

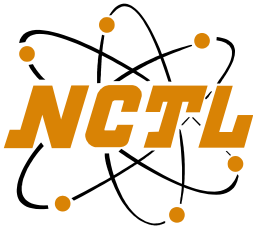


***MGM Industries***

*SIMULATION PERFORMANCE &  
SOLAR HEAT GAIN REPORT*

*"7010"  
Fixed*

*NCTL-110-10907-01*



# NATIONAL CERTIFIED TESTING LABORATORIES

FIVE LEIGH DRIVE • YORK, PENNSYLVANIA 17406 • TELEPHONE (717) 846-1200  
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## **Simulation Performance, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance Calculation Report**

**REPORT NO:** NCTL-110-10907-01  
**SIMULATION DATE:** 09/18/07  
**REPORT DATE:** 09/19/07

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

**Product Line:** MGM Industries' Series "7010" Fixed

**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 "7010" Fixed.

**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 strips of weather-strip
Jamb	(3) single strip of weather-strip
Sill	(1) single strip of weather-strip and Bulb Seal

**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 obscurity (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	AFG TiAC#36 / Air / AFG Clear	0.481*
005	AFG TiAC#36 / Air / 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.

**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.

**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.

**Modeling assumptions:**

The product was modeled with a nominal 1" x 4" wood stud attached to the exterior flange.

**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.

**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	0.771	0.690	0.614

VT	No Dividers	Dividers <1"	Dividers ≥1"
0.00	0.000	0.000	0.000
1.00	0.768	0.684	0.605

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

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

***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				0.48	0.80	0.83	CU-D	N,G	CL	<b>0.46</b>	<b>43</b>	<b>0.62</b>	<b>0.64</b>	<b>0.55</b>	<b>0.57</b>
CLR_DS_AIR		887	887	0.118	0.118	0.514	AIR				0.48	0.79	0.82	CU-D	N,G	CL	<b>0.46</b>	<b>43</b>	<b>0.61</b>	<b>0.63</b>	<b>0.54</b>	<b>0.56</b>
TiAC36#3_SS_AIR	<b>002</b>	885	964	0.098	0.098	0.553	AIR			0.034	0.30	0.47	0.69	CU-D	N,G	LE	<b>0.33</b>	<b>54</b>	<b>0.36</b>	<b>0.53</b>	<b>0.32</b>	<b>0.47</b>
TiAC36#2_SS_AIR		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>54</b>	<b>0.29</b>	<b>0.53</b>	<b>0.26</b>	<b>0.47</b>
TiAC36#3_DS_AIR	<b>003</b>	887	965	0.118	0.118	0.514	AIR			0.034	0.29	0.37	0.68	CU-D	N,G	LE	<b>0.33</b>	<b>54</b>	<b>0.36</b>	<b>0.52</b>	<b>0.32</b>	<b>0.46</b>
TiAC36#2_DS_AIR		965	887	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>54</b>	<b>0.28</b>	<b>0.52</b>	<b>0.26</b>	<b>0.46</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**  
  
DIGITAL SIGNATURE**CHRISTIAN J. MITCHELL**

Simulator

  
  
DIGITAL SIGNATURE**STEVEN H. COBLE**

NFRC Accredited Simulator

Simulator-In-Responsible-Charge

Attachments

**Report Log**

**Product Line:** MGM Industries' Series "7010" Fixed

**Date:**  
**09/19/07** - 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.

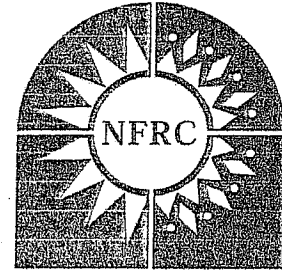
<b>Spacer</b>		
<b>Code</b>	<b>Type</b>	<b>Definition</b>
A8-D	Aluminum-Butyl Composite	Exposed corrugated aluminum spacer with butyl - dual sealed.
A8-S	Aluminum-Butyl Composite	Exposed corrugated aluminum spacer with butyl - single sealed.
CS-D	Coated Steel	Coated Steel (galvanized or tinplated) - 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: 9/18/07 NCTL-110-10907-01

