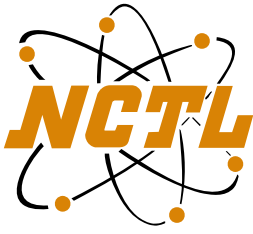


*MGM Industries*

*SIMULATION PERFORMANCE &  
SOLAR HEAT GAIN REPORT*

*Series "7010"  
Double Hung*

*NCTL-110-10884-01*



# NATIONAL CERTIFIED TESTING LABORATORIES

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## Simulation Performance, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance Calculation Report

**REPORT NO:** NCTL-110-10884-01  
**SIMULATION DATE:** 09/12/07  
**REPORT DATE:** 09/12/07

**Client:** MGM Industries  
287 Freehill Road  
Hendersonville, TN 37075

**Product Line:** MGM Industries' Series "7010" Double Hung

**Specification:** NFRC 100-2004: "Procedure for Determining Fenestration Product U-Factors".  
NFRC 200-2004: "Procedure for Determining Fenestration Product Solar Heat  
Gain Coefficients and Visible Transmittance at Normal Incidence".  
NFRC 500-2004: "Procedure for Determining Fenestration Product  
Condensation Resistance Values".  
Therm 5.x / Window 5.x NFRC Simulation Manual (Approved at test date)

**Procedures  
and  
Compliance:** All U-factor, Solar Heat Gain Coefficients, Visible Transmittance and  
Condensation Resistance values were calculated using the following  
characteristics: a default value of 0.30 solar absorptance for all products other  
than window glazed wall and sloped glazing which have a solar absorptance of  
0.50. The best glazing option was used as the configuration for SHGC and VT  
specialty products table. NCTL is a NFRC accredited simulation laboratory and  
this simulation was conducted in full compliance with NFRC requirements. This  
report does not constitute an opinion or endorsement by the laboratory. Ratings  
values included in this report are for submittal to an NFRC-licensed IA and are  
not meant to be used directly for labeling purposes. Only those values identified  
on a valid Certification Authorization Report (CAR) by an NFRC accredited  
Inspection Agency (IA) are to be used for labeling purposes. Rounding per  
IEEE/ASTM SI 10-1997 except section 5.4.1.3.

### PRODUCT LINE DESCRIPTION

**General:** The product line modeled is MGM Industries' Series Series "7010" Double Hung.

**Model Size Simulations:** 1200mm x 1500mm (47.244" x 59.055")

**Note:** All product drawings are included in Attachment A.

**Weatherseals:**

Location	Weather Seal Description
Head	(1) single strip of weather-strip
Bottom Jamb	(3) single strip of weather-strip
Top Jamb	(3) single strip of weather-strip
Meeting Rail	(2) single strip of weather-strip
Sill	(1) single strip of weather-strip and (1) bulb seal

**Reinforcement:** Not applicable.

**Finish:** Vinyl

**Dividers:** Where applicable, dividers were not modeled because the gap between dividers and lites were greater than 3mm. For Solar Heat Gain and Visual Light Transmittance default dividers less than 1" and greater or equal to 1" and default patterns were used for simulations.

**Group Leaders:** The following group leaders are actual simulated individual products per NFRC 4.2.4 and the NFRC Technical Interpretations where applicable. All remaining individual products' U-factors in the corresponding groups are represented by the group leader's U-factor.

**COG Group Leader:** Individual products which differ from another (base) individual product in glazing tint and/or obscenity (including obscure glass, fritted glass, and wired glass) only may be assumed to have the same U-factor as the base product unless this change is associated with a change in coating properties.

**COG Group Leader:**

Glazing ID	Glazing Description	U <sub>COG</sub>
001	2mm AFG Clear / .553" Air / 2mm AFG Clear	0.481 *
002	2mm AFG TiAC#36 / .553" Air / 2mm AFG Clear	0.298 *

\* Group Leader

**Modeling Assumptions and Comments Deemed Important:****Sealing Rules:**

All cavities that are opened to the exterior within a frame section shall be modeled according to ISO 15099, Section 6.7.1, which states that cavities greater than 2mm but equal to or less than 10 mm shall be modeled as "slightly ventilated air cavities". For physical testing purposes the product is sealed at the inside surface with tape or equivalent to prevent air infiltration. Air cavities created by this sealing technique must be simulated with the standard NFRC "Frame Cavity" material. If cavities on the frame are sealed (covered) to the surround panel with tape or equivalent, those cavities are also filled with NFRC "Frame Cavity" material within the simulation model. If the frame is not covered or sealed, those areas are left hollow or opened within the simulation model.

**Continuous elements:**

All elements continuous within the product line are identified from the Bill-of-Materials and detailed drawings via the referenced dimensions and cut lengths as compared to the overall size of the product.

**General Notes:**

The Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation, and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening.

**Miscellaneous assumptions:**

1. The screen extrusions were not modeled.
2. All radii are simulated at angles.
3. Any spacer simulated using a spacer system from the Frame Spacer Library match the required configurations for this manufacturer's spacer system.
4. The modeling was performed in accordance with the manufacturer's assembly drawing from a DXF file.

**Component Area and Frame Heights:**

Frame heights, calculated areas, area weighted values for U-factor, SHGC, and VT, and center -of-glazing are located in approved NFRC simulation programs for all individual products.

**Specialty Products Table:** The specialty products method allows the manufacturer to determine the overall product SHGC and VT for any glazing option. The center of glass SHGC and/or VT must be determined using WINDOW 5.2. The method gives overall product SHGC and VT indexed on center of glass properties.

SHGC	No Dividers	Dividers <1"	Dividers ≥1"
0.00	0.003	0.005	0.008
1.00	0.754	0.674	0.598

VT	No Dividers	Dividers <1"	Dividers ≥1"
0.00	0.000	0.000	0.000
1.00	0.751	0.668	0.590

$$SHGC = SHGC_0 + SHGC_{COG} (SHGC_1 - SHGC_0)$$

$$VT = VT_0 + VT_{COG} (VT_1 - VT_0)$$

**NCTL Therm Section Filename Methodology**

Filename Codes Example: CU_HD2_003.THM	
CU	Spacer (Intercept)
HD	Frame Section (Head)
2	Glass Size (2.5mm)
003	Glazing ID #3

**Individual Product Descriptions and Model Size Matrix of U-Factors, SHGC, VT & CR**

*All U-factors are given in BTU/HR/ft<sup>2</sup>/°F*

Product Description	Product Number	Pane ID (Exterior)	Pane ID (Interior)	Pane Thickness (Exterior)	Pane Thickness (Interior)	Gap	Gap Fill	% of Gap Fill	Emissivity Surface 2	Emissivity Surface 3	U-factor C-O-G	SHGC C-O-G	VT C-O-G	Spacer	Grid Type	Tint	U-factor	Condensation Resistance	Solar Heat Gain Coefficient (ND)	Visual Transmittance (ND)	Solar Heat Gain Coefficient (<1")	Visual Transmittance (<1")
CLR_SS_AIR	<b>001</b>	885	885	0.098	0.098	0.553	AIR				0.50	0.80	0.83	CU-D	N,G	CL	<b>0.46</b>	<b>42</b>	<b>0.61</b>	<b>0.62</b>	<b>0.54</b>	<b>0.56</b>
CLR_DS_AIR		887	887	0.118	0.118	0.514	AIR				0.50	0.79	0.82	CU-D	N,G	CL	<b>0.46</b>	<b>42</b>	<b>0.59</b>	<b>0.62</b>	<b>0.53</b>	<b>0.55</b>
TiAC36#2_SS_AIR	<b>002</b>	964	885	0.098	0.098	0.553	AIR		0.034		0.30	0.37	0.69	CU-D	N,G	LE	<b>0.33</b>	<b>52</b>	<b>0.28</b>	<b>0.52</b>	<b>0.25</b>	<b>0.46</b>
TiAC36#3_SS_AIR		885	964	0.118	0.118	0.514	AIR			0.034	0.30	0.47	0.69	CU-D	N,G	LE	<b>0.33</b>	<b>52</b>	<b>0.35</b>	<b>0.52</b>	<b>0.32</b>	<b>0.46</b>
TiAC36#2_DS_AIR		965	887	0.098	0.098	0.553	AIR		0.034		0.29	0.37	0.68	CU-D	N,G	LE	<b>0.33</b>	<b>52</b>	<b>0.28</b>	<b>0.51</b>	<b>0.25</b>	<b>0.45</b>
TiAC36#3_DS_AIR		887	965	0.118	0.118	0.514	AIR			0.034	0.29	0.46	0.68	CU-D	N,G	LE	<b>0.33</b>	<b>52</b>	<b>0.35</b>	<b>0.51</b>	<b>0.31</b>	<b>0.45</b>

A baseline product test in accordance with the "NFRC 102: Test Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems" is required in order to validate the "Model Size Matrix of U-Values" as previously indicated. Per Section 1.4.3 of NFRC 100-2004, "the baseline product is the individual product selected for validation testing". **The individual product selected as the baseline product shall be the lowest simulated individual product or an individual product having a simulated U-factor within 0.60 W/(m<sup>2</sup>\*K) (0.10 BTU/HR/ft<sup>2</sup>/°F) or 20% of the listed lowest simulated U-factor.**

**Note:**

1. For lowest U-factor listings where multiple individual products are shown, validation testing can be conducted on any of the configurations listed.
2. Actual simulated individual products are required for product line validation testing.
3. All individual products in the product line were simulated using the approved NFRC THERM program.

For the purposes of validation testing, production line units and sizes shall be used to represent the baseline product. Per the client, the model size is manufactured as part of their product line; therefore the previously listed model size can be used for baseline product validation testing.

Copies of this report and the detailed product drawings will be retained by NCTL for a period of four (4) years. This report may not be reproduced, except in full, without the approval of NCTL. The results only to the fenestration product simulated. The attached diskette(s) contain(s) all required NFRC data and software files.

**NATIONAL CERTIFIED TESTING LABORATORIES**

A handwritten signature in black ink that reads "Justin M. Robinson". Below the signature is a small orange and black logo for NCTL with the text "DIGITAL SIGNATURE" underneath.

