

CT INTERNATIONAL ALUMINUM CORP TEST REPORT

SCOPE OF WORK

AAMA/WDMA/CSA 101/I.S.2/A440 TESTING ON TT300I, DUAL ACTION WINDOW

REPORT NUMBER

I7913.01-525-44-R0

TEST DATE(S)

09/17/18 – 09/28/18

ISSUE DATE

02/01/19

RECORD RETENTION END DATE

09/28/22

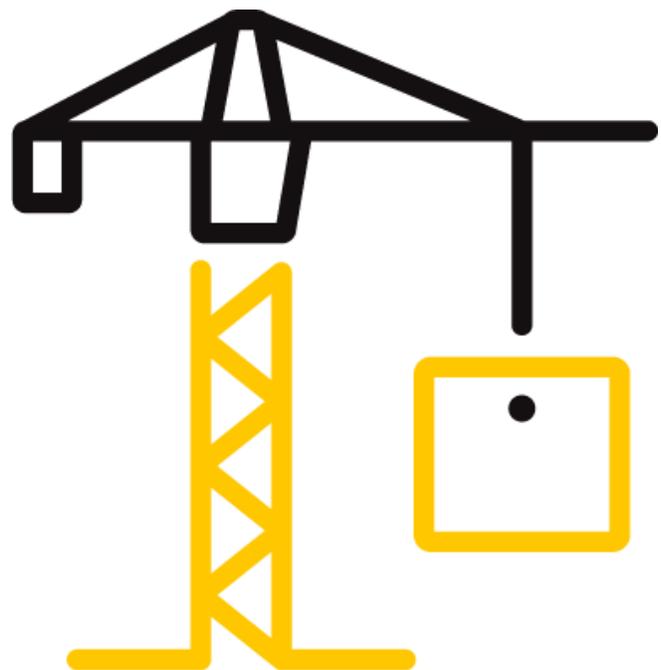
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TEST REPORT FOR CT INTERNATIONAL ALUMINUM CORP

Report No.: I7913.01-525-44-r0

Date: 02/01/19

REPORT ISSUED TO

CT INTERNATIONAL ALUMINUM CORP

5235 74th St.
Elmhurst, NY 11373

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by CT International Aluminum Corp, to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 on their TTI300, Dual Action Window. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek test facility in Farmingdale, NY. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

TITLE	RESULTS
AAMA/WDMA/CSA 101/I.S.2/A440-17	Class-CW PG60 1219 x 1829 (48 x 72)-DAW
Design Pressure	±2880 Pa (±60.0 psf)
Air Infiltration	0.5 L/s/m ² (0.1 cfm/ft ²)
Canadian Air Infiltration/Exfiltration Level	A3
Water Penetration Resistance Test Pressure	575 Pa (12.0 psf)

For INTERTEK B&C:

COMPLETED BY:	Craig Ginsberg	REVIEWED BY:	Heather Stahl-Figueroa
TITLE:	Technician	TITLE:	Lab Manager
SIGNATURE:		SIGNATURE:	
DATE:	02/01/19	DATE:	02/01/19

cg:cns

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TEST SPECIFICATION(S)/METHOD(S)

The specimens were evaluated in accordance with the following:

AAMA/WDMA/CSA 101/I.S.2/A440-17- *North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

The following test methods were used during testing:

ASTM E283-04(2012), *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

ASTM E547-00(2016), *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference*

ASTM E2068-00(2016), *Standard Test Method for Determination of Operating Force of Sliding Windows and Doors¹*

ASTM F588-17, *Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact*

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MATERIAL SOURCE/INSTALLATION

Test specimen was provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

The specimen was installed into a Douglas-Fir wood buck. The rough opening allowed for a 1/2" shim space and the interior and exterior perimeter of the specimen was sealed to the test buck. Because of the presence of the interior seal, no determination could be made regarding leakage of the frame. Installation of the tested product was performed by CT International Aluminum Corp.

