a Failin resul
2 of the 7 (29%) units tested ended in a pas ing result.

FAILURE:

According to Section 3.2.3 of the ASTM E-1105 t sting st ndard, failure is defined as follows:

> 3.2.3 water penetration, n—penetration of water beyond a plane parallel to the glazing (the vertical plane) inter cting the inne most projection of the test specimen, not including interior rim and hardware, under the specified conditions of air pressure ifferen e across the specimen.

According to this statement, the interpretation of Water Penetration (Failure) is when water penetrates beyond the glazed system's water management system and is witnessed beyond the innermost part of the window system framing or installation.

For example, when water is seen on the marble/drywall sill or drywall reveal (head, jamb, or sill) beyond the framing system, this is considered a failure ccording to ASTM E-1105.

PASSING:

If water is witnessed on a frame member of an installed glazed system or is contain d within the Sill Frame Member and does not reach beyond the frame nto interior living space, the window is considered to have passed the tes

All glazed systems ave designed within them Water Management Systems to handle "Water I filtration."

According to ASTM E-21 8 Section 3.2.3, Water Infiltration is defined as follows:

> 3.2.3 water infiltra on— pro ess in which water passes through a material or between m terials i a system and reaches a space that is not directly or intention lly exposed to the water source.

A window system is designed to manag limited water infiltration by integrating the buildings Water Resistanc Barr er, Mo sture Drainage Plane, Incorporating Sill End Damn, Weeping System and other water mitigation design systems.

If a window system operates according to its s ecifi d designed water resistance testing pressure and is installed according to its ufacturer's prescribed installation method, it can manage limited moist re intrusion and protect the interior occupied space from the exterior elemen s.

To understand this point further:

> "If the water that has leaked to the inside of the window does not breach the innermost plane of the window itself, the water can ot damage the building because the window is still protecting it from any of the water infiltration." - Todd Mikkelson "Building Consultant."

However, moisture intrusion can escalate to moisture penetration when a window system is compromised, stressed beyond its specified design pressure, and has exhibited signs of failure. The window system cannot ha dle the amount of uncontrolled "water leakage" attacking the exterior gl zed envelope. According to ASTM E-2128 section 3.2.4, Water Leakage is defined as follows:

> 3 2.4 water leakage—water that is uncontrolled; exceeds the esistance, retention, or discharge capacity of the system; or causes sub equ nt damage or premature deterioration.

Note – th TSSA Storm Safe DAC Inc spray rack is calibrated as per the ASTM E-1105 testing st ndard and was in compliance with the standard when testing was performed at the [redacted] Residence. Below is a copy of the TSSA Storm Sa e DAC Inc Cal bration Certificate.

ASTM E331 & E1105 Apparatus Calibration Certificate
In compliance with ASTM 2128

"AAMA 502, 503 & 511 refers to ASTM E1105 and ASTM E547 refers to E331. This Calibration is pertinent to all of these standards.

The ASTM E331 and E1105 standards require the spray rack to average between 5 and 10 gallons of water per square foot per hour with none of the single square feet falling below 4 gallons per hour. The Rain Maker is tested according to the strict guidelines laid out by ASTM.

The calibration test is performed with the Rain maker nozzles spaced 24" from each other, and 20" from the test specimen, with a water pressure of 12 psi. 12 psi is to be maintained no matter how many of the nozzles are being used in the assembly.

#000914	7/10/21	Ivan Browner
Serial Number	Calibration Date	Technician

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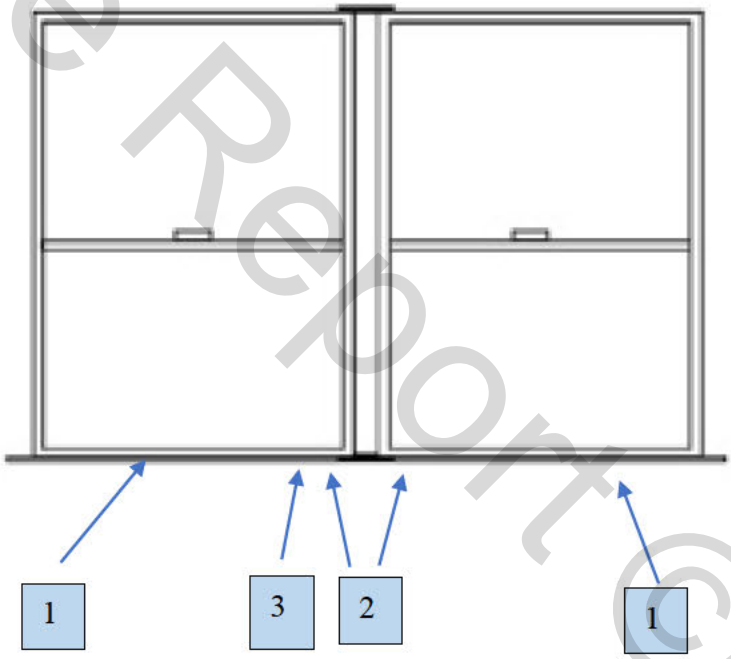
ASTM E-1105 Water Penetration Testing Results

The following diagrams show the location of failure on each of the specimens tested and what test cycle the failure occurred.

ASTM E-1105 Water Penetration Testing Results

Double Mulled Single Hung Window



4 = PASS

	Location	System Type:	Window Obervation Cycle Number:	Flow Rate (Gal/min)	Water Pressure (PSI)	Vacuum Pressure (in of H^2O)	Result	Time
Spec 1	GA	2SH	2	7.5	12 PSI	0.19	F	1:49
Spec 2	LR	2SH	1	7.5	12 PSI	0	F	1:48
Spec 3	LR	2SH	3	7.5	12 PSI	0.39	F	0:37
Spec 4	LR	2SH	4	7.5	12 PSI	0.58	P	5:00

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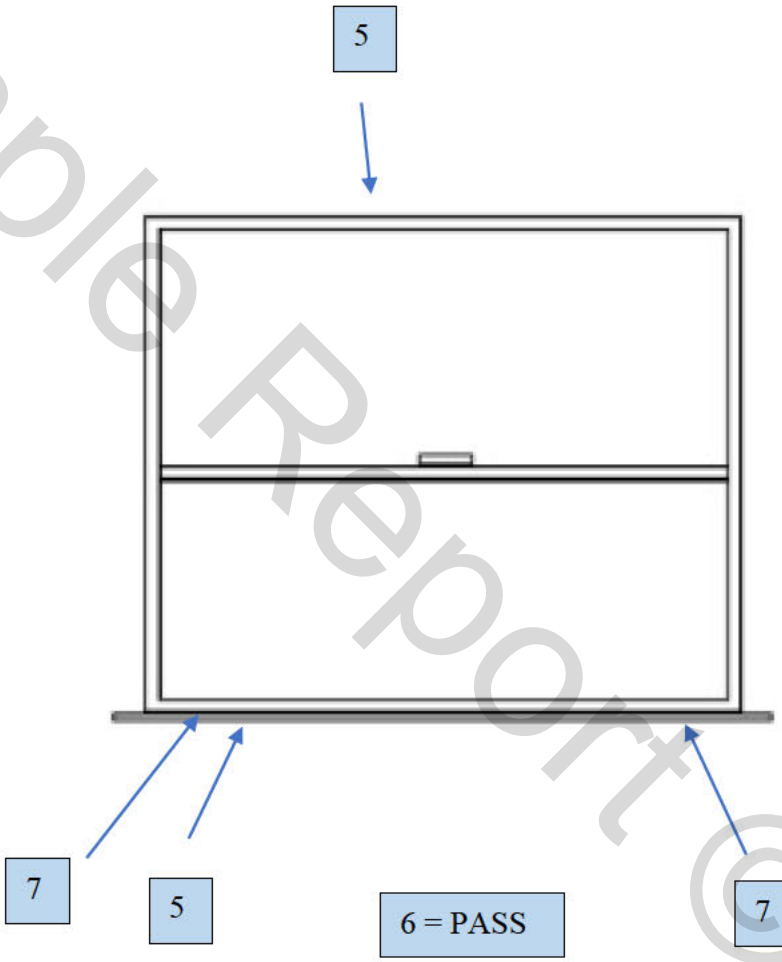
Single Hung Window



	Location	System Type:	Window Obervation Cycle Number:	Flow Rate (Gal/min)	Water Pressure (PSI)	Vacuum Pressure (in of H^2O)	Result	Time
Spec 5	D	SH	4	7.5	12 PSI	0.68	F	3:40
Spec 6	D	SH	4	7.5	12 PSI	0.68	P	5:00
Spec 7	3BR	SH	3	7.5	12 PSI	0.65	F	1:49

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Repair Replace Analysis

After Analyzing the inspection data collected onsite, the following recommendations to repair or replace have been determined.