**JUSTIN M. ROBINSON**  
NFRC Accredited Simulator  
Simulator-In-Responsible-Charge

A handwritten signature in black ink that reads "Steven H. Coble". Below the signature is a small orange and black logo for NCTL with the text "DIGITAL SIGNATURE" underneath.

**STEVEN H. COBLE**  
NFRC Accredited Simulator  
Simulator-In-Responsible-Charge

*Attachments*

**Report Log**

***Product Line:***    *MGM Industries' Series "7010" Double Hung*

***Date:***  
***09/12/07***        *- Original Report issued to MGM Industries and Inspection Agency*

**NFRC CODES**

<b>Door</b>	
<b>Code</b>	<b>Description</b>
EM	Embossed
FL	Flush
LF	Full Lite
LH	1/2 - Lite
LQ	1/4 - Lite
LT	3/4 - Lite
N	Not Applicable
RP	Raised Panel

<b>Grid</b>	
<b>Code</b>	<b>Description</b>
G	Grids between the glass
N	No Muntins
S	Simulated Divided Lites
T	True Muntins

<b>Sealant</b>	
<b>Code</b>	<b>Description</b>
D	Dual Seal Spacer System
N	Not Applicable
S	Single Seal Spacer System

<b>Gap Fill</b>	
<b>Code</b>	<b>Description</b>
AIR	Air
AR3	Argon/Krypton/Air Mixture
ARG	Argon
KRY	Krypton
N	Not Applicable

<b>Glass Tint</b>	
<b>Code</b>	<b>Description</b>
AZ	Azurlite
BG	Blinds between the Glazing
BL	Blue
BZ	Bronze
CL	Clear
DV	Dynamic Glazing (Variable)
DY	Dynamic Glazing (Non-Variable)
EV	Evergreen
GC	Gold (reflective coating)
GD	Gold
GR	Green
GY	Gray
LE	Low 'e' Coating
OT	Other (use comment field)
RC	Solar or Reflective Coating
RG	Roller shades between Glazing
RS	Silver (reflective coating)
SF	Suspended Polyester Film
SR	Silver

<b>Spacer</b>		
<b>Code</b>	<b>Type</b>	<b>Definition</b>
A1-D	Aluminum	Aluminum spacer system - dual sealed.
A1-S	Aluminum	Aluminum spacer system - single sealed.
A2-D	Aluminum (thermally-broken)	Thermally improved aluminum spacer system - dual sealed.
A2-S	Aluminum (thermally-broken)	Thermally improved aluminum spacer system - single sealed.
A3-D	Aluminum-reinforced polymer	Polymer spacer material with aluminum substance - dual sealed.
A3-S	Aluminum-reinforced polymer	Polymer spacer material with aluminum substance - single sealed.
A4-D	Aluminum/Wood	Composite spacer system of two materials - dual sealed.
A4-S	Aluminum/Wood	Composite spacer system of two materials - single sealed.
A5-D	Aluminum-reinforced butyl	Butyl spacer material with aluminum substrate - dual sealed.
A5-S	Aluminum-reinforced butyl	Butyl spacer material with aluminum substrate - single sealed.
A6-D	Aluminum/Foam/Aluminum	Two aluminum spacers separated by foam-type material - dual sealed
A6-S	Aluminum/Foam/Aluminum	Two aluminum spacers separated by foam-type material - single sealed
A7-D	Aluminum U-shaped	U-shaped spacer system embedded in sealant - dual sealed.
A7-S	Aluminum U-shaped	U-shaped spacer system embedded in sealant - single sealed.

<b>Spacer</b>		
<b>Code</b>	<b>Type</b>	<b>Definition</b>
A8-D	Aluminum-Butyl Composite	Exposed corrugated aluminum spacer with butyl - dual sealed.
A8-S	Aluminum-Butyl Composite	Exposed corrugated aluminum spacer with butyl - single sealed.
CS-D	Coated Steel	Coated Steel (galvanized or tinplated) - Dual seal
CS-S	Coated Steel	Coated Steel (galvanized or tinplated) - Single seal
CU-D	Coated Steel U-Shaped	Coated Steel (galvanized or tinplated) U-shaped spacer system embedded in sealant - Dual sealed
CU-S	Coated Steel U-Shaped	Coated Steel (galvanized or tinplated) U-shaped spacer system embedded in sealant - Single sealed
ER-D	EPDM Reinforced Butyl	EPDM reinforced butyl spacer system - dual sealed.
ER-S	EPDM Reinforced Butyl	EPDM reinforced butyl spacer system - single sealed.
FG-D	Fiberglass	Fiberglass - dual sealed.
FG-S	Fiberglass	Fiberglass - single sealed.
GL-S	Glass	Welded glass edge condition at glazing perimeter.
N	Not Applicable	
OF-D	Organic Foam	Organic-based foam spacer system - dual sealed.
OF-S	Organic Foam	Organic-based foam spacer system - single sealed.
P1-D	Polycarbonate- Butyl Composite	Exposed corrugated polycarbonate spacer with butyl - dual sealed.
P1-S	Polycarbonate- Butyl Composite	Exposed corrugated polycarbonate spacer with butyl - single sealed.
PU-D	Polyurethane foam	Polyurethane foam - dual sealed.
PU-S	Polyurethane foam	Polyurethane foam - single sealed.
S2-D	Steel (thermally-broken)	Stainless steel spacer with urethane thermal break - dual sealed.
S2-S	Steel (thermally-broken)	Stainless steel spacer with urethane thermal break - single sealed.
S3-D	Steel/Foam/Steel	Two steel spacers separated by foam-type material - dual sealed.
S3-S	Steel/Foam/Steel	Two steel spacers separated by foam-type material - single sealed.
S5-D	Steel reinforced butyl	Butyl spacer material with stainless steel substrate - dual sealed.
S5-S	Steel reinforced butyl	Butyl spacer material with stainless steel substrate - single sealed.
S6-D	Steel U-channel w/ thermal cap	U-shaped steel spacer system with a thermal cap - dual sealed.
S6-S	Steel U-channel w/ thermal cap	U-shaped steel spacer system with a thermal cap - single sealed.
SS-D	Stainless Steel	Stainless Steel - Dual Seal
SS-S	Stainless Steel	Stainless Steel - Single Sealed
SU-D	Stainless Steel U-Shaped	Stainless Steel U-shaped spacer system embedded in sealant - Dual sealed
SU-S	Stainless Steel U-Shaped	Stainless Steel U-shaped spacer system embedded in sealant - Single sealed
TP-D	Thermo-plastic	Thermo-plastic - dual sealed.
TP-S	Thermo-plastic	Thermo-plastic - single sealed.
TS-D	Thermo-plastic	Thermoplastic spacer with stainless steel substrate - dual-sealed
TS-S	Thermo-plastic	Thermoplastic spacer with stainless steel substrate - single-sealed
WD	Wood	Wood spacer system
ZF-D	Silicone Foam	Silicone foam spacer system - dual sealed.
ZF-S	Silicone Foam	Silicone foam spacer system - single sealed.
ZS-D	Silicone/Steel	Combination of two separate spacers: a steel spacer and silicone spacer - dual sealed.
ZS-S	Silicone/Steel	Combination of two separate spacers: a steel spacer and silicone spacer - single sealed.

***ATTACHMENT A***

***Product Drawings***

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCTL-110-10884-01

Bill of Materials Listing

Print Date: Aug 21, 2007

Product: 7010 Type: DH

Assembly Code	Part #	Description	Qty	<---Deducts--->		Unit Code	Vert Hor	Sub Assy	Add Color	Fixed Length	W/Nailing Fin
				Height	Width						
ASSCR1	8X1PH	Assembly Screw #1	4.00			EA		IA	N		
ASSCR2	6-25X1/2PHSSY	6-25x1/2 Pan SS Yel	2.00			EA		IA	N		
ASSCR3	6X11/4FH	Assembly Screw #3	4.00			EA		IA	Y		
BALCOV	609	Sash Stop	4.00			LI	H	IA	Y	2.6250	609
GLASS	1CL	Default Glass Type	1.00	3.3750	4.8750	SF		IA	N		
GLSSPC	SWGG-9/16	Glass Spacer	2.00		3.6250	LI	W	IA	N		
GLSSPC	SWGG-9/16	Glass Spacer	2.00	3.6250		LI	H	IA	N		
HEADER	8003	Frame Top Extrusion	1.00		4.7500	LI	W	IA	Y		
KEEPER	8422	Keeper	2.00			EA		IA	N		
LATCH	TWL-720	Latch	2.00			EA		IA	N		
LJAMB	8000	Left Side Extrusion	1.00	.7500		LI	H	IA	Y		
MUNCLP	10946-002	Muntin Clips	1.00			EA		IA	N		
MUNINH	536006	Muntin Bar Horizontal	1.00		5.4375	LI	W	IA	Y		
MUNINV	536006	Muntin Bar Vertical	1.00	4.0000		LI	H	IA	Y		
RJAMB	8000	Right Side Extrusion	1.00	.7500		LI	H	IA	Y		
SILL	8022	Bottom Extrusion	1.00		4.7500	LI	W	IA	Y		
TLTKEY	23110	Tilt Pivot Bar	2.00			EA		IA	N		
WTSTPH	W432519W	Weather Strip(H)	1.00		2.8125	LI	W	IA	N		
WTSTPV	W432519W	Weather Strip(V)	6.00	1.0000		LI	H	IA	N		
-----											
End of Subassembly IA *****											
ASSCR1	8X1PH	Assembly Screw #1	4.00			EA		IB	N		
ASSCR2	8X11/80V	Assembly Screw #2	4.00			EA		IB	Y		
ASSCR3	6-25X1/2PHSSY	6-25x1/2ph Self Tap	2.00			EA		IB			
GLASS	1CL	Default Glass Type	1.00	3.3750	3.8750	SF		IB	N		
GLSSPC	SWGG-9/16	Glass Spacer	2.00		2.6250	LI	W	IB	N		
GLSSPC	SWGG-9/16	Glass Spacer	2.00	3.6250		LI	H	IB	N		