LOCATION	ANCHOR DESCRIPTION	ANCHOR SPACING
Interior jambs	Ply wood strip/ blind stop	Entire length of jamb
Interior and exterior head	Ply wood strip/ blind stop	Entire length of head
In each jamb	Screws	9", 36-1/2", and 65" from bottom of unit

SECTION 5

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Craig Ginsberg	Intertek B&C

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TEST SPECIMEN DESCRIPTION

Product Type: Dual Action Windows

Series/Model: TT300I

Product Size(s):

Test Specimen #1

OVERALL AREA:	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
2.23 m ² (24.0 ft ²)				
Overall size	1219	48	1829	72
Vent	1137	44-3/4	1721	67-3/4

Frame Construction:

MEMBER	MATERIAL	DESCRIPTION
Head, Sill, Jamb	Aluminium and polyethylene	Two aluminium extrusions bound together with two strut type thermal breaks. (Part No. TT-001)
	JOINERY TYPE	DETAIL
All corners	Mitered	Two corner keys per corner located in the aluminium hollows with 4 crimps per corner key. Crimps are caulked with sealant. Seam sealer applied to mitre joints

Vent Construction:

MEMBER	MATERIAL	DESCRIPTION
Rails and stiles	Aluminium and polyethylene	Two aluminium extrusions bound together with two strut type thermal breaks. (Part No. TT-003)
	JOINERY TYPE	DETAIL
All corners	Mitered	Two corner keys per corner located in the aluminium hollows with 4 crimps per corner key. Crimps are caulked with sealant. Seam sealer applied to mitre joints

Reinforcement: *No reinforcement was utilized.*

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Weatherstripping:

DESCRIPTION	QUANTITY	LOCATION
Hollow rubber bulb gasket	4 rows	Outer leg of head, sill, jambs
Hollow rubber bulb gasket	4 rows	Inner vent leg of rails and stiles
Central goose neck rubber gasket	4 rows	Perimeter of frame
Glazing rubber wedge gasket	4 rows	Perimeter of glazing on interior side glazing bead
Seam Sealer/Caulking		Thermal break seams of vent members caulked over. Central gasket is sealed to frame. Sill receptor is caulked to sill inside and outside. All thermal break seams for vent and frame. Installation fasteners. All mitred corners inside and out. Perimeter of handle sets. All glazing bead joinery. Perimeter of flapped weep covers.

Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

GLASS TYPE	SPACER TYPE	INTERIOR LITE	EXTERIOR LITE	GLAZING METHOD
1" IG	1/2" Aluminium box (5/8" air space)	0.2" tempered	0.2" tempered	Wet Butyl tape exterior seal, dry wedge interior with aluminium glass stop

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Vent	1	994 x 1578	39-1/8 x 62-1/8	1/2"

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Drainage:

WEEPS	SIZE	QTY	LOCATION/DESCRIPTION
Equalization holes	1" wide	2	Sections removed from bulb gasket on outer leg of head centred about 5" away from either side of unit.
Weep Slots	1.77" wide 0.35" tall	3	Front face of sill member with flapped weep covers located at about 5-3/4" away from either edge of unit with one more in the center. Backer rod is placed inside the profiles to act as a baffle.
Circular hole	0.325" Diameter	5	In top face of sill on the outer track. Two are located above each of the weep slots on the left and right side and one is located above the weep slot in the middle.
Circular hole	0.28" Diameter	2	Located in bottom of bottom rail under inner track centered about 7.5" away from either side of vent.
Circular hole	0.28" Diameter	2	Located in bottom of bottom rail under outer track centered about 7.5" away from either side of vent.

Hardware:

DESCRIPTION	QTY	LOCATION
Dual Action Hinges	2	Top and bottom of meeting stile
Handle set	1	On handle stile 33-3/4" from bottom of vent
Keepers/ locking points	6	Handle side jamb centred at 7", 32", 64" from bottom of unit. Head centred 19-5/8" from handle side of unit. Hinge side jamb centred at 10-1/2", 37-1/4" from bottom of unit.
Block rollers and support blocks	2	On top face of sill 3" and 25-3/4" from handle side of unit. Plastic support blocks on under side of bottom rail line up/mate with rollers. One roller block acts as striker plate for shoot bolt feature on multi-point lock rail.
Transmission	2	Top corners of sash
Multi-point lock rails	3	One on handle stile, one on top rail, and one on hinge stile.