Window Map Location	E-1105 Testing Specimen Number	SPECIMEN	FACING	ROOM	SPECNUM	Damages Identified	Reccomendation to Correct
1		SH-CG_35X71	W	2BR	1	,O,GSD,FS,DG,OS,FOA,	REPLACE
2		2SH_71X60	W	3BR	1	,O,GSD,FS,IFD,DS,	REPLACE
3		SH_34X58	W	3BR	1	,O,NSI,ND,GSD,OS,	REPAIR
4		SH_30X35	W	4BR	1	,IO,GSD,DS,OS,FS,DG,	REPLACE
5	Spec 1	2SH_71X60	N	G	1	,O,GSD,FS,DS,EFD,MM,	REPLACE
6		2SH_71X60	E	F	1	,O,IO,BM,OR,RG,FS,DS,IFD,OS,EFD,GSD,	REPLACE
7		2SH_71X60	E	F	2	,O,DS,OR,DG,FS,IFD,OS,GSD,	REPLACE
8	Spec 5	SH_31X35	E	D	1	,IO,GSD,DS,OS,DG,EFD,	REPLACE
9	Spec 6	SH-CG_31X35	W	D	2	,O,IFD,GSD,BL,OS,EFD,FS,FR,DS,	REPLACE
10		2SH_71X60	E	MBR	1	,IO,O,BM,IFD,DS,FS,SF,	REPLACE
11		2SH_71X60	S	MBR	2	,O,NO,BM,IFD,FS,SF,DS,	REPLACE
12		2SH_71X60	S	MBR	3	,O,NO,SF,IFD,FS,DS,	REPLACE
13		SH_30X35	S	MBA	1	,NO,BM,DS,GSD,FR,IFD,FS,	REPLACE
14		SH-CG_31X35	N	MBA	2	,IO,BM,IFD,OS,SD,FS,DS,FOA,SF,	REPLACE
15		SH_29X34	E	LA	2	,NO,FS,GSD,IFD,MI,OS,DG,SD,FR,	REPLACE
16		SH_26X71	E	DR	1	,IFD,FS,DS,NO,MI,OS,GSD,EFD,	REPLACE
17		ED_PW-GI_36X79	N	K	1	,O,DG,IFD,BM,JM,FS,MI,OS,EFD,	REPLACE
18		2SH_70X59	E	LR	1	,SF,NO,FS,MI,OR,FR,IFD,DG,OS,GSD,ED,EFD,	REPLACE
19		2SH_70X59	E	LR	2	,SF,FS,OS,IFD,EFD,GSD,DG,MI,NO,OR,FR,ED,	REPLACE
20	Spec 2	2SH_70X59	E	LR	3	,OS,EFD,GSD,SF,FS,FR,SD,ED,	REPLACE
21	Spec 4	2SH_70X59	S	LR	4	,NO,IFD,MI,FS,DS,OS,OR,DG,EFD,GSD,ED,SF,	REPLACE
22		2SGD_72X80	S	LR	5	,LP,O,JM,AD,HM,IFD,DF,GI,FS,OS,FOA,	REPLACE
23		2SH_70X59	S	LR	6	,O,FS,DG,IO,BM,IFD,OS,EFD,GSD,ED,	REPLACE
24		2SH_70X59	S	LR	7	,OS,EFD,GSD,ED,OR,FS,DS,SD,IFD,	REPLACE
25	Spec 3	2SH_70X59	S	LR	8	,SF,NO,FS,OR,DG,DS,IFD,MI,OS,EFD,GSD,ED,	REPLACE

Not Physically Inspected	Spec 7	SH_34X58	W	3BR		REPAIR	4%
						REPLACE	96%
						NA	0%

Replace Determination –

D ermination to Replace has been created based on excessive Frame Separation, Frame Ro ation, Primary Seal Disruption, System Movement, Interior Finish Distress, Exterior Finish Distress, Deglazing, Glass Stop Damage, Spacer Disruption, Seal Failure, and Exposure to Moisture Intrusion witnessed on the systems inspected. The combination of these p ysical damages is indicative of the effects of [redacted] created buffeting wi d forc , which has left these systems in a compromised state.

Repair Determ nation –

Determinatio to Repa r has been created based on the fact that these systems did not show the same struc ural diminishment of capacity as the windows placed in the Replace group. Therefore t is po sible for an Engineered Approved Repair Protocol to be created to repair these specim ns.

Findings – Our professional pinion is that the physical damages witnessed on the glazed systems are consisten with an in raction with [redacted] created wind force, extensive buffeting, stress, nd ot c mmon age, condition, or poor maintenance issues.

The physical damage profile notated during our Non nvasi e Physical evaluation of the 25 window systems examined was further co c etized b the Water Penetration witnessed during the E-1105 Water Penetrati n Resi tance sting performed on the seven selected specimens.

The list below highlights the physical damage profile w tness d duri g our Non-Invasive Physical Evaluation:

Frame Separation
Frame Rotation
Primary Seal Disruption
System Movement
Interior Finish Distress
Exterior Finis Distress
Deglazing
Glass Stop Damag
Spacer Disruption
Seal Failure

These physical damages dimmish a glazed system's ability to keep a congruen env ope of protection. This diminishment of capacity is a primary reason water would be allowe to penetrate through the damaged glazed systems framing members, glazing mate al, primary seal, and adherence to the building substrate.

The failure locations (Water Penetration) witnessed during the ASTM E-1105 Water Penetration Test are directly proportional to the physical damages witnessed during the TSSA Storm Safe DAC Inc Non-Invasive Physical Evaluation.

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F ilure Analysis:

Storm Created Pressure Damage on Glazed Systems

[redacted] created wind speed, and subsequent pressure damage to the glazed system insta led at the [redacted] Residence was exacerbated by the glazed systems' rapid win buffe ing and cyclic movement.

> [redacted] defines Wind buf eting as a "rapid change in either direction or magnitude such that the change is dramat ally different from the immediately prior time step direction or immediatel prior time step average wind speed."