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCTE-110-10884-01

Bill of Materials Listing

Print Date: Aug 24, 2007

Product: 7010 Type: DH

Assembly Code	Part #	Description	Qty	<---Deducts--->		Unit Code	Vert Hor	Sub Assy	Add Color	Fixed Length	W/Nailing Fin
				Height	Width						
HEADER	8004	Frame Top Extrusion	1.00		3.7500	LI	W	IB	Y		
LATCH	TWL-720	Latch	2.00			EA		IB	N		
LJAMB	8000	Left Side Extrusion	1.00	.5000		LI	H	IB	Y		
LOCK	VIG3288	Lock	2.00			EA		IB	N		
MUNCLP	10946-002	Muntin Clips	1.00			EA		IB	N		
MUNTNH	536006	Muntin Bar Horizontal	1.00		4.4375	LI	W	IB	Y		
MUNTNV	536006	Muntin Bar Vertical	1.00	1.4375		LI	H	IB	Y		
RJAMB	8000	Right Side Extrusion	1.00	.5000		LI	H	IB	Y		
SILL	8002	Bottom Extrusion	1.00		3.7500	LI	W	IB	Y		
TLTKEY	23110	Tilt Pivot Bar	2.00			EA		IB	N		
VSWEEP	V-391	Bulb Vinyl Sweep Hor	1.00			LI	W	IB	Y		
WTSTPH	W432519W	Weather Strip(H)	1.00		1.0000	LI	W	IB	N		
WTSTPV	W432519W	Weather Strip(V)	6.00	.7500		LI	H	IB	N		
-----											
End of Subassembly IB	*****										
ASSCR1	10X1/2TRUSS	Balance Screw #1	2.00			EA		MF			
ASSCR2	10X5/8TRUSS	Assy Screw #2	2.00			EA		MF			
<del>BALSHO</del>	<del>7006T=LCK</del>	<del>Balance Shoes</del>	<del>4.00</del>			<del>EA</del>		<del>MF</del>			
BOTAPT	M-7025	Bottom Adapter	1.00		2.6875	LI	W	MF	Y		
HEADAD	VR-2180	Head Adapter	1.00		2.6875	LI	W	MF	Y		
HEADER	M-7003	Frame Top Extrusion	1.00		-.2500	LI	W	MF	Y		
INSSTP	609	Insert Stop	4.00			EA		MF	Y	6.5000	
JAMEXS	WOOD	Jamb Extension	2.00	.0000		LI	H	MF			WOOD
JAMEXT	WOOD	Jamb Extension	2.00		1.2500	LI	W	MF			WOOD
LJAMB	M-7003	Left Side Extrusion	1.00	.5000		LI	H	MF	Y		
MISC	716	BlockNTackle Balance	4.00		.0000	EA		MF	N		
RJAMB	M-7003	Right Side Extrusion	1.00	.5000		LI	H	MF	Y		

TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.

Bill of Materials Listing

Print Date: Aug 09/12/07  
 TEST COMPLETE  
 NCTL-110-10884-01

Product: 7010 Type: DH

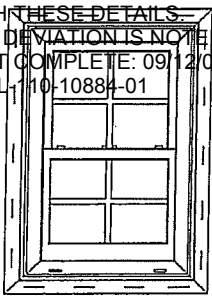
<---Deducts--->

Assembly Code Part # Description Qty Height Width Unit Code Vert Hor Sub Assy Add Color Fixed Length W/Nailing Fin

Assembly Code	Part #	Description	Qty	Height	Width	Unit Code	Vert	Hor	Sub Assy	Add Color	Fixed Length	W/Nailing Fin
SILL	M-7004	Bottom Extrusion	1.00			LI	W		MF	Y		
WTSTPH	W4301NW	Weather Strip(H)	1.00		-.1250	LI	W		MF	N		
-----												
End of Subassembly MF *****												
CKEYS	CORB38LT	Corner Keys	2.00			EA			SC	N		
CKEYS	CORB38LP	Corner Keys	2.00			EA			SC	N		
HEADER	BARB38L020	Frame Top Extrusion	1.00		4.1250	LI	W		SC	N		
LJAMB	BARB38L020	Left Side Extrusion	1.00	4.2500		LI	H		SC	N		
MISC	GA-817	Cross Bar Clip	2.00		.0000	EA			SC			
MISC	A31155H	Plastic Plunger	3.00			EA			SC			
MISC	A1308L10	Plastic Caps	3.00			EA			SC			
MISC	2000242	Screen Clip	1.00		.0000	EA			SC	N		
MISC	A-412	Plunger Spring	2.00			EA			SC			
MISC	V80082	Swivel	1.00			EA			SC			
POPRVT	AB48A	Pop Rivet	1.00			EA			SC			
RJAMB	BARB38L020	Right Side Extrusion	2.00	4.1250		LI	H		SC	N		
SCDEDF	1	Full Screen Deduct		4.0625	5.5000				SC			
SCDEDH	1	Half Screen Deduct		2.1250	4.3750				SC			
SCLOTH	1816	Screen Cloth(Std)	1.00	.2500	4.5000	SF			SC	N		
SCLOTW	1816	Screen Cloth(Wire)	1.00			SF			SC	N		
SILL	BARB38L020	Bottom Extrusion	1.00		4.1250	LI	W		SC	N		
SSPLIN	.155	Screen Spline	2.00	.2500		LI	H		SC	N		
SSPLIN	.155	Screen Spline	2.00	.0000	4.2500	LI	W		SC	N		

-----  
 End of Subassembly SC \*\*\*\*\*

TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED. TEST COMPLETE: 09/12/07 NCTL 10-10884-01



**Series 7010 DH**

**Vinyl Double Hung Windows**

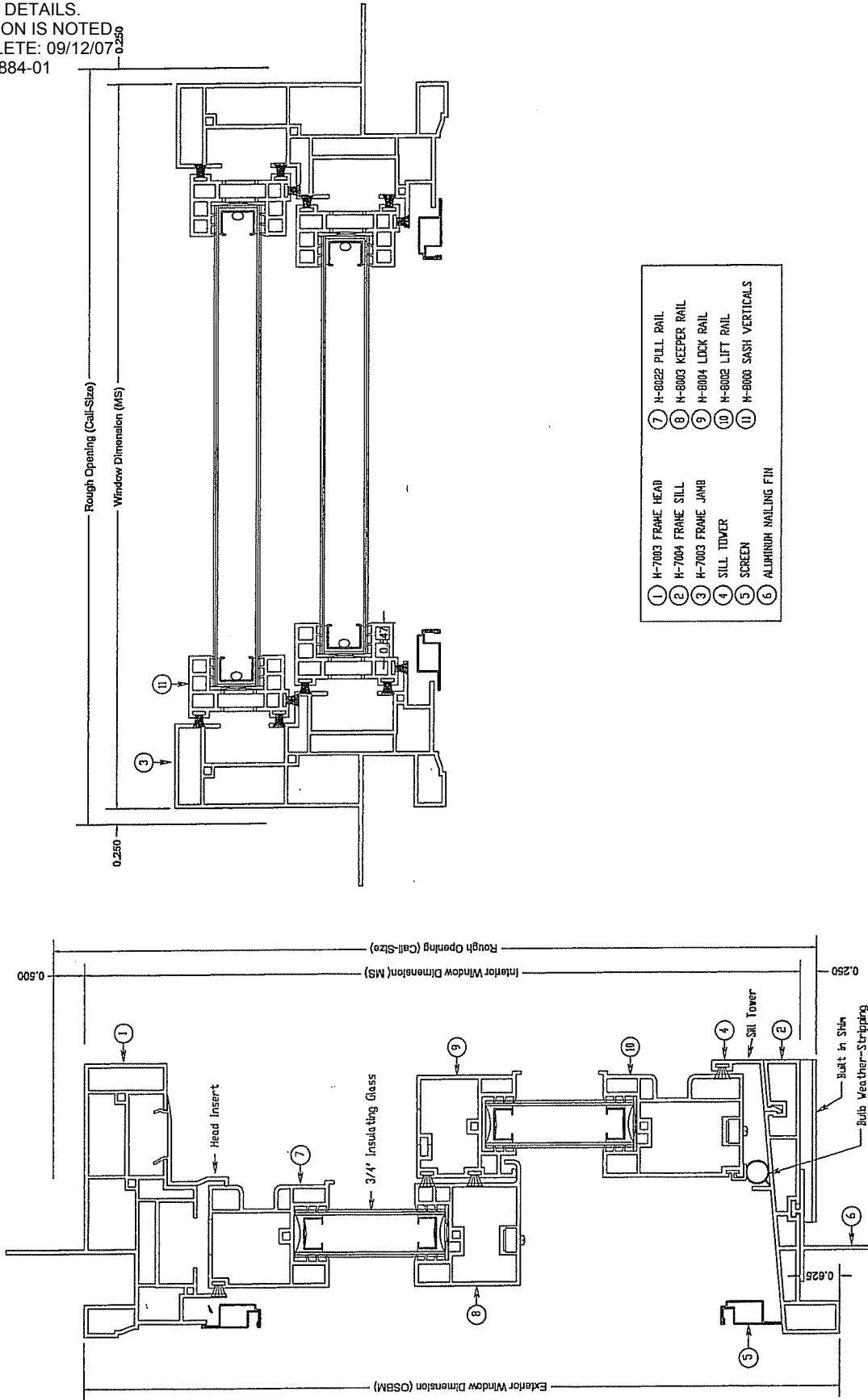
- Both Sash Tilt in and Can Be Removed
- 4-9/16" Jamb Extensions: Add \$64.00
- 6-9/16" Jamb Extensions: Add \$87.00