Screen Construction: *No screen utilized.*

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SECTION 7

TEST RESULTS

The temperature during testing was 22.2°C (72°F). The results are tabulated as follows:

Test Specimen #1:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Operating Force, per ASTM E2068	Initiate Motion: 8.9 N (2 lbf) Maintain Motion: 8.9 N (2 lbf) Lock: 75.6 N (17 lbf) Unlock: 66.7 N (15 lbf)	Report only	
Canadian Operating Force, per ASTM E2068	Initiate Motion: 8.9 N (2 lbf) Maintain Motion: 8.9 N (2 lbf) Lock: 75.6 N (17 lbf) Unlock: 66.7 N (15 lbf)	Report only	
Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf)	0.5 L/s/m ² (0.1 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Air Leakage, Exfiltration per ASTM E283 at 75 Pa (1.57 psf)	0.45 L/s/m ² (0.09 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Air Leakage, Infiltration per ASTM E283 at 300 Pa (6.24 psf)	1.37 L/s/m ² (0.27 cfm/ft ²)	Report only	
Air Leakage, Exfiltration per ASTM E283 at 300 Pa 6.24 psf)	0.96 L/s/m ² (0.19 cfm/ft ²)	Report only	
Canadian Air Infiltration/Exfiltration Level	A3	N/A	
Water Penetration, per ASTM E547 at 575 Pa (12.0 psf)	Pass	No leakage	2

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TITLE OF TEST	RESULTS	ALLOWED	NOTE
Uniform Load Deflection, per ASTM E330 Deflections taken at Bottom rail +2880 Pa (+60.0 psf) -2880 Pa (-60.0 psf)	1.27 mm (0.05") 0.76 mm (0.03")	6.1 mm (0.24") max. 6.1 mm (0.24") max.	3,4
Uniform Load Structural, per ASTM E330 Permanent set taken at Bottom rail +4310 Pa (+90.0 psf) -4310 Pa (-90.0 psf)	<0.3 mm (<0.01") <0.3 mm (<0.01")	3.3 mm (0.13") max. 3.3 mm (0.13") max.	3,4
Forced Entry Resistance, per ASTM F588, Type: A - Grade: 10	Pass	No entry	
Sash/Leaf Concentrated Load Test on Latch Rail (Horizontal) 135 N (30.35 lbf)	0.5 mm (0.02")	1.5 mm (0.06") max.	
Sash/Leaf Concentrated Load Test on Latch Rail (Vertical) 230 N (51.71 lbf)	1.0 mm (0.04")	3.3 mm (0.13") max.	
Stabilizing Arm Load Test 890 N (200.08 lbf) leaf corners 1780 N (400.16 lbf) top rail at center	Pass	No damage	

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: Without insect screen.

Note 3: Loads were held for 10 seconds.

Note 4: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

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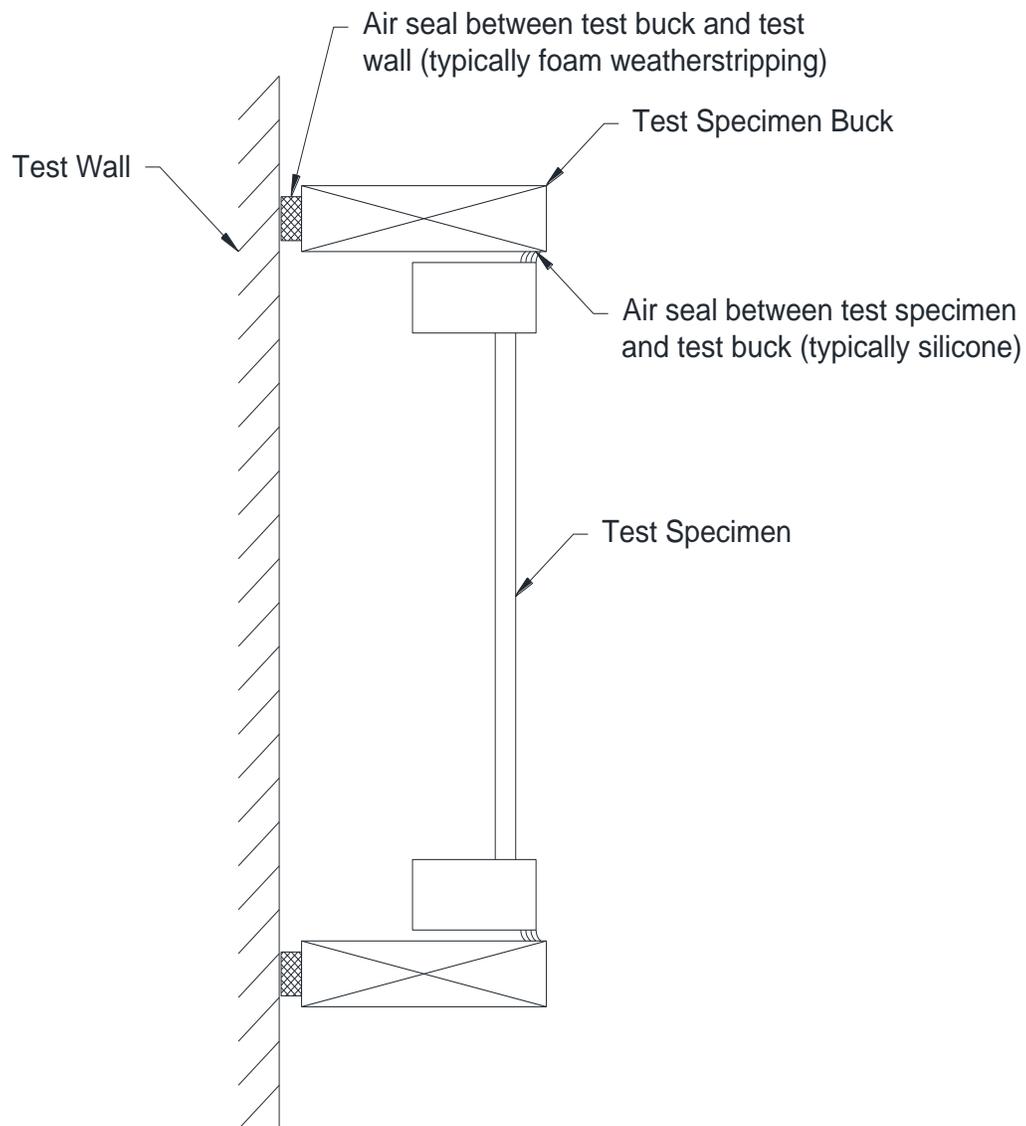
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LOCATION OF AIR SEAL