NFRC PRODUCT CERTIFICATION PROGRAM



National Fenestration Rating Council®

Submittal Form for Test Samples

For use by manufacturers, lineal suppliers and fabricators

1. Information on Production of the Test Sample (complete ALL fields):

Manufacturer: MGM INDUSTRIES Date of sample manufacture: 8/21/07
Plant Address where manufactured: 287 FREEHILL ROAD
City: HENDERSONVILLE State: TN Zip Code: 37075
Name of IA: ALI Phone: 1-800-476-5584 Fax: (615) 822-6581

2. Product Information (complete ALL fields):

Product Line ID No.: 7010 Operator Type (Table 4-3 of NFRC 100): FIXED
Series/Model: PICTURE

3. Test sample is being submitted for (select ONE):

- a. Validation for Initial Certification (prototype only; Section 2.2.1.C of PCP), no plant qualification
b. Validation for Initial Certification (production line unit; Section 2.2.1.B.ii of PCP) & plant qualification
c. Validation for Recertification (production line unit; Section 2.2.1.B.ii of PCP) & plant qualification
d. Plant Qualification Only (production line unit; Section 2.2.1.B.ii of PCP)

[Note: If the only test option is to be used, include a copy of the NFRC-certified simulator's statement and NFRC approval as required in NFRC 100 (1997) Sections 6.1 and 6.1.1.]

I, Ryan Blankenship, as the designated agent for MGM do hereby attest that the foregoing information is true to the best of my information, knowledge, and belief. Further, if the unit is identified in Section 3 as a production line unit, I hereby authorize the NFRC-accredited testing laboratory to send a copy of the test report to the IA identified above for plant qualification purposes pursuant to the NFRC Product Certification Program.

Signature: Ryan Blankenship Date: 8/21/07

FOR LABORATORY USE ONLY

- 1. Laboratory
2. Date Sample Received: File number ID:
3. Date Sample Tested: By:
4. Modifications made:
5. Reason for non-testing of sample unit:

[Note: If the sample submitted can not be tested due to damage prior to testing, a new sample and new form shall be submitted to the testing laboratory. Both forms shall be submitted to the IA when the testing is completed.]

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 9/18/07  
 NCTL-110-10907-01

Bill of Materials Listing

Print Date: Aug 17, 2007

Product: 7010

Type: PIC

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
ASSCR1	8X1PH	Assembly Screw #1	4.00			EA			IA	N		
GLASS	1CL	Default Glass Type	1.00	6.0000	4.8750	SF			IA	N		
GLSSPC	SWG-11/16	Glass Spacer	2.00		3.9375	LI	W		IA	N		
GLSSPC	SWG-11/16	Glass Spacer	2.00	6.3750		LI	H		IA	N		
HEADER	8002	Frame Top Extrusion	1.00		4.7500	LI	W		IA	Y		
LJAMB	8000	Left Side Extrusion	1.00	2.5625		LI	H		IA	Y		
MUNCLP	10946-002	Muntin Clips	1.00			EA			IA	N		
MUNTNH	536006	Muntin Bar Horizontal	1.00		5.3125	LI	W		IA	Y		
MUNTNV	536006	Muntin Bar Vertical	1.00	5.4375		LI	H		IA	Y		
RJAMB	8000	Right Side Extrusion	1.00	2.5625		LI	H		IA	Y		
SILL	8002	Bottom Extrusion	1.00		4.7500	LI	W		IA	Y		
WTSTPH	W432519W	Weather Strip(H)	2.00		2.9375	LI	W		IA	N		
WTSTPV	W432519W	Weather Strip(V)	6.00	2.9375		LI	H		IA	N		