**Single Units**

Stock Size	1/1	GBC	Lite	Low E	Screen
2-0 x 3-0	164.50	183.34	4/4	17.52	13.55
2-0 x 3-8	179.02	199.52	4/4	21.41	14.75
2-0 x 4-0	187.79	209.29	4/4	23.36	15.95
2-0 x 4-4	196.50	219.00	4/4	25.31	15.95
2-0 x 5-0	212.23	236.53	4/4	29.20	17.15
2-0 x 5-4	227.09	253.09	6/6	31.24	18.35
2-0 x 6-0	237.17	264.33	6/6	35.04	19.85
2-4 x 3-0	175.43	195.52	6/6	20.44	13.95
2-4 x 3-8	191.03	212.90	6/6	24.98	15.15
2-4 x 4-0	199.68	222.54	6/6	27.25	16.35
2-4 x 4-4	208.62	232.51	6/6	29.52	16.35
2-4 x 5-0	220.04	245.23	6/6	34.07	17.45
2-4 x 5-4	235.44	262.40	9/9	36.45	18.67
2-4 x 6-0	245.85	274.00	9/9	40.88	20.35
2-8 x 3-0	176.95	197.21	6/6	23.36	14.95
2-8 x 3-8	193.04	215.14	6/6	28.55	16.15
2-8 x 4-0	200.32	223.26	6/6	31.15	17.45
2-8 x 4-4	209.07	233.01	6/6	33.74	17.45
2-8 x 5-0	224.82	250.56	6/6	38.93	18.75
2-8 x 5-4	240.56	268.10	9/9	41.66	20.06
2-8 x 6-0	249.88	278.49	9/9	46.72	21.85
3-0 x 3-0	188.84	210.46	6/6	26.28	16.05
3-0 x 3-8	206.29	229.91	6/6	32.12	16.45
3-0 x 4-0	213.03	237.42	6/6	35.04	18.55
3-0 x 4-4	221.99	247.41	6/6	37.96	18.55
3-0 x 5-0	238.14	265.41	6/6	43.80	19.95
3-0 x 5-4	254.81	283.99	6/6	46.72	21.55
3-0 x 6-0	261.85	291.83	9/9	52.56	23.05
3-4 x 3-0	212.10	236.39	8/8	29.20	18.65
3-4 x 3-8	230.00	256.34	8/8	35.69	20.15
3-4 x 4-0	238.14	265.41	8/8	38.93	21.65
3-4 x 4-4	244.28	272.25	8/8	42.18	21.65
3-4 x 5-0	265.39	295.78	8/8	48.67	23.25
3-4 x 5-4	283.97	316.48	12/12	52.07	24.88
3-4 x 6-0	302.38	337.00	12/12	58.40	29.05
3-8 x 3-0	224.06	249.71	8/8	32.12	21.65
3-8 x 3-8	242.83	270.63	8/8	39.26	23.15
3-8 x 4-0	258.98	288.63	8/8	42.83	24.65
3-8 x 4-4	269.91	300.81	8/8	46.40	24.65
3-8 x 5-0	289.72	322.89	8/8	53.53	26.25
3-8 x 5-4	310.00	345.50	12/12	57.28	28.09
3-8 x 6-0	320.88	357.62	12/12	64.24	31.05
<b>Custom Size</b>	Next Larger Size + 59.00			+2.92 per sqft	+33.00

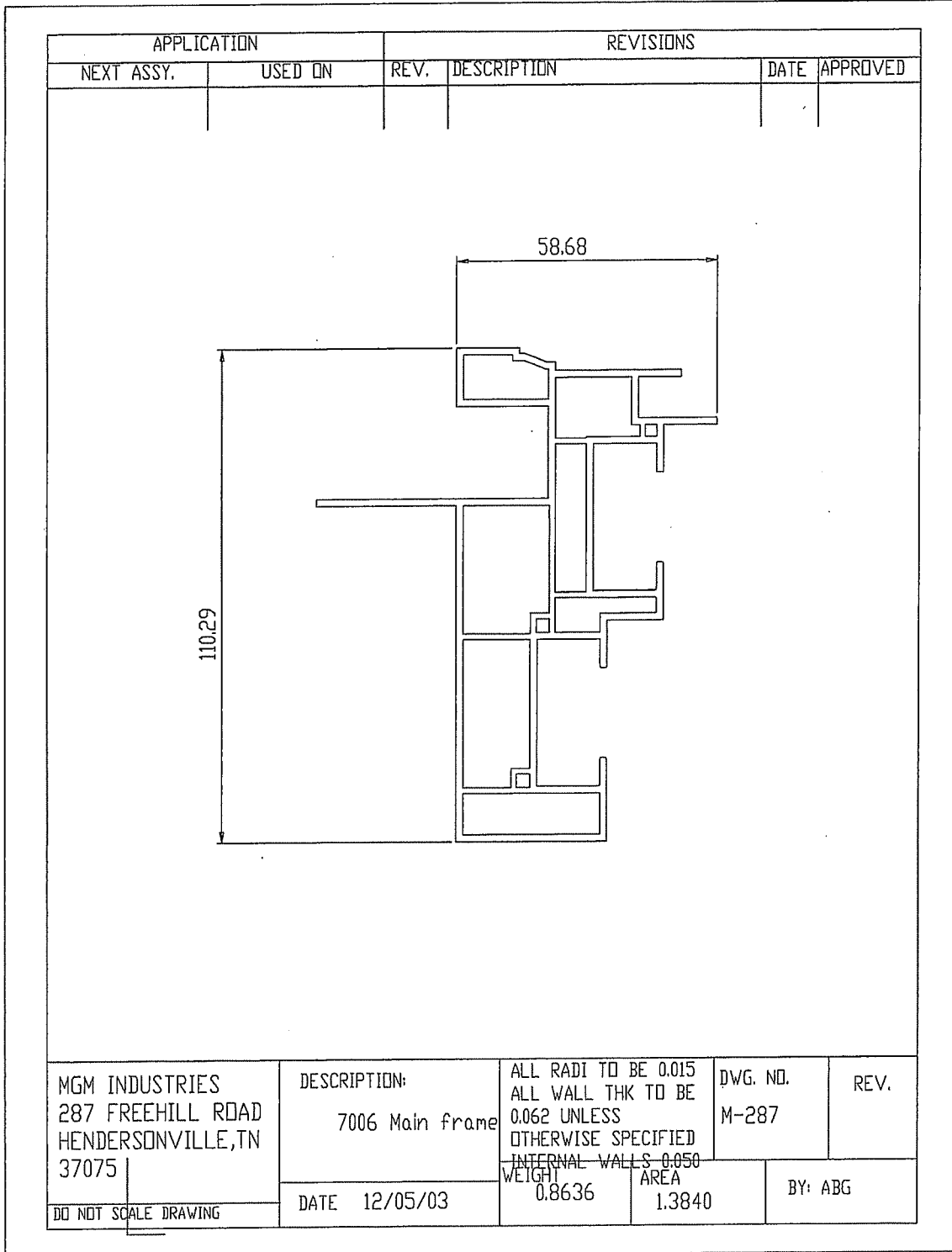
**MGM Industries**  
 287 Freehill Road  
 Hendersonville, TN 37075  
 Office 1-800-476-5584  
 Fax 1-615-822-6581

TEST SPECIMEN COMPLIES  
WITH THESE DETAILS.  
ANY DEVIATION IS NOTED  
TEST COMPLETE: 09/12/07  
NCTL-110-10884-01



<b>MGM</b> INDUSTRIES 287 FREEBELL ROAD HENDERSONVILLE, TN 37075 1-800-778-6394 PH-615-624-4572 FX-615-622-5581	TITLE:	Vertical and Horizontal Cross-Section		
	MATERIALS:			
POF:	SERIES#	DATE:	BY:	
WOR:	7010DH	01-25-07	R.GRAVES	
	Do Not Scale Drawing			ENGR

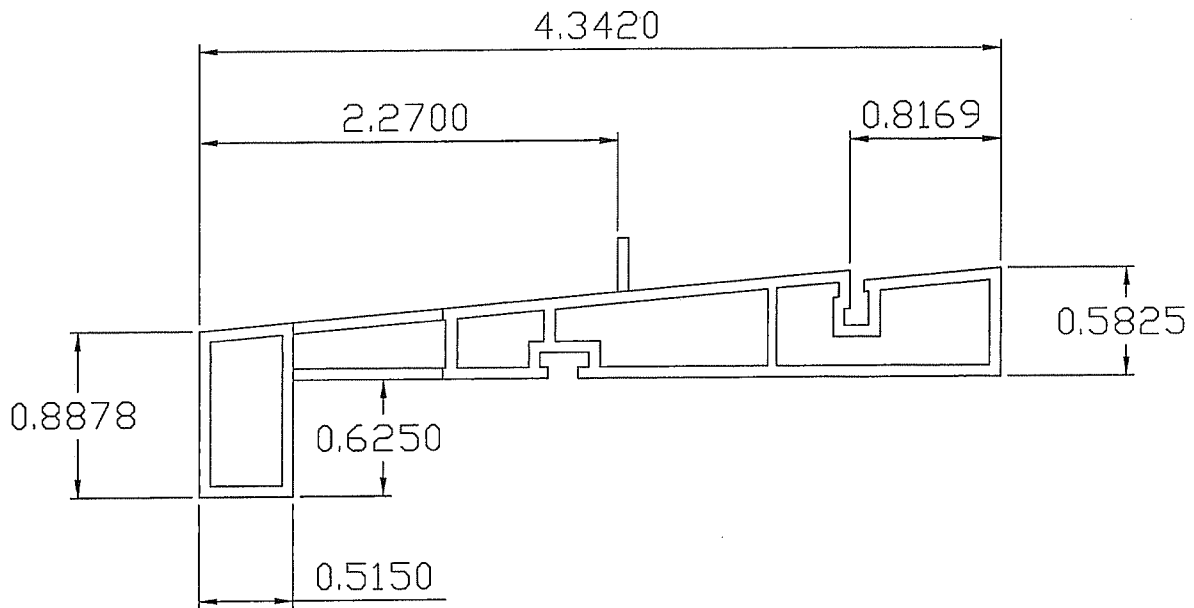
TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCTL-110-10884-01