The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.





Total Quality. Assured.

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SECTION 9

CONCLUSION

The specimen tested successfully met the performance requirements for a Class-CW PG60 1219 x 1829 (48 x 72)-DAW rating.

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SECTION 10 PHOTOGRAPHS



Photo No. 1

Interior View (Left), Exterior View (Right)



Photo No. 2

Photos showing interior corner details

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Photo No. 3
Section view of sill detail



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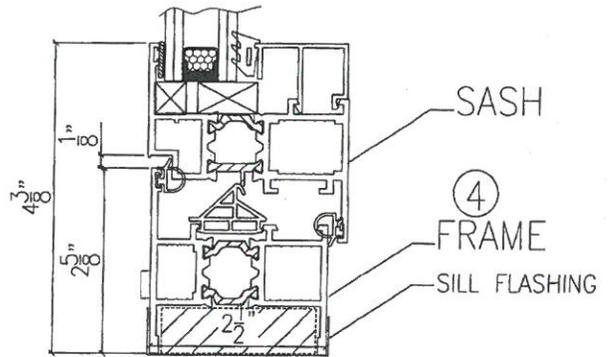
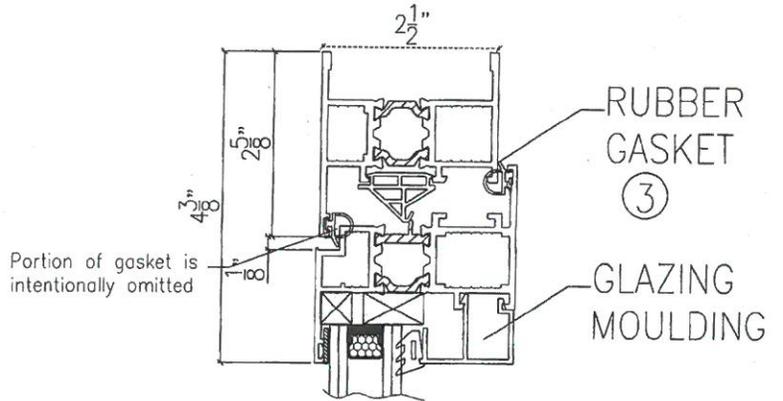