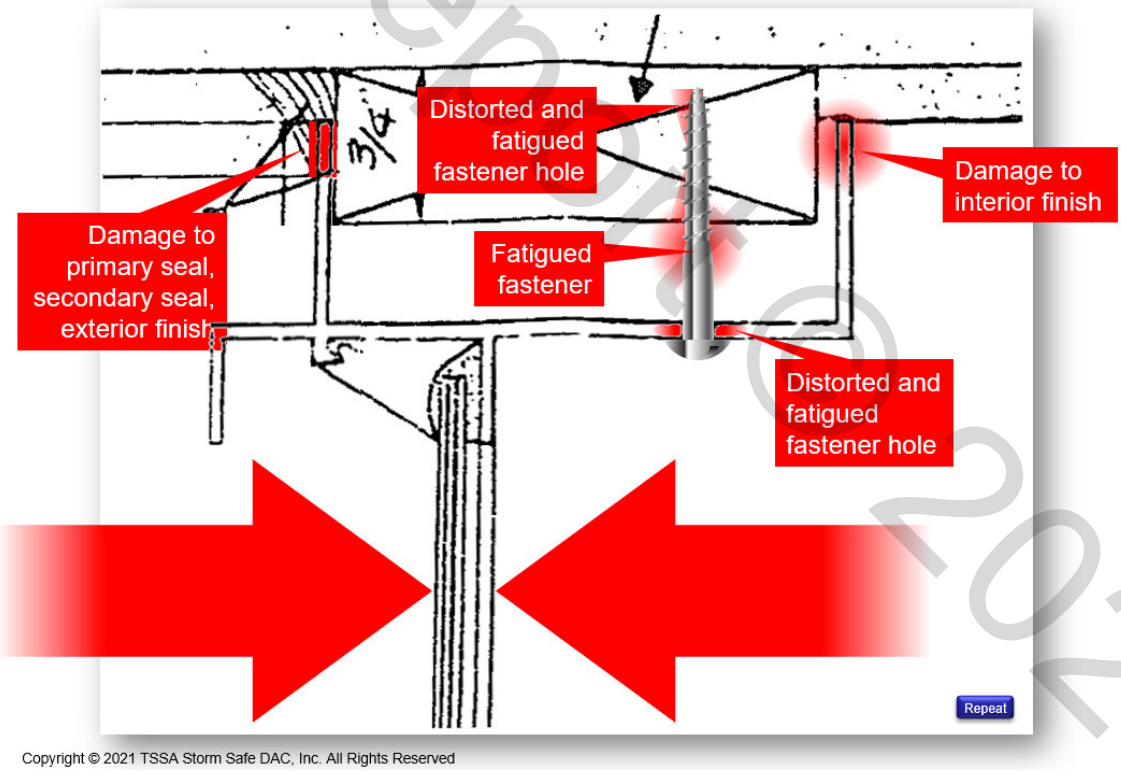
Buffeting wind fo e i under ood t have the ability to damage glazing systems, as well as other building envelope comp nents well below design wind speeds:

> According to Baskaran et l., f eque tly buffeting winds can cause materials and building envelope failures well bel w design wind speeds. [1]

The physical damages witnessed on the glazed system supp rted by the documented test cycle failure (wind speed and pressure), are indicat of windows systems that have been over-stressed and structurally damaged during th ir inte ction ith [redacted]

Below is a pictural example of how a glazed system damaged during an interaction with a prolonged cyclic high wind event.

This photograph was taken during a cyclic pressure test of a single hung window system. This photograph demonstrates how high wind speed, pressure, and buffeting force affects glazed systems during a Hurricane. The rapid positive and negative cyclic movement and high wind buffeting create separations and disruptions in a window system framing joints, installation fasteners, and glazing system causing failure in the components allowing water to penetrate through the exterior building envelope into the interior living space.



Physical damage created by Hurricane
High Wind Buffeting, Speed, and Pressure.

The professional opinion of TSSA Storm Safe DAC Inc. is that the glazed systems tested a the [redacted] Residence have been damaged to the point of being unable to adequately pro ect the interior living space from the exterior elements.

High Wind Speed, Pressure, and wind buffeting force from [redacted] caused the win ws framing, installation, and glazing components to separate. The post-storm ndition of the windows installed at the [redacted] Residence now sit in a compromised state and with a diminished capacity to keep a congruent envelope of protection. It is also impor ant to note that the glazed systems are now in peril of failing during a less powerful wind ev nt.

Due to the da a collec ed and the rate of failure witnessed during the ASTM E-1105 testing activ ties perf rmed onsite, it is the professional opinion of TSSA Storm Safe DAC Inc. that the azed tems need to be replaced.

Limitations – Th contents o this ondition damage assessment letter are intended for the use of Mr. [redacted] and his prese tatives or clients. TSSA Storm Safe Inc. assumes no liability for the misuse of this inform tion by others. The professional opinions and recommendations included w thin t s condition damage assessment letter are based on the results and interpretations of he n n-invasive testing and data collection activities performed at the site. TSSA Storm Safe In reserves the right to update this letter should additional information become available.

MOISTURE METER TECHNOLOGY – Th Ry bi Mod l # E49MM01 Moisture Meter Gauge and General 4-in-1 Pin/Pad RH Moisture Mete Model # MMH800 were utilized for the sole purpose of the TSSA Storm Safe Inc. inspector to document the presence of moisture in and around the Glazed System pecime in order to validate his remarks on Moisture Intrusion, Damage, and Penet ation No Microbial, Bacterial, Environmental, or other scientific data was investigated inte pre ed, and otherwise implied by the testing, data gathering, and investigation completed with th Ryobi Model # E49MM01 Moisture Gauge or General 4-in-1 Pin/Pad RH Moistu Meter Model # MMH800.

Closing Statement - The opinions authored in this condition damage a sessme t letter are a direct result of Ivan Browner (TSSA's President) and TSSA Storm Safe DA Inc.'s background, training, and combined experience, which spans over 70 years in all facets of the glazing industry. TSSA Storm Safe DAC Inc. has inspected over 500,000 windows, sliding glass doors, curtain walls, storefront systems, and architectural produ s in multiple states.

As the author of this condition damage assessment letter, the basis for the opinions expressed herein are to a reasonable degree of professional certainty. However, TSSA S rm Safe DAC Inc. reserves the right to update this report should additional inf rmation become available.

The TSSA Storm Safe DAC Inc., glazed damage assessment investigation of the [redacted] Res nce was performed by the TSSA Storm Safe Inc. Field Inspection Team under my direct supervision.

Attach d to th s Glazing Testing Report are the following exhibits:

Exhibit A – Inspe i n Field Notes and Photographic Backup
Exhibit B – ASTM E-1 05 Water Penetration Test Field Notes
Exhibit C – van Browner Curriculum Vitae
Exhibit D – TSSA torm S fe Inc. Curriculum Vitae
Exhibit E – TSSA Storm Safe Inc. Expert Witness Fee Schedule
Exhibit F – Referen

TSSA Storm Safe DAC Inc. app eciates this opportunity to have assisted Mr. [redacted] with this investigation. Please call i you h ve any questions concerning this information.

Sincerely,

[redacted]

Ivan Browner
President
TSSA Storm Safe DAC Inc.

Exhibit A

Field Inspection Notes and Photos

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10/11/2021 10:36


10/11/2021 10:37

TSSA STORM SAFE — Damage Assessment Consultants

Structural Glazing Damage Assessment

Project: 1 Residence

Building #/Letter: 1 Stack: A

Floor: 1 Unit: [redacted]

Room: Foyer / Specimen #: 1 Facing: E / Corner Unit: No

SYSTEM DISPOSITION:
- ☐ (ND) - NO DAMAGE
- ☐ (R) – REMOVED
- ☐ (NA) - NOT ACCESSIBLE
- ☐ (LA) - LIMITED ACCESS
- ☐ (NSI) - NEW SYSTEM INSTALLED
- ☒ (O) - OPERATIONAL
- ☐ (NO) - NOT OPERABLE
- ☒ (IO) - IMPAIRED OPERATION
- ☒ (BM) - BROKEN MECHANISM
- ☐ (ED) - EXCESSIVE DAMAGE
- ☐ (S) - SHUTTERS

EXPOSURE DAMAGE:
- ☒ (IFD) - INTERIOR FINISH DISTRESS
- ☒ (EFD) - EXTERIOR FINISH DISTRESS
- ☐ (MI) - MOISTURE INTRUSION
- ☐ (C) - CORROSION
- ☐ (SD) - SEALANT DISRUPTION

PHOTO START # 140

PHOTO FINISH # 198

FRAME DAMAGE:
- ☐ (FOA) - FRAME OUT OF ALIGNMENT
- ☒ (FS) - FRAME SEPARATION
- ☐ (FR) - FRAME ROTATION
- ☐ (HM) - HEADER MOVEMENT
- ☐ (JM) - JAMB MOVEMENT
- ☐ (FM) - FOOTER MOVEMENT
- ☐ (SM) - SILL MOVEMENT
- ☐ (MS) - MULL SEPARATION
- ☐ (MM) - MULL MOVEMENT
- ☐ (MR) - MULL ROTATION
- ☐ (AD) - ASTRAGAL DAMAGE
- ☐ (LP) - LOOSE PANEL
- ☐ (FD) - FRAME DEFLECTION