APPLICATION	REVISIONS			
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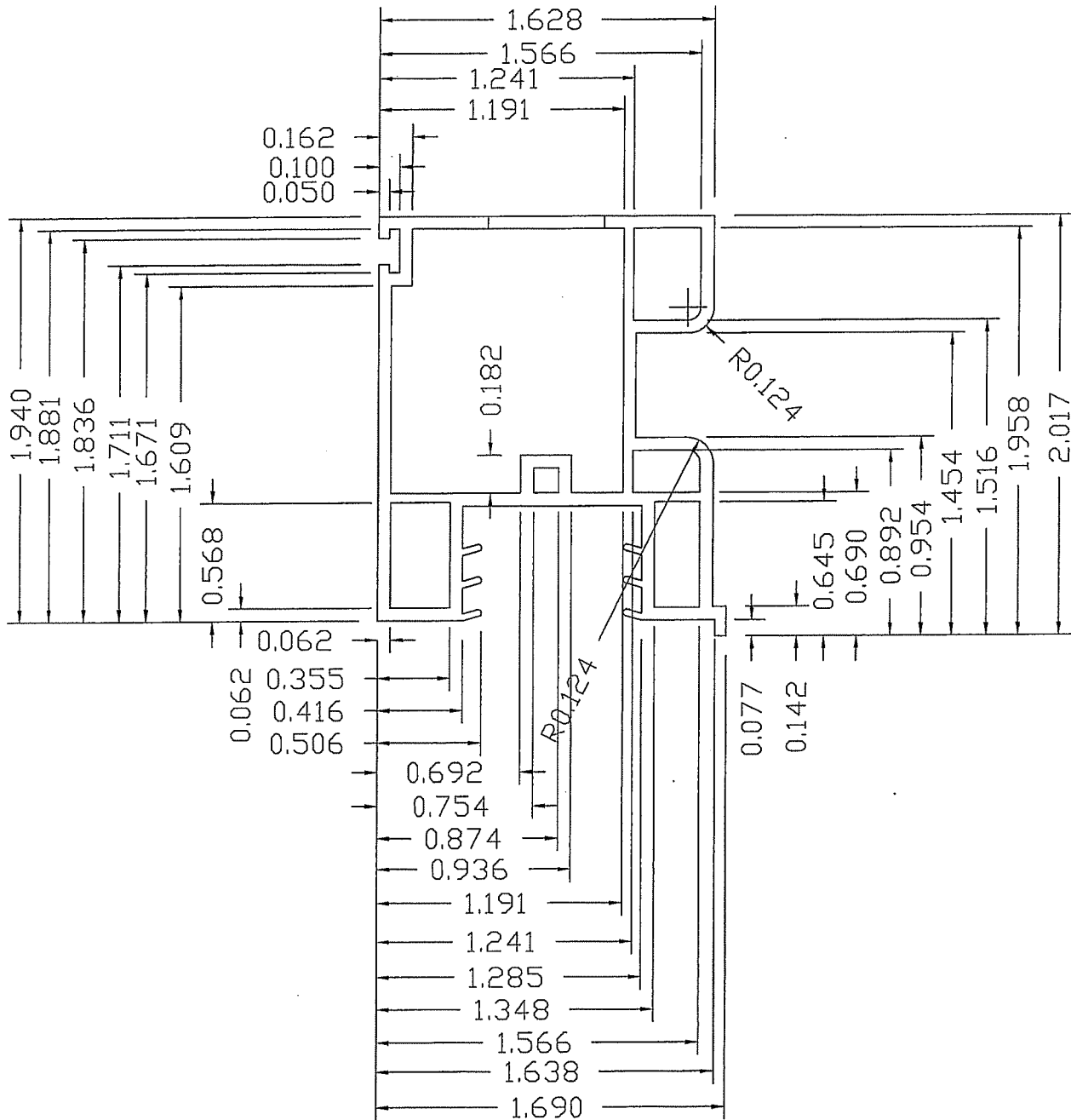
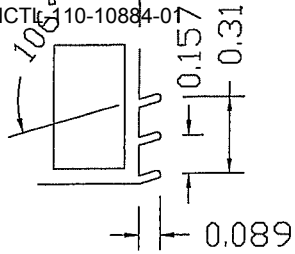
NEXT TEST SPECIMEN COMPRISED ON	REV.	DESCRIPTION	DATE	APPROVED
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WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCTL-110-10884-01



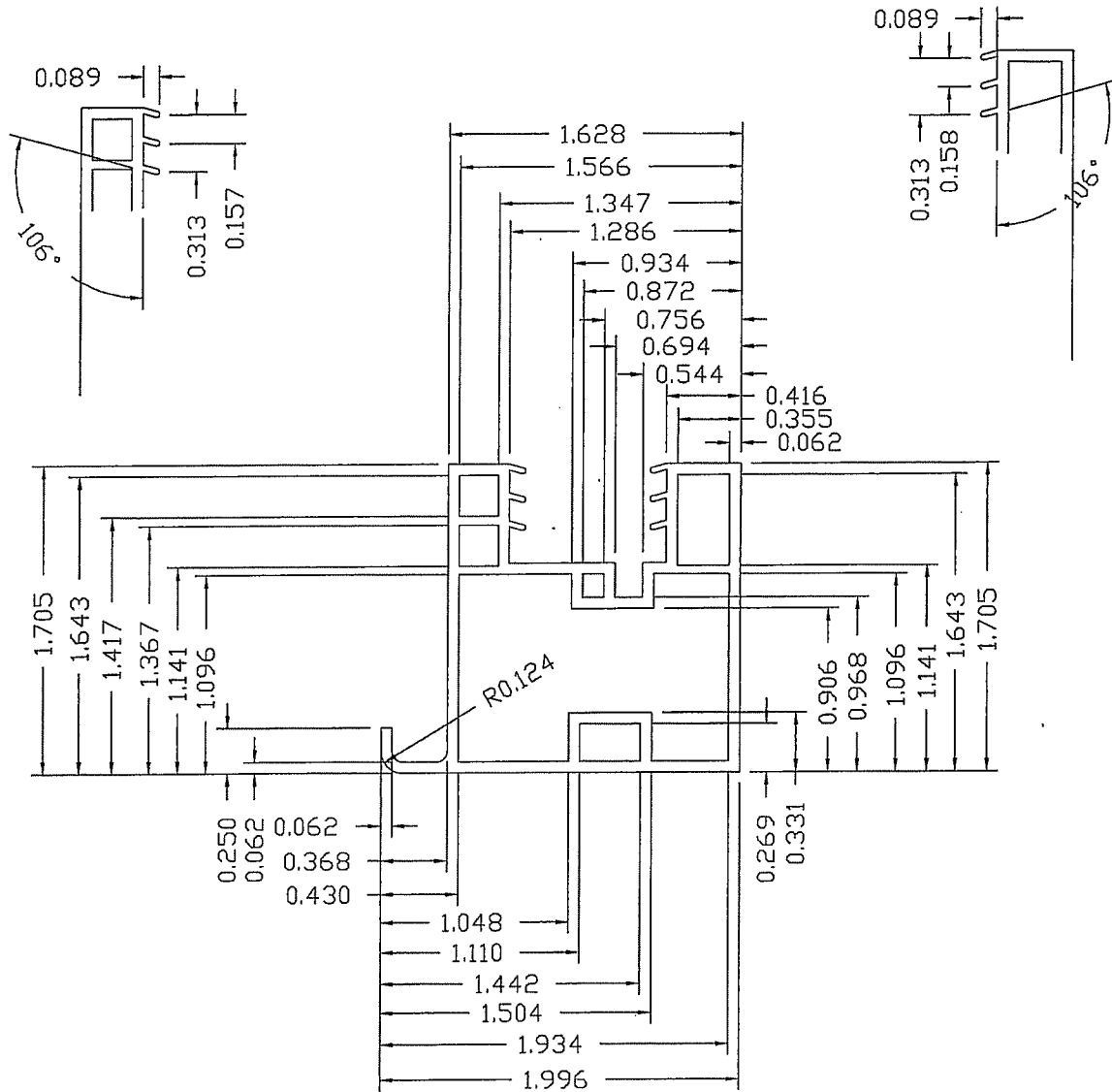
MGM INDUSTRIES 287 FREEHILL ROAD HENDERSONVILLE, TN 37075	DESCRIPTION: 7010 SILL	ALL RADI TO BE 0.015 ALL WALL THK TO BE 0.062 UNLESS OTHERWISE SPECIFIED INTERNAL WALLS 0.050	DWG. NO. M-7004	REV.
	DATE 11/30/05	WEIGHT 0.480	AREA 0.769	BY: ABG
DO NOT SCALE DRAWING				