End of Subassembly IA

Assembly Code	Part #	Description	Qty	Height	Width	Unit Code	Vert	Hor	Sub Assy	Add Color	Fixed Length	W/Nailing Fin
HDADPT	401	Header Adapter	1.00		2.6875	LI	W		MF	Y		401
HEADER	7003	Frame Top Extrusion	1.00		.2500	LI	W		MF	Y		7003
JAMADL	401	Left Jamb Adapter	1.00	1.8125		EA	H		MF	Y		401
JAMADR	401	Right Jamb Adapter	1.00	1.8125		EA	H		MF	Y		401
JAMEXS	WOOD	Jamb Extension	2.00	.0000		LI	H		MF			WOOD
JAMEXT	WOOD	Jamb Extension	2.00		1.2500	LI	W		MF			WOOD
LJAMB	7003	Left Side Extrusion	1.00	.5000		LI	H		MF	Y		7003
RJAMB	7003	Right Side Extrusion	1.00	.5000		LI	H		MF	Y		7003
SILL	7004	Bottom Extrusion	1.00			LI	W		MF	Y		
SILL1	7007	Sill Adapter	1.00		2.6875	LI	W		MF	Y		7007

End of Subassembly MF

~~CKEYS CORB3811 Corner Keys 2.00~~

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 9/18/07  
 NCTL-110-10907-01

Bill of Materials Listing

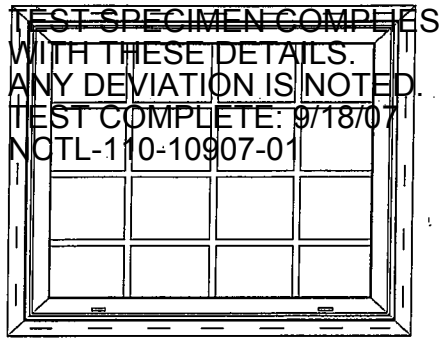
Print Date: Aug 17, 2007

Product: 7010

Type: PIC

Assembly Code	Part #	Description	Qty	Height	Width	Unit Code	Vert Hor	Sub Assy	Add Color	Fixed Length	W/Nailing Fin
CKEYS	CORB38LP	Corner Keys	2.00			EA		SC	N		
HEADER	BARB38L020	Frame Top Extrusion	1.00		4.5000	LI	W	SC	Y		
LJAMB	BARB38L020	Left Side Extrusion	1.00	.2500		LI	H	SC	Y		
MISC	2000242	Screen Clip	1.00			EA		SC	N		
MISC	A3155H	Plastic Plungers	3.00			EA		SC			
MISC	A1308L10	Plastic Caps	3.00			EA		SC			
POPRVT	AB48A	Pop Rivet	1.00			EA		SC			
RJAMB	BARB38L020	Right Side Extrusion	1.00	.2500		LI	H	SC	Y		
SCDEDF	1	Full Screen Deduct		5.0000	5.0000			SC			
SCDEDH	1	Half Screen Deduct		.1250	4.5000			SC			
SCLOTH	1816	Screen Cloth(Std)	1.00	.2500	4.6250	SF		SC	N		
SCLOTW	1816	Screen Cloth(Wire)	1.00			SF		SC	N		
SILL	BARB38L020	Bottom Extrusion	1.00		4.5000	LI	W	SC	Y		
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 \*\*\*\*\*