RELATIVE MOISTURE LEVEL:

(L JAMB) - _____% (R - JAMB) - _____%

(HEADER) - _____% (SILL) - _____%

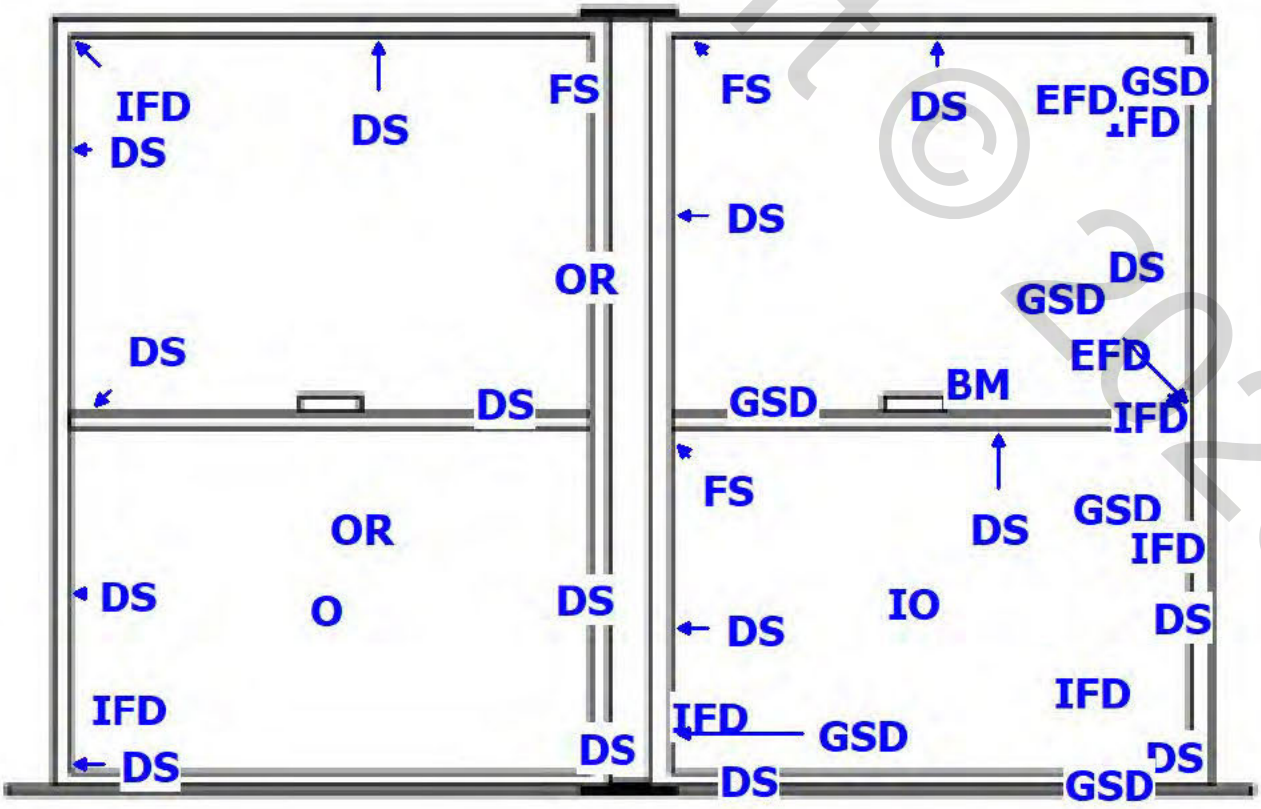
(REFERENCE) - _____%

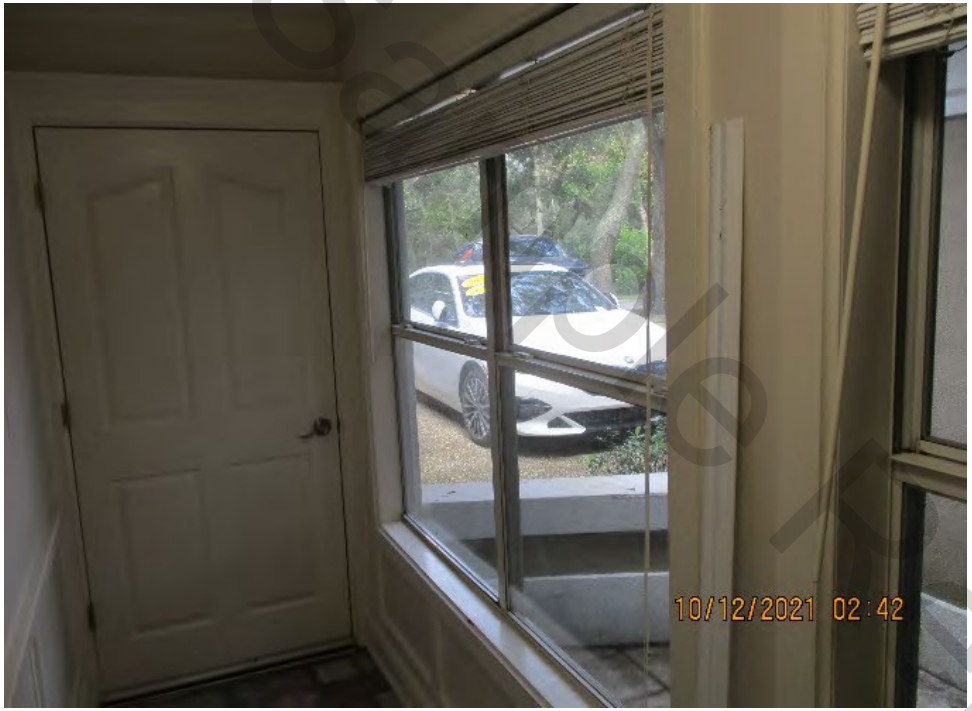
SYSTEM DAMAGE:
- ☐ (DG) - VISUAL SIGNS OF DEGLAZING
- ☐ (GI) - GASKET INGESTED
- ☐ (GNS) - GASKET NOT SEATED
- ☒ (DS) - DAMAGED SPACER
- ☐ (DF) - DAMAGED FASTENER
- ☐ (MF) - MISSING FASTENER
- ☒ (GSD) - GLASS STOP DAMAGE
- ☐ (ASD) - ASSEMBLY SYSTEM DISTRESS
- ☐ (BL) - BROKEN LITE
- ☐ (WD) - WEATHER STRIP DAMAGE
- ☐ (SF) - SEAL FAILURE
- ☐ (CPD) - COVER PLATE DAMAGE

TEMPORARY REPAIRS:
- ☐ (FP) - FRESH PAINT
- ☐ (PF) - PAINTED FRAMES
- ☐ (WP) - WALLPAPER
- ☐ (SR) - SEALANT REPAIR
- ☒ (RG) - RE-GLAZED
- ☐ (NG) - NEW GASKET
- ☐ (NF) - NEW FASTENER
- ☒ (OR) - OTHER REPAIR

WINDOW TYPE: Double Mulled Single Hung **WINDOW CODE:** 2SH_71X60

(OS) = OUTSIDE VIEW





TSSA STORM SAFE — Damage Assessment Consultants

Structural Glazing Damage Assessment

Project: 1 Residence

Building #/Letter: 1 Stack: A

Floor: 1 Unit: [redacted]

Room: Foyer / Specimen #: 2 Facing: E / Corner Unit: No

SYSTEM DISPOSITION:

- ☐ (ND) - NO DAMAGE
- ☐ (R) – REMOVED
- ☐ (NA) - NOT ACCESSIBLE
- ☐ (LA) - LIMITED ACCESS
- ☐ (NSI) - NEW SYSTEM INSTALLED
- ☒ (O) - OPERATIONAL
- ☐ (NO) - NOT OPERABLE
- ☐ (IO) - IMPAIRED OPERATION
- ☐ (BM) - BROKEN MECHANISM
- ☐ (ED) - EXCESSIVE DAMAGE
- ☐ (S) - SHUTTERS