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCT# 110-10884-07



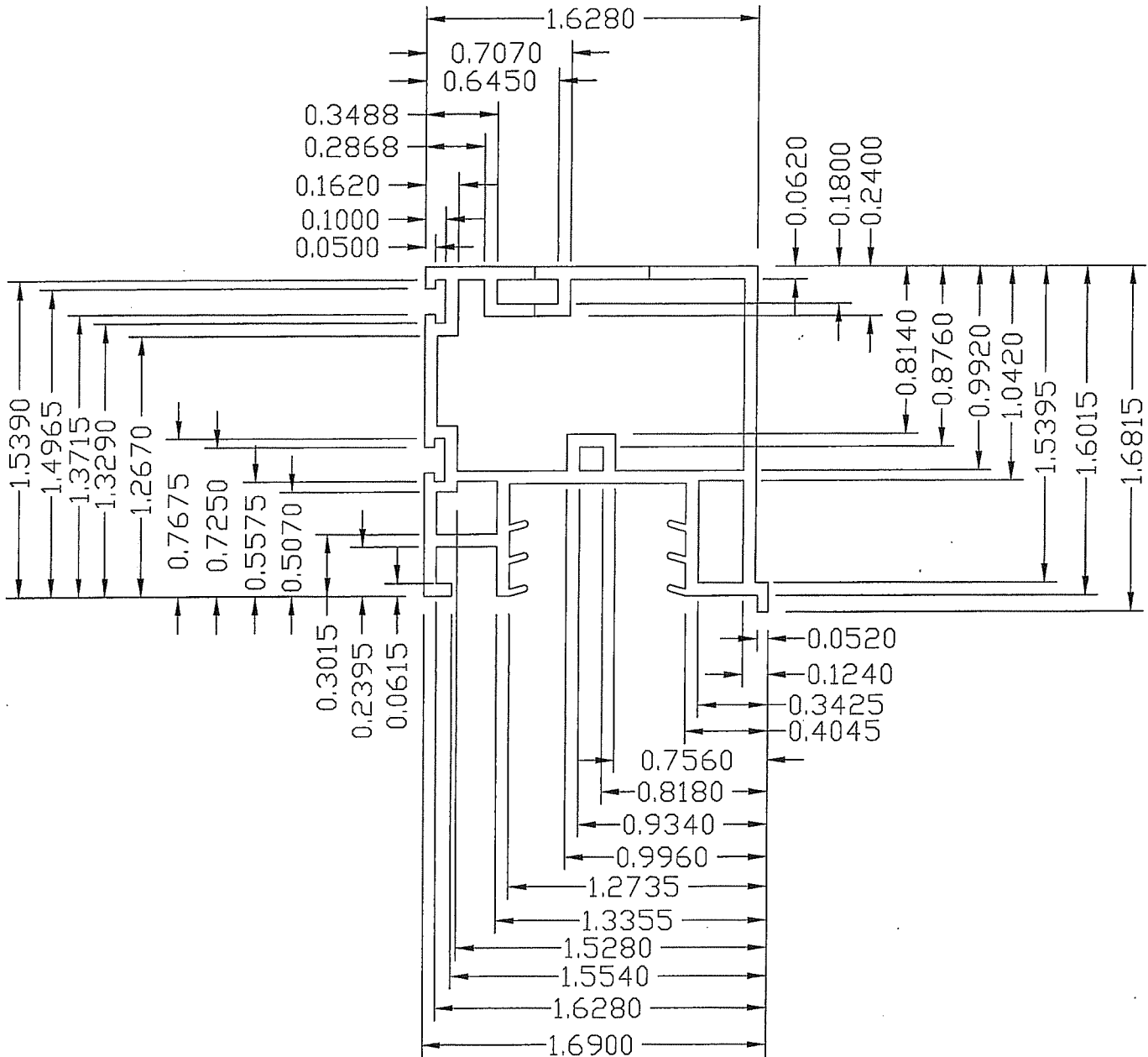
MGM INDUSTRIES 287 FREEHILL RD HENDERSONVILLE, TN 37075	DESCRIPTION:  TOP SASH TOP RAIL	ALL RADI TO BE 0.015. ALL WALL THK TO BE 0.062 UNLESS OTHERWISE SPECIFIED. INTERNAL WALLS 0.052 INTERNAL WALLS 0.052	DWG. NO.  M-8022	REV.
	DATE 02/07/00	AREA	WT/FT	BY: ABG

TEST SPECIMEN COMPLIES  
WITH THESE DETAILS.  
ANY DEVIATION IS NOTED.  
TEST COMPLETE: 09/12/07  
NCTL-110-10884-01



MGM INDUSTRIES 287 FREEHILL RD HENDERSONVILLE, TN 37075	DESCRIPTION: TOP SASH Bottom RAIL	ALL RADI TO BE 0.015, ALL WALL THK TO BE 0.0625 UNLESS OTHERWISE SPECIFIED. INTERNAL WALLS 0.052	DWG. NO. V-8003	REV. 2
	DO NOT SCALE	AREA .6232	WT/FT .4031	BY: ABG
	DATE 07/28/00			

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCTL-110-10884-01



MGM INDUSTRIES  
 287 FREEHILL RD  
 HENDERSONVILLE, TN  
 37075

DESCRIPTION:  
 BOTTOM SASH  
 TOP RAIL

ALL RADI TO BE 0.015.  
 ALL WALL THK TO BE  
 0.062 UNLESS  
 OTHERWISE SPECIFIED.  
 INTERNAL WALLS 0.052  
 INTERNAL WALLS 0.052