**Series 7010 PIC**

**Vinyl Fixed Picture Windows**

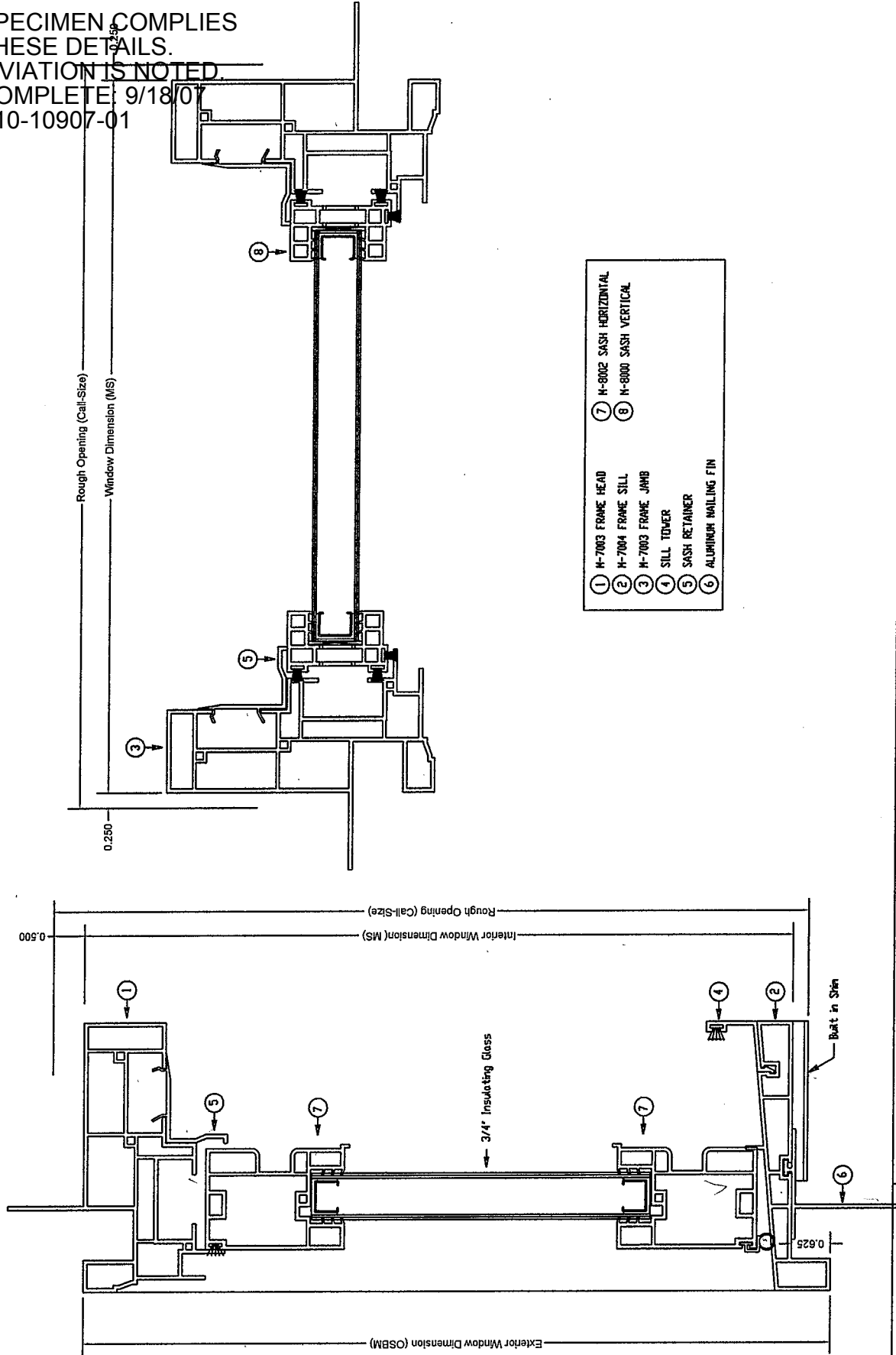
- Box Sill
- Custom Sizes Available
- 4-9/16" Jamb Extensions: Add \$64.00
- 6-9/16" Jamb Extensions: Add \$87.00