EXPOSURE DAMAGE:

- ☒ (IFD) - INTERIOR FINISH DISTRESS
- ☐ (EFD) - EXTERIOR FINISH DISTRESS
- ☐ (MI) - MOISTURE INTRUSION
- ☐ (C) - CORROSION
- ☐ (SD) - SEALANT DISRUPTION

PHOTO START # 199

PHOTO FINISH # 252

FRAME DAMAGE:

- ☐ (FOA) - FRAME OUT OF ALIGNMENT
- ☒ (FS) - FRAME SEPARATION
- ☐ (FR) - FRAME ROTATION
- ☐ (HM) - HEADER MOVEMENT
- ☐ (JM) - JAMB MOVEMENT
- ☐ (FM) - FOOTER MOVEMENT
- ☐ (SM) - SILL MOVEMENT
- ☐ (MS) - MULL SEPARATION
- ☐ (MM) - MULL MOVEMENT
- ☐ (MR) - MULL ROTATION
- ☐ (AD) - ASTRAGAL DAMAGE
- ☐ (LP) - LOOSE PANEL
- ☐ (FD) - FRAME DEFLECTION

RELATIVE MOISTURE LEVEL:

(L JAMB) - _____% (R - JAMB) - _____%

(HEADER) - _____% (SILL) - _____%

(REFERENCE) - _____%

SYSTEM DAMAGE:

- ☒ (DG) - VISUAL SIGNS OF DEGLAZING
- ☐ (GI) - GASKET INGESTED
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- ☐ (DF) - DAMAGED FASTENER
- ☐ (MF) - MISSING FASTENER
- ☒ (GSD) - GLASS STOP DAMAGE
- ☐ (ASD) - ASSEMBLY SYSTEM DISTRESS
- ☐ (BL) - BROKEN LITE
- ☐ (WD) - WEATHER STRIP DAMAGE
- ☐ (SF) - SEAL FAILURE
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TEMPORARY REPAIRS:

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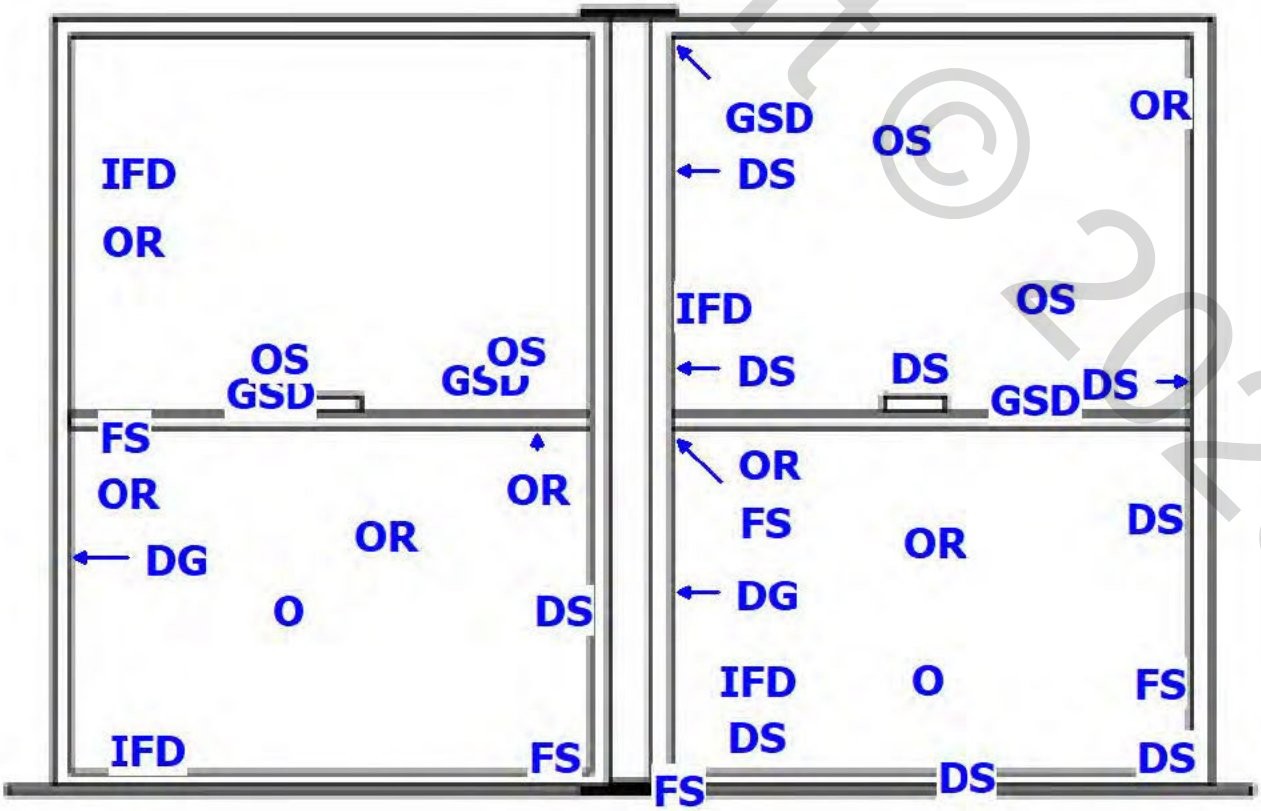
- ☒ (OR) - OTHER REPAIR

WINDOW TYPE: Double Mulled Single Hung **WINDOW CODE:** 2SH_71X60

(OS) = OUTSIDE VIEW



TSSA STORM SAFE — Damage Assessment Consultants

Structural Glazing Damage Assessment

Project: 1 Residence

Building #/Letter: 1 Stack: A

Floor: 1 Unit: [redacted]