DWG. NO.  
 M-8004

REV.  
 1

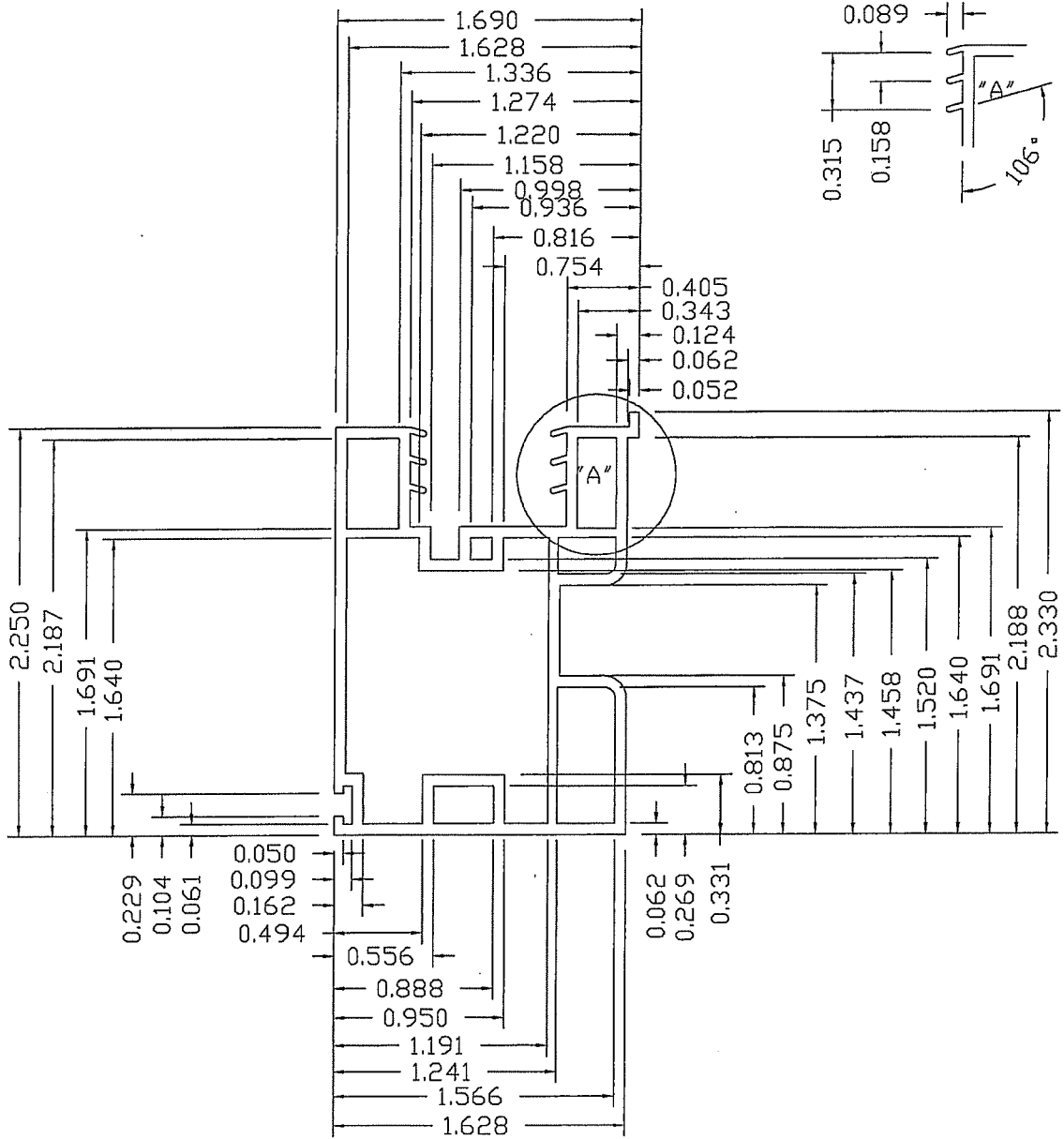
DATE 02/07/00

AREA .5932

WT/FT .3729

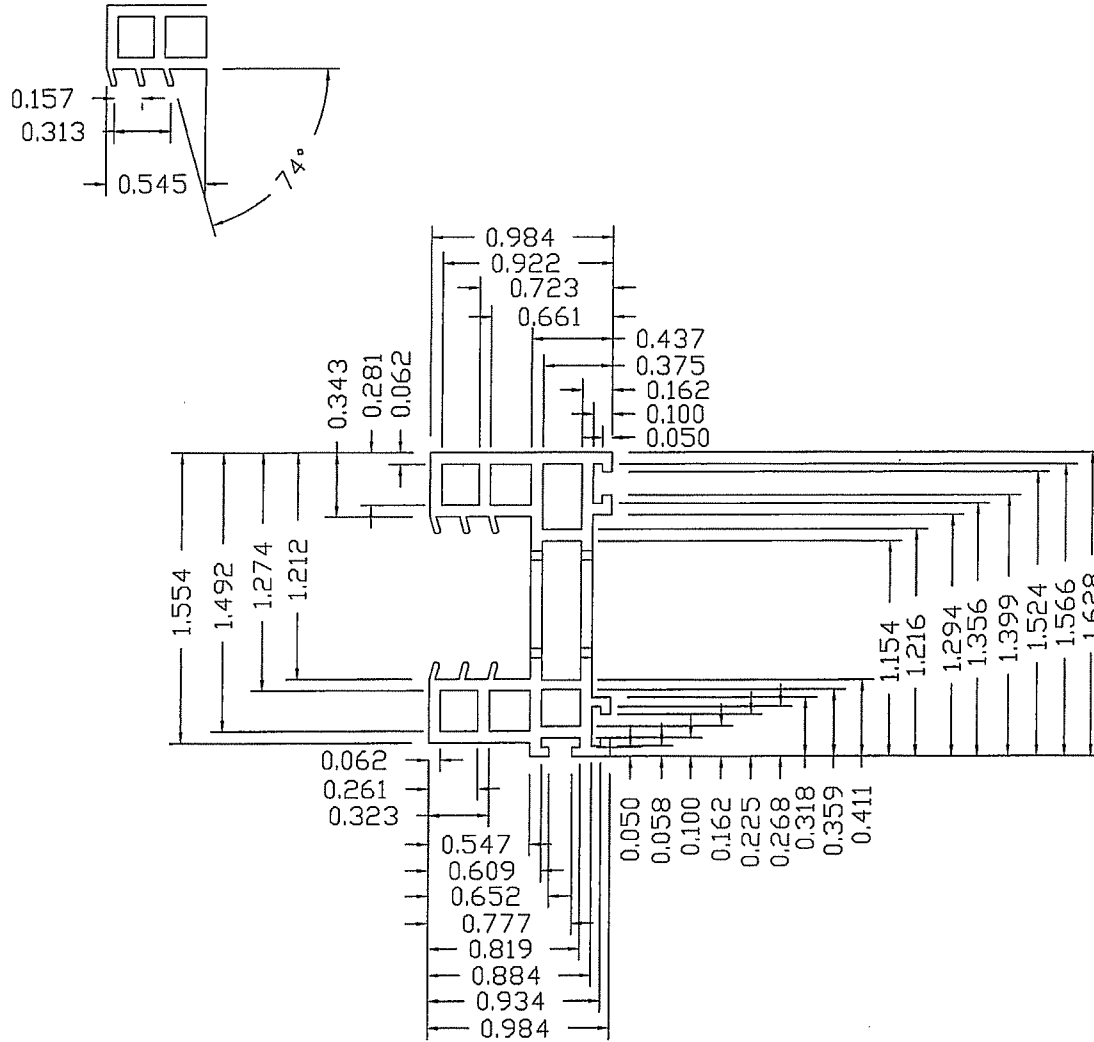
BY: ABG

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCTL-110-10884-01



MGM INDUSTRIES 287 FREEHILL RD HENDERSONVILLE, TN 37075	DESCRIPTION:	ALL RADI TO BE 0.015. ALL WALL THK TO BE 0.0625 UNLESS OTHERWISE SPECIFIED. ALL INTERNAL RADI .052	DWG. NO.:	REV.:
	DO NOT SCALE		V-8002	4
DATE:	08/11/00	AREA .7808	WT/FT .4863	BY: ABG

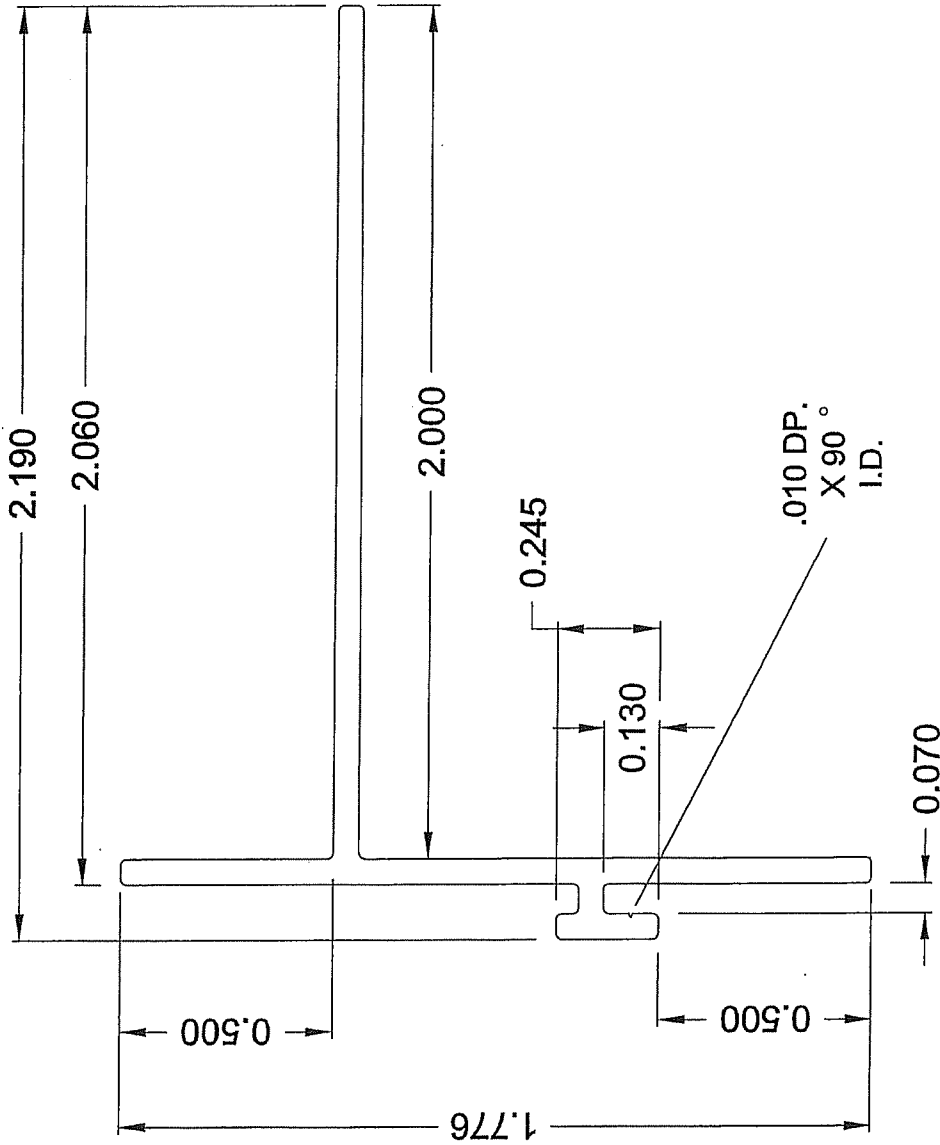
TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCTL-110-10884-01



MGM INDUSTRIES 287 FREEHILL RD HENDERSONVILLE, TN 37075	DESCRIPTION:	ALL RADI TO BE 0.015, ALL WALL THK TO BE 0.0625 UNLESS OTHERWISE SPECIFIED		DWG. NO. V-8000	REV. 1
	8000 Series Sash				
	DO NOT SCALE				
DATE: 02/07/00	AREA .4959	WT/FT .3094	DRAWN BY: R.Graves		

Revisions:

TEST SPECIMEN COMPLIES WITH THESE DETAILS.  
ANY DEVIATION IS NOTED.  
TEST COMPLETE: 09/12/07  
NCTL-110-10884-01

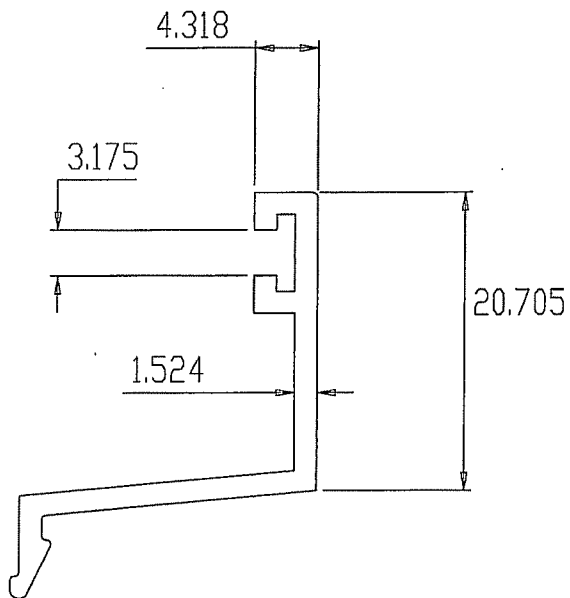


EXPOSED

ACTUAL SIZE

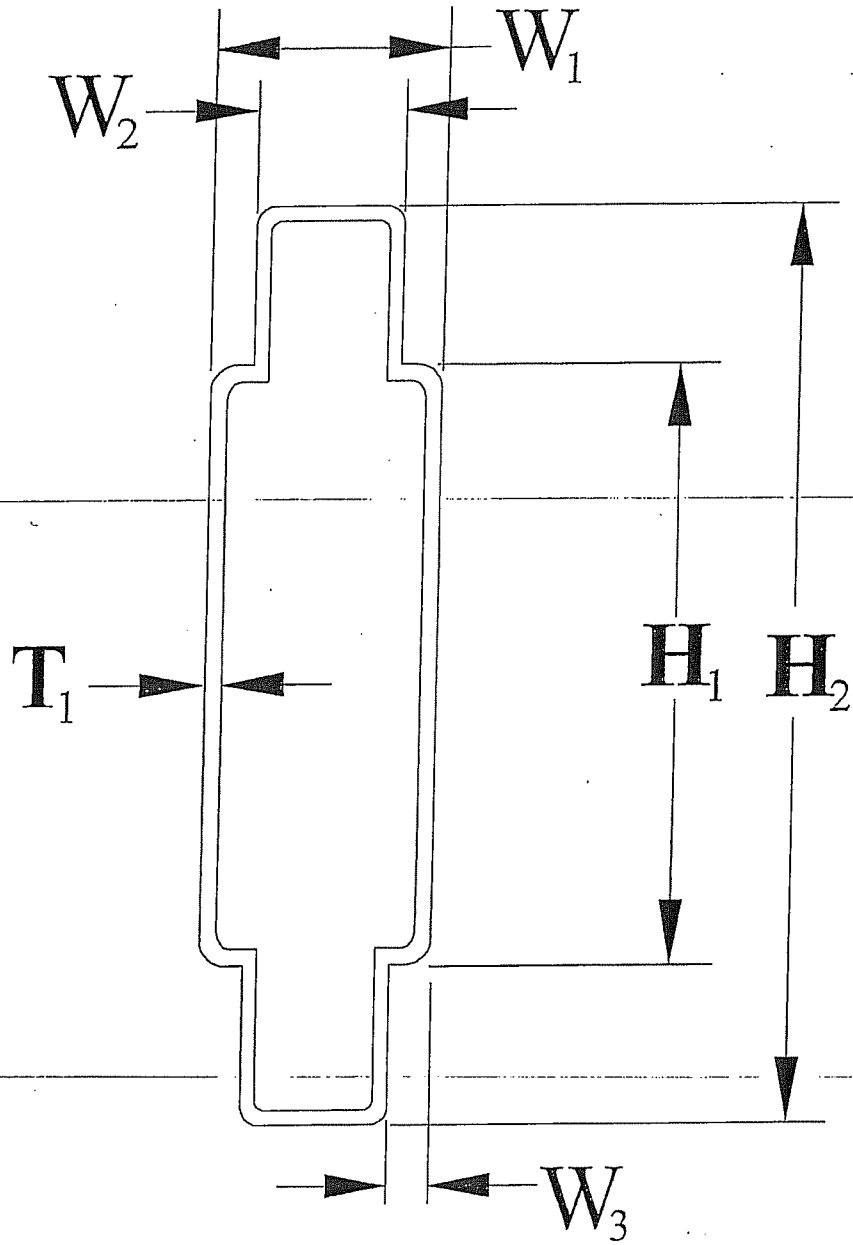
Unmarked RadIIR .015	All Corners: .015	Radius Unless Specified:	Unspecified Wall Thickness: .060	Alloy/Temper: 6063-T6 Aluminum	Vendor/Die Number: 22095 A
<b>MGM INDUSTRIES, INC.</b> 287 FreeHill Road Hendersonville, Tennessee 37075 (615)-824-6572			Title: 8006 Nail Fin Vendor: Alcoa Extruded Construction Products		Series#: 8000 BY: R.Graves Date: 05/15/02
			Est.Area: .245 Scale: 2 X 1	Est.Wt.Per Ft.: .294 Customer #: A-127	