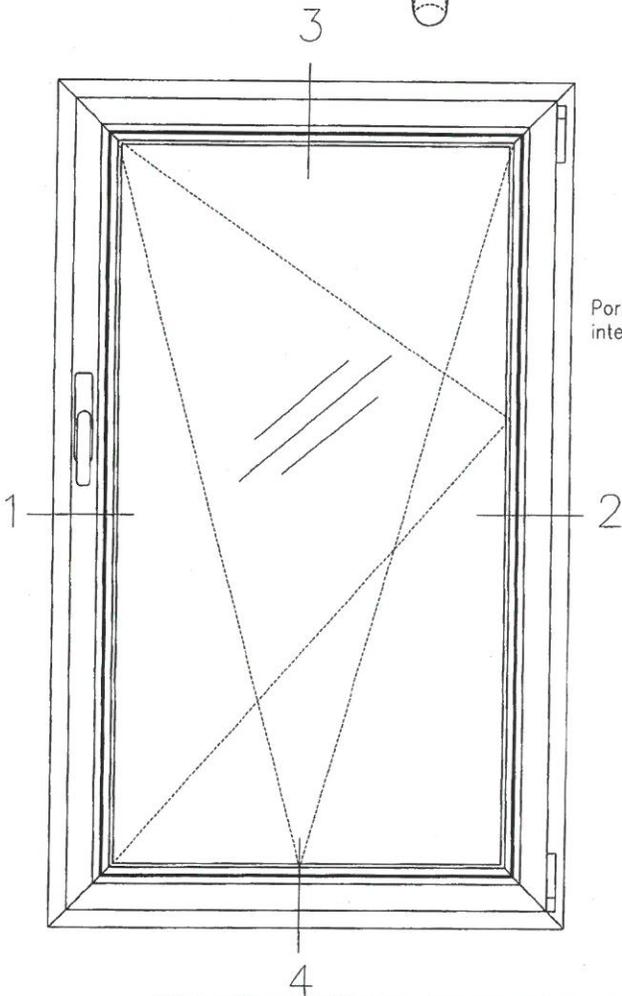
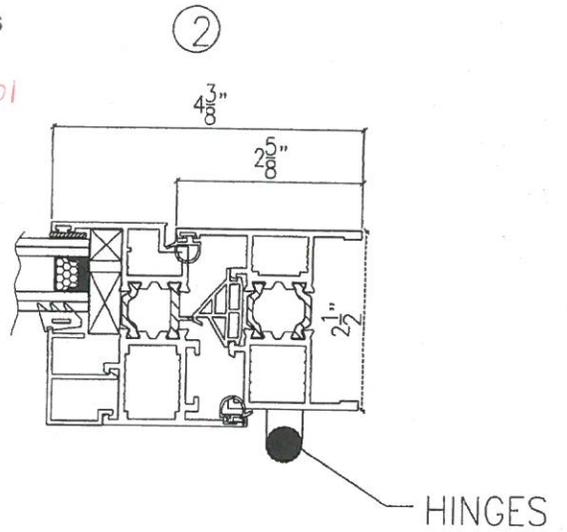
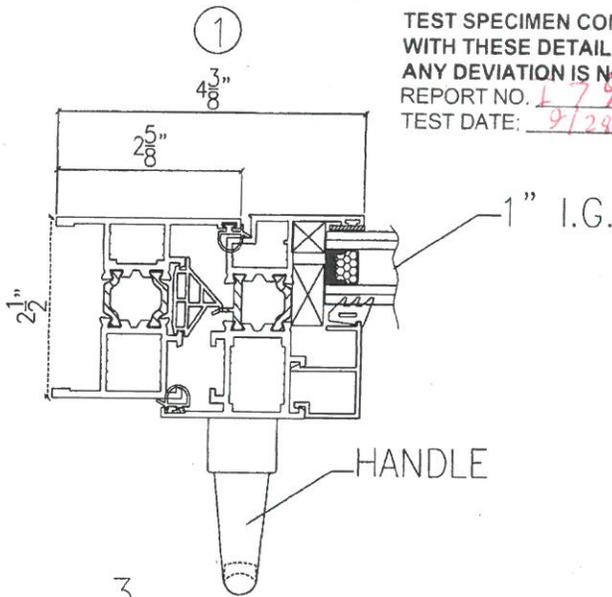
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SECTION 11

DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

TEST SPECIMEN COMPLIES WITH THESE DETAILS
 ANY DEVIATION IS NOTED
 REPORT NO. 17913.01
 TEST DATE: 9/29/18



TT300z TILT & TURN WINDOW BILL OF MATERIALS

ITEM #	DESCRIPTION	Qty	PART #	DWG #
1	WINDOW FRAME	4	TT-001	1,2,3,&4
2	MOULDING	4	TT-002MD	1,2,3,&4
3	SASH	4	TT-003	1,2,3,&4



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SECTION 12

REVISION LOG

REVISION #	DATE	PAGES	REVISION
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