Room: Foyer / Specimen #: 2 Facing: E / Corner Unit: No

left operational sash exterior head glass stop fully evulsed

WINDOW TYPE: Double Mulled Single Hung **WINDOW CODE:** 2SH_71X60

(OS) = OUTSIDE VIEW

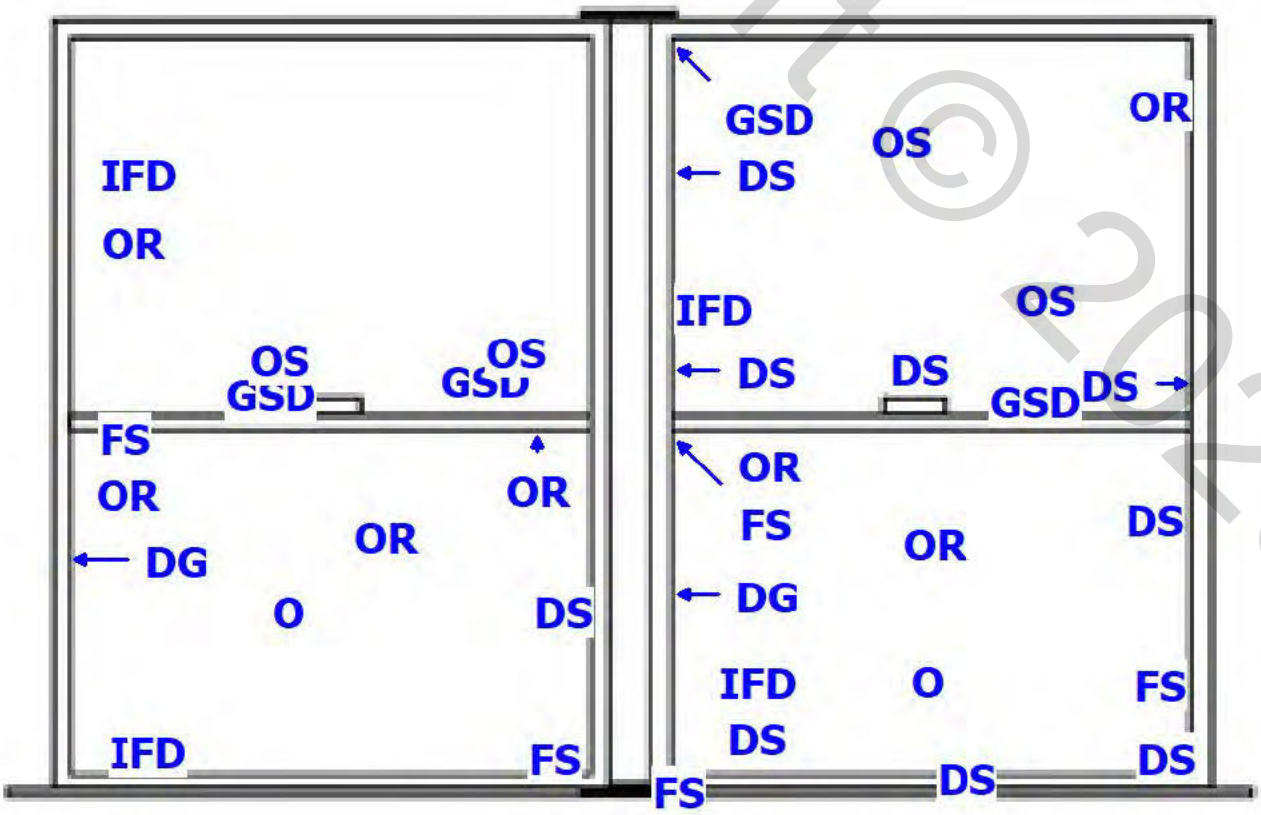


Exhibit B

ASTM E-1105 Water Penetration Test Field Notes

STORM SAFE
Damage Assessment Consultants

WATER PENETRATION TEST

DATA COLLECTION FORM:

PROJECT NAME:	[redacted] Residence	DATE:	10/12/21	
ADDRESS:	[redacted]	CLIENT:	[redacted]	[redacted]
CITY, STATE, ZIP:	[redacted]			
		INSIDE Br. PRESSURE:	1014.3 hPa	
STANDARD FOLLOWED		WIND SPEED: (AT SPEC)	7.2 mph	
ASTM E-1105	X	RELATIVE HUMIDITY:	81 %	
METHOD A – UNIFORM STATIC		TEST SUBJECT SURFACE TEMP		
METHOD B – CYCLIC STATIC	X	INSIDE:		
AAMA 511		OUTSIDE:		
AAMA 501.2				
		OUTSIDE AIR TEMP:		
BLDG #		INSIDE:	77 F	
UNIT #		OUTSIDE:	77 F	
FLOOR #	1			
SAMPLE NUMBER:	1	START TIME:		
SAMPLE LOCATION	Garage	END TIME:		
SAMPLE FACING	N			
		PHOTO START		
PROJECT DIRECTOR	Ivan	PHOTO STOP		
TECH #1	Nick			
TECH #2	Steven			
TECH #3				

PHYSICAL EVALUATION

SPECIMEN #	1	SPECIMEN TYPE:	2SH		
OVERALL EXTERIOR PHOTO #		OVERALL INTERIOR PHOTO #		PHOTO START	
				PHOTO STOP	
DIAGONAL MEASURMENT	71 W 60 H	FENESTRATION OPERATED (5 TIMES)	Y N		

SYSTEM DISPOSITION:
- ☐ (ND) - NO DAMAGE
- ☐ (R) - REMOVED
- ☐ (NA) - NOT ACCESSIBLE
- ☐ (LA) - LIMITED ACCESS
- ☐ (NSI) - NEW SYSTEM INSTALLED
- ☐ (O) - OPERATIONAL
- ☐ (NO) - NOT OPERABLE
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- ☐ (SM) - SILL MOVEMENT
- ☐ (MS) - MULL SEPARATION
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- ☐ (ASD) - ASSEMBLY SYSTEM DISTRESS
- ☐ (BL) - BROKEN LITE
- ☐ (WD) - WEATHER STRIP DAMAGE
- ☐ (SF) - SEAL FAILURE
- ☐ (CPD) - COVER PLATE DAMAGE

TEMPORARYREPAIRS:
- ☐ (FP) - FRESH PAINT
- ☐ (PF) - PAINTED
- ☐ FRAMES (WP) -
- ☐ WALLPAPER
- ☐ (SR) - SEALANT REPAIR
- ☐ (RG) - RE-GLAZED
- ☐ (NG) - NEW GASKET
- ☐ (NF) - NEW FASTENER

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WATER PENETRATION TEST

DATA COLLECTION FORM:

TESTING DATA COLLECTION

WINDOW OBSERVATION CYCLE NUMBER	FLOW RATE (Gal/Hr./Sq Ft.)	WATER PRESSURE (PSI)	VACUUM PRESSURE (in of H^2O)	PASS/FAIL	Time
1	7.41 (g/h/sf)	12 psi	0	P	5:00 min
2	7.41 (g/h/sf)	12 psi	0.19	F	1:49 min
0	7.41 (g/h/sf)	12 psi	0		
3	7.41 (g/h/sf)	12 psi	0.39		
0	7.41 (g/h/sf)	12 psi	0		
4	7.41 (g/h/sf)	12 psi	0.58		

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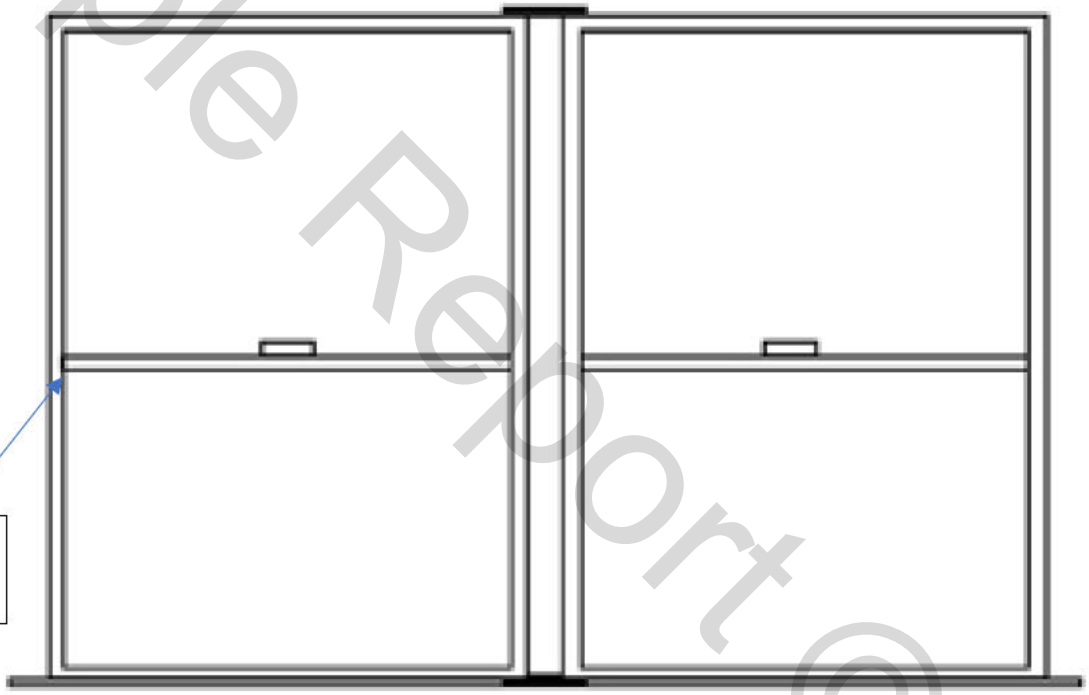
WATER PENETRATION TEST

DATA COLLECTION FORM:

Water PENETRATION DIAGRAM

INSTRUCTIONS: Draw a pictorial diagram of the window system being tested and mark location of moisture penetration, test cycle, time of event and pass/fail