APPLICATION		REVISIONS		
TEST SPECIMEN COMPLIES	USED ON	REV.	DESCRIPTION	DATE APPROVED
WITH THESE DETAILS: ANY DEVIATION IS NOTED. TEST COMPLETE: 09/12/07 NCTL-110-10884-01				



MGM INDUSTRIES 287 FREEHILL ROAD HENDERSONVILLE, TN 37075	DESCRIPTION:	ALL RADI TO BE 3.8mm ALL WALL THK TO BE 1.52mm UNLESS OTHERWISE SPECIFIED INTERNAL WALLS 0.050	DWG. NO.	REV.
	7010 Sill Tower	WEIGHT	AREA	BY: ABG
DO NOT SCALE DRAWING	DATE 4/26/06	0.079 Lb/ft	xx	

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 09/12/07  
 NCTL-110-10884-01

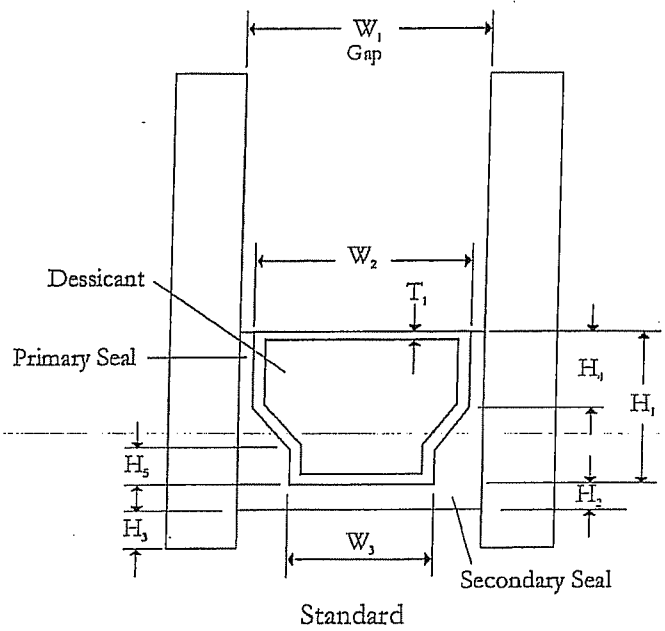
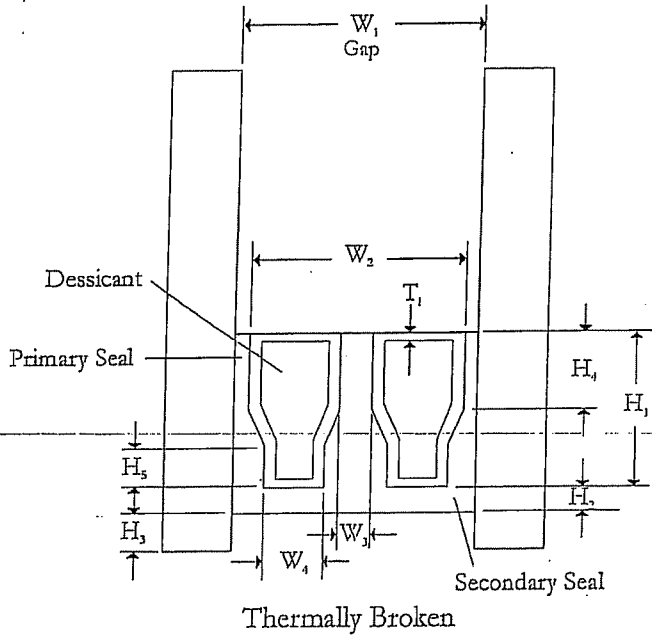
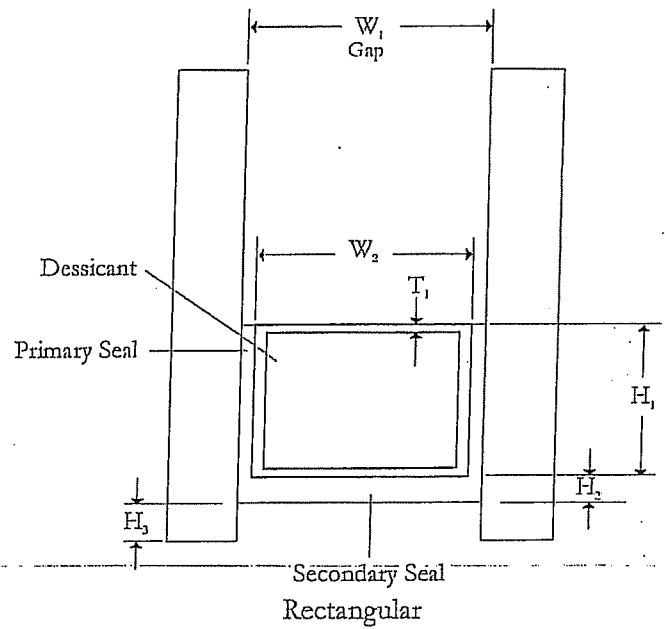
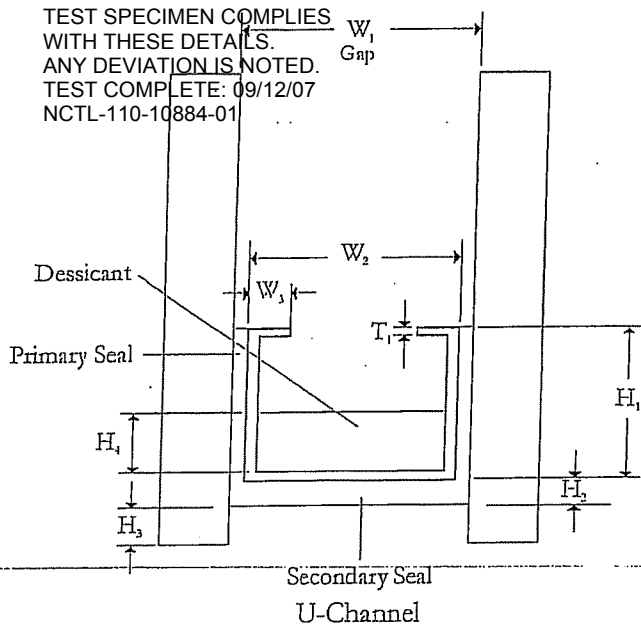


# Decorative

Divider Dimensions - Fill dimensions where applicable - Please fill out a divider sheet for each divider size used.

Dimensions			Material		
<input type="checkbox"/> $W_1$ , <u>1.215</u> "	<input type="checkbox"/> $W_2$ , <u>.151</u> "	<input type="checkbox"/> $W_3$ , <u>1.064</u> "	<input checked="" type="checkbox"/> Aluminum	<input type="checkbox"/> Steel - Galvanized	<input type="checkbox"/> Other _____
<input type="checkbox"/> $H_1$ , <u>1.360</u> "	<input type="checkbox"/> $H_2$ , <u>.715</u> "	<input type="checkbox"/> $T_1$ , <u>.120</u> "	<input type="checkbox"/> Steel - Mild	<input type="checkbox"/> Steel - Stainless	

TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED. TEST COMPLETE: 09/12/07 NCTL-110-10884-01



Spacer Dimensions - Fill dimensions where applicable - Please fill out a spacer sheet for each spacer used whether spacer type or size.

Gap	Primary Seal	Secondary Seal	Material	Fill
<input type="checkbox"/> W <sub>1</sub> <u>.576</u> "	<input checked="" type="checkbox"/> Butyl	<input checked="" type="checkbox"/> Butyl	<input type="checkbox"/> Aluminum	<input checked="" type="checkbox"/> Desiccant
<input type="checkbox"/> W <sub>2</sub> <u>.526</u> "	<input type="checkbox"/> PIB	<input type="checkbox"/> PIB	<input type="checkbox"/> Steel - Mild	<input type="checkbox"/> Air
<input type="checkbox"/> W <sub>3</sub> <u>.676</u> "	<input type="checkbox"/> Polysulphide	<input type="checkbox"/> Polysulphide	<input type="checkbox"/> Steel - Stainless	<input type="checkbox"/> Other _____
<input type="checkbox"/> W <sub>4</sub> _____ "	<input type="checkbox"/> Silicone	<input type="checkbox"/> Silicone	<input checked="" type="checkbox"/> Steel - Galvanized	
<input type="checkbox"/> H <sub>1</sub> <u>.300</u> "	<input type="checkbox"/> Urethane	<input type="checkbox"/> Urethane	<input type="checkbox"/> Vinyl	
<input type="checkbox"/> H <sub>2</sub> <u>.645</u> "	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Foam _____	
<input type="checkbox"/> H <sub>3</sub> <u>.08</u> "	<input type="checkbox"/> Other _____	<input type="checkbox"/> Other _____	<input type="checkbox"/> Other _____	
<input type="checkbox"/> H <sub>4</sub> <u>.084</u> "				
<input type="checkbox"/> H <sub>5</sub> _____ "				
<input type="checkbox"/> T <sub>1</sub> <u>.013</u> "				