**Fixed Windows**

Size	1/1	GBC	Lite	Low-E	Tempered
2-0 x 3-0	163.62	179.16	8	17.52	84.24
2-0 x 3-8	171.09	187.34	8	21.41	102.96
2-0 x 4-0	174.82	191.43	8	23.36	112.32
2-0 x 4-4	178.58	195.55	8	25.31	121.68
2-0 x 5-0	186.05	203.72	8	29.20	140.40
2-0 x 5-4	186.05	203.72	8	31.15	149.76
2-0 x 6-0	200.14	219.15	12	35.04	168.48
2-8 x 3-0	192.46	210.74	12	23.36	112.32
2-8 x 3-8	200.34	219.37	12	28.55	137.28
2-8 x 4-0	208.17	227.95	12	31.15	149.76
2-8 x 4-4	208.17	227.95	12	33.74	162.24
2-8 x 5-0	222.60	243.75	12	38.93	187.20
2-8 x 5-4	222.60	243.75	12	41.53	199.68
2-8 x 6-0	247.48	270.99	18	46.72	224.64
3-0 x 3-0	202.02	221.21	12	26.28	126.36
3-0 x 3-8	215.36	235.82	12	32.12	154.44
3-0 x 4-0	225.98	247.45	12	35.04	168.48
3-0 x 4-4	225.98	247.45	12	37.96	182.52
3-0 x 5-0	276.27	302.52	12	43.80	210.60
3-0 x 5-4	276.27	302.52	12	46.72	224.64
3-0 x 6-0	317.47	347.63	18	52.56	252.72
4-0 x 3-0	234.36	256.62	16	35.04	168.48
4-0 x 3-8	238.29	260.93	16	42.83	205.92
4-0 x 4-0	263.18	288.18	16	46.72	224.64
4-0 x 4-4	263.18	288.18	16	50.61	243.36
4-0 x 5-0	310.34	339.82	16	58.40	280.80
4-0 x 5-4	310.34	339.82	16	62.29	299.52
4-0 x 6-0	366.62	401.45	24	70.08	336.96
5-0 x 3-0	259.25	283.88	20	43.80	210.60
5-0 x 3-8	268.44	293.94	20	53.53	257.40
5-0 x 4-0	311.65	341.26	20	58.40	280.80
5-0 x 4-4	311.65	341.26	20	63.27	304.20
5-0 x 5-0	331.29	362.76	20	73.00	351.00
5-0 x 5-4	331.29	362.76	20	77.87	374.40
5-0 x 6-0	412.44	451.62	30	87.60	421.20
6-0 x 3-0	293.94	321.86	24	52.56	252.72
6-0 x 3-8	304.62	333.56	24	64.24	308.88
6-0 x 4-0	408.51	447.32	24	70.08	336.96
6-0 x 4-4	408.51	447.32	24	75.92	365.04
6-0 x 5-0	417.45	457.11	24	87.60	421.20
6-0 x 5-4	417.45	457.11	24	93.44	449.28
<b>*6-0 x 6-0</b>	484.46	530.48	36	105.12	505.44
Custom Size	Next Larger Size + 59.00			2.92/sqft	14.04/sqft
<b>* Windows with over 30 sqft of glass are required to be tempered</b>					

**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: 9/18/07  
 NCTL-110-10907-01



- ① H-7003 FRAME HEAD
- ② H-7004 FRAME SILL
- ③ H-7003 FRAME JAMB
- ④ SILL TOWER
- ⑤ SASH RETAINER
- ⑥ ALUMINUM MAILING FIN
- ⑦ H-8002 SASH HORIZONTAL
- ⑧ H-8000 SASH VERTICAL