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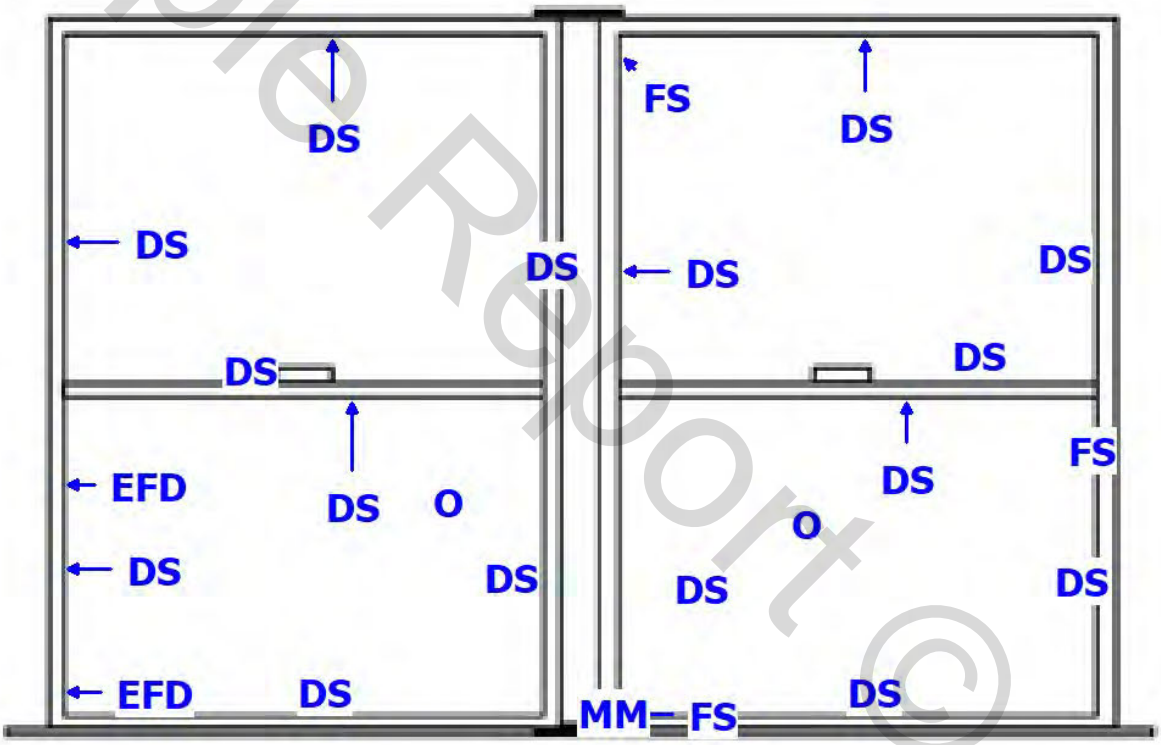
WATER PENETRATION TEST

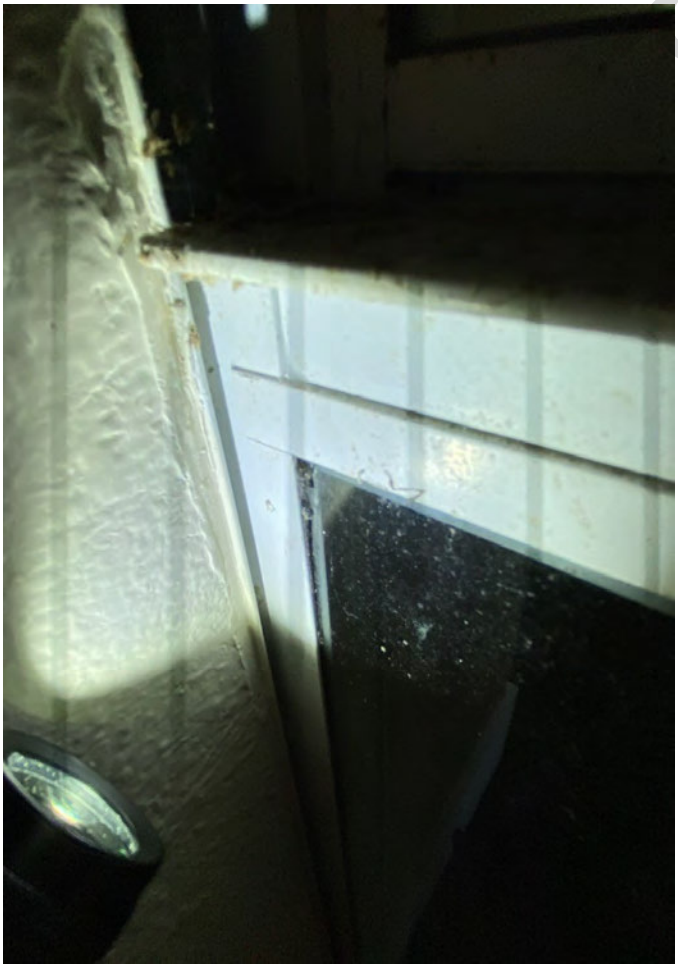
DATA COLLECTION FORM:

NOTES & OBSERVATIONS

Physical Damage Assessment



NOTE – for complete Physical Damage Assessment – see Tabby inspection results for Ga age – Sp 1



STORM SAFE
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WATER PENETRATION TEST

DATA COLLECTION FORM:

PROJECT NAME:	[redacted] Residence		DATE:	10/12/21	
ADDRESS:	[redacted]		[redacted]	[redacted]	[redacted]
[redacted]	[redacted]				
			INSIDE Br. PRESSURE:	1014.1 hPa	
STANDARD FOLLOWED			WIND SPEED: (AT SPEC)	7.8 mph	
ASTM E-1105	X		RELATIVE HUMIDITY:	76 %	
METHOD A – UNIFORM STATIC			TEST SUBJECT SURFACE TEMP		
METHOD B – CYCLIC STATIC	X		INSIDE:		
AAMA 511			OUTSIDE:		
AAMA 501.2					
			OUTSIDE AIR TEMP:		
BLDG #			INSIDE:	74 F	
UNIT #			OUTSIDE:	79 F	
FLOOR #	1				
SAMPLE NUMBER:	2		START TIME:		
SAMPLE LOCATION	Living Room – Spec 3		END TIME:		
SAMPLE FACING	E				
			PHOTO START		
PROJECT DIRECTOR	Ivan		PHOTO STOP		
TECH #1	Nick				
TECH #2	Steven				
TECH #3					

PHYSICAL EVALUATION

SPECIMEN #	2	SPECIMEN TYPE:	2SH		
OVERALL EXTERIOR PHOTO #		OVERALL INTERIOR PHOTO #		PHOTO START	
				PHOTO STOP	
DIAGONAL MEASURMENT	70 W 59 H	FENESTRATION OPERATED (5 TIMES)		Y	N

SYSTEM DISPOSITION:
- ☐ (ND) - NO DAMAGE
- ☐ (R) - REMOVED
- ☐ (NA) - NOT ACCESSIBLE
- ☐ (LA) - LIMITED ACCESS
- ☐ (NSI) - NEW SYSTEM INSTALLED
- ☒ (O) - OPERATIONAL
- ☐ (NO) - NOT OPERABLE
- ☐ (IO) - IMPAIRED OPERATION
- ☐ (BM) - BROKEN MECHANISM
- ☒ (ED) - EXCESSIVE DAMAGE
- ☐ (S) - SHUTTERS

EXPOSURE DAMAGE:
- ☐ (IFD) - INTERIOR FINISH DISTRESS
- ☒ (EFD) - EXTERIOR FINISH DISTRESS
- ☐ (MI) - MOISTURE INTRUSION
- ☐ (C) - CORROSION
- ☒ (SD) - SEALANT DISRUPTION

FRAME DAMAGE:
- ☐ (FOA) - FRAME OUT OF ALIGNMENT
- ☒ (FS) - FRAME SEPARATION
- ☒ (FR) - FRAME ROTATION
- ☐ (HM) - HEADER MOVEMENT
- ☐ (JM) - JAMB MOVEMENT
- ☐ (FM) - FOOTER MOVEMENT
- ☐ (SM) - SILL MOVEMENT
- ☐ (MS) - MULL SEPARATION
- ☒ (MM) - MULL MOVEMENT
- ☐ (MR) - MULL ROTATION
- ☐ (AD) - ASTRAGAL DAMAGE
- ☐ (LP) - LOOSE PANEL
- ☐ (FD) - FRAME DEFLECTION

SYSTEM DAMAGE:
- ☐ (DG) - VISUAL SIGNS OF DEGLAZING
- ☐ (GI) - GASKET INGESTED
- ☐ (GNS) - GASKET NOT SEATED
- ☐ (DS) - DAMAGED SPACER
- ☐ (DF) - DAMAGED FASTENER
- ☐ (MF) - MISSING FASTENER
- ☒ (GSD) - GLASS STOP DAMAGE
- ☐ (ASD) - ASSEMBLY SYSTEM DISTRESS
- ☐ (BL) - BROKEN LITE
- ☐ (WD) - WEATHER STRIP DAMAGE
- ☒ (SF) - SEAL FAILURE
- ☐ (CPD) - COVER PLATE DAMAGE

TEMPORARYREPAIRS:
- ☐ (FP) - FRESH PAINT
- ☐ (PF) - PAINTED
- ☐ FRAMES (WP) -
- ☐ WALLPAPER
- ☐ (SR) - SEALANT REPAIR
- ☐ (RG) - RE-GLAZED
- ☐ (NG) - NEW GASKET
- ☐ (NF) - NEW FASTENER

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WATER PENETRATION TEST

DATA COLLECTION FORM:

TESTING DATA COLLECTION

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0	7.41 (g/h/sf)	12 psi	0		
3	7.41 (g/h/sf)	12 psi	0.39		
0	7.41 (g/h/sf)	12 psi	0		
4	7.41 (g/h/sf)	12 psi	0.58		

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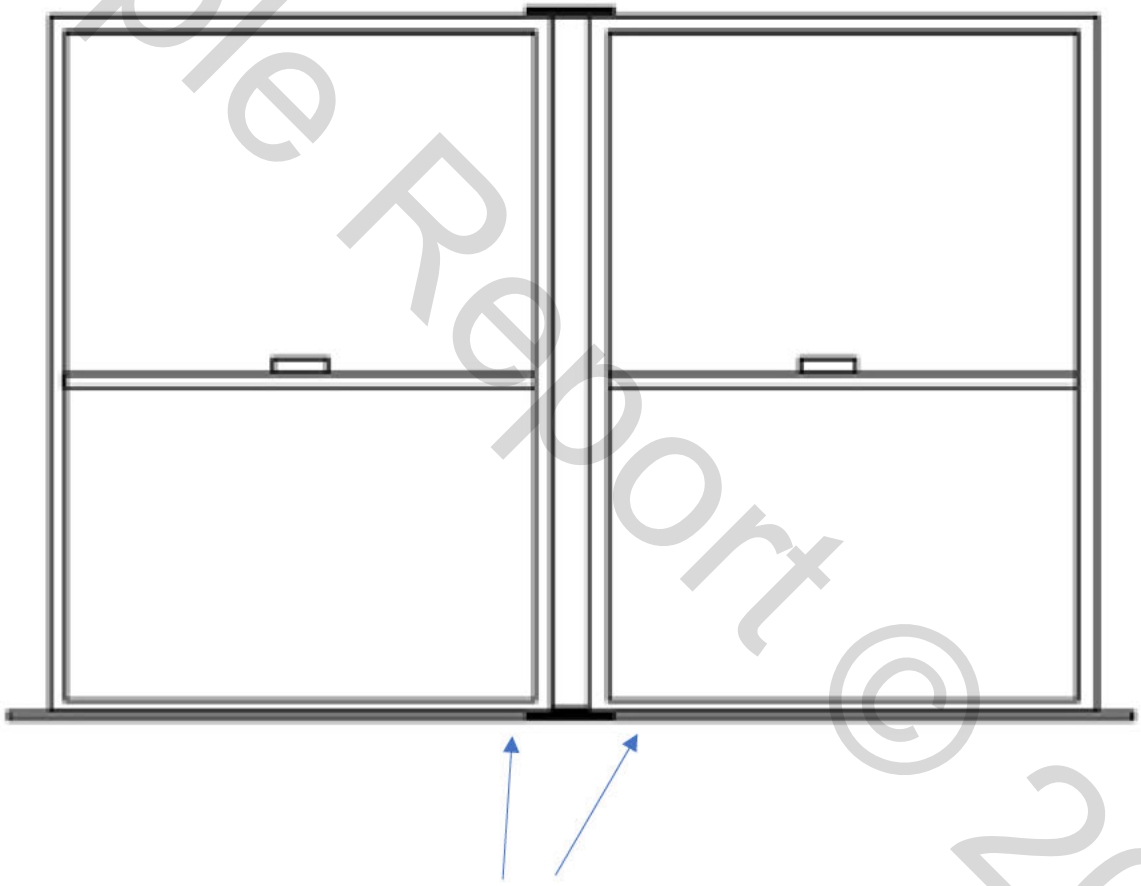
WATER PENETRATION TEST

DATA COLLECTION FORM:

Water PENETRATION DIAGRAM

INSTRUCTIONS: Draw a pictorial diagram of the window system being tested and mark location of moisture penetration, test cycle, time of event and pass/fail



MP – Failure
Cycle 1 - 1:48

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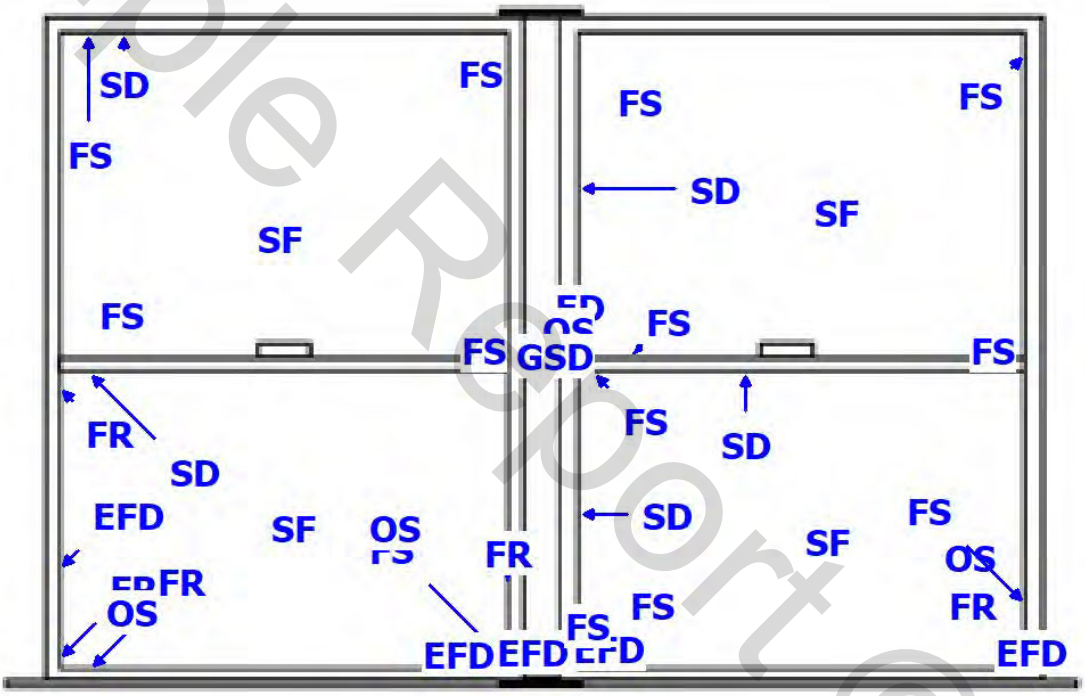
WATER PENETRATION TEST

DATA COLLECTION FORM:

NOTES & OBSERVATIONS

Physical Damage Assessment



NOTE – for complete Physical Damage Assessment – see Tabby inspection results for Living Room – Spec 3.