**MGM**  
INDUSTRIES

287 FRENCH HILL ROAD  
 HENDERSONVILLE, TN 37075  
 1-800-476-6564  
 PH-615-824-8872  
 FX-615-822-5591

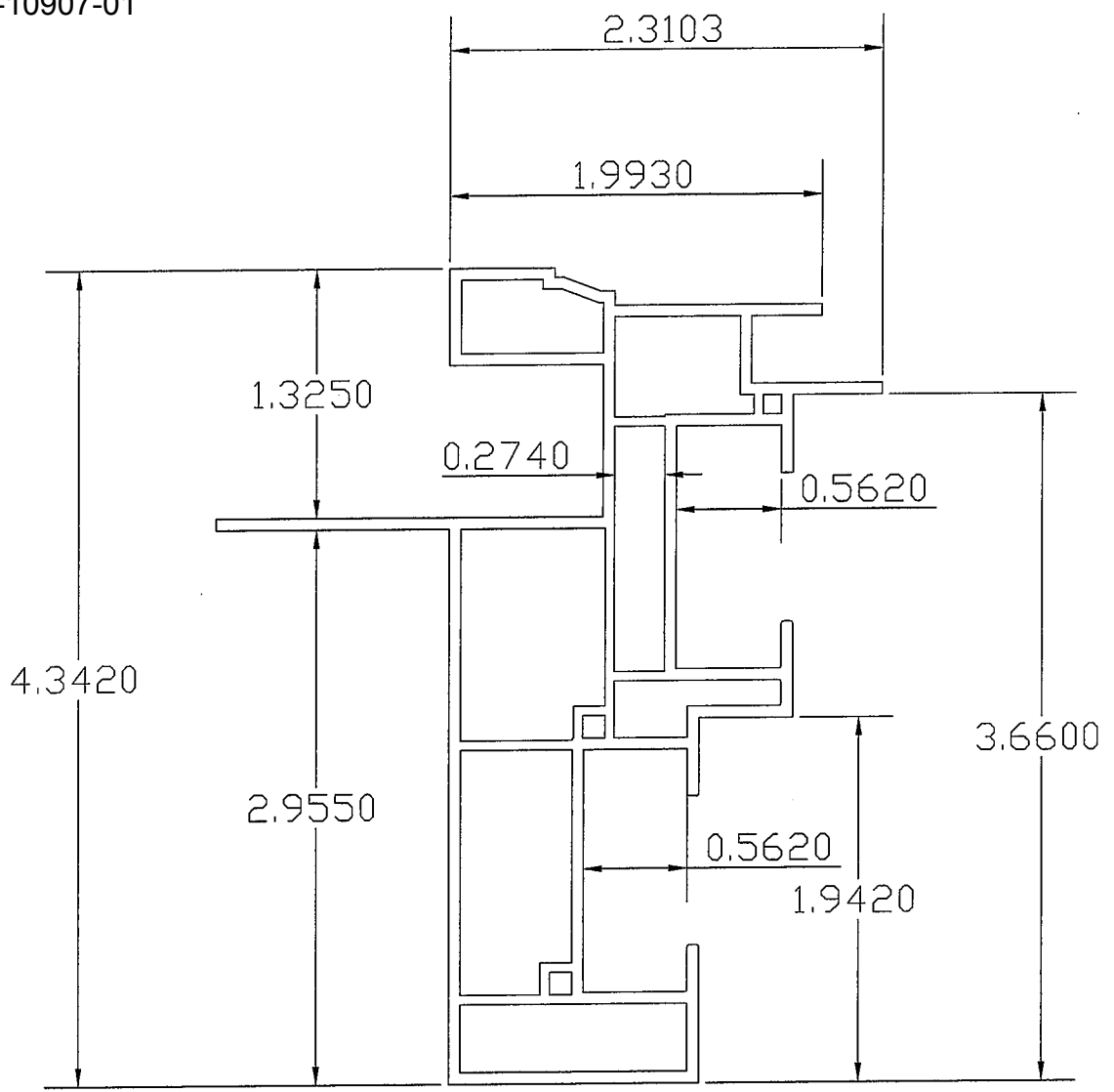
TITLE: Vertical and Horizontal Cut Logic  
 MATERIALS:

PC#: 7010PW  
 W/C#:  
 SERIES#:  
 DATE: 01-10-07  
 BY: R.GRAVES  
 DIV#:  
 Do Not Scale Drawing



NEXT ASSY.	USED ON	REV.	DESCRIPTION	DATE	APPROVED
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TEST SPECIMEN COMPLIES WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 9/18/07  
 NCTL-110-10907-01



MGM INDUSTRIES  
 287 FREEHILL ROAD  
 HENDERSONVILLE, TN  
 37075

DO NOT SCALE DRAWING

DESCRIPTION:  
 7006 Main frame

DATE 12/05/03

ALL RADI TO BE 0.015  
 ALL WALL THK TO BE 0.062 UNLESS OTHERWISE SPECIFIED  
 INTERNAL WALLS 0.050

WEIGHT 0.8636

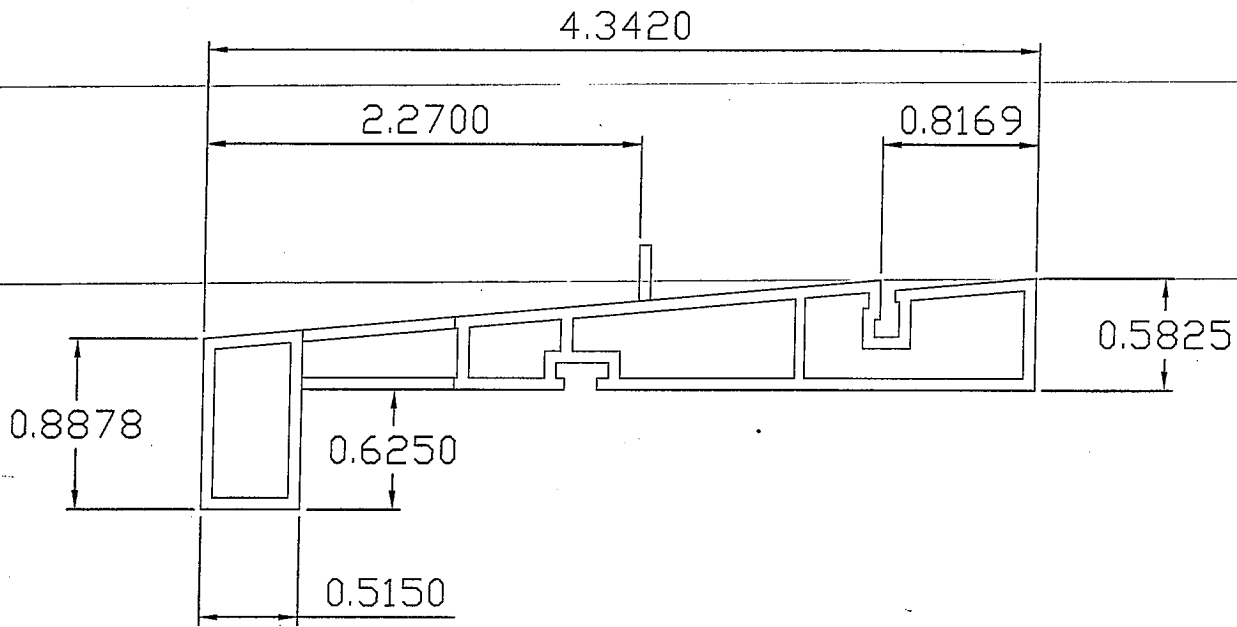
AREA 1.3840

DWG. NO. M-287

REV.

BY: ABG

APPLICATION		REVISIONS			
NEXT ASSY.	USED ON	REV.	DESCRIPTION	DATE	APPROVED
<b>TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED. TEST COMPLETE: 9/18/07 NCTL-110-10907-01</b>					



MGM INDUSTRIES 37 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				

APPLICATION

REVISIONS

NEXT ASSY.

USED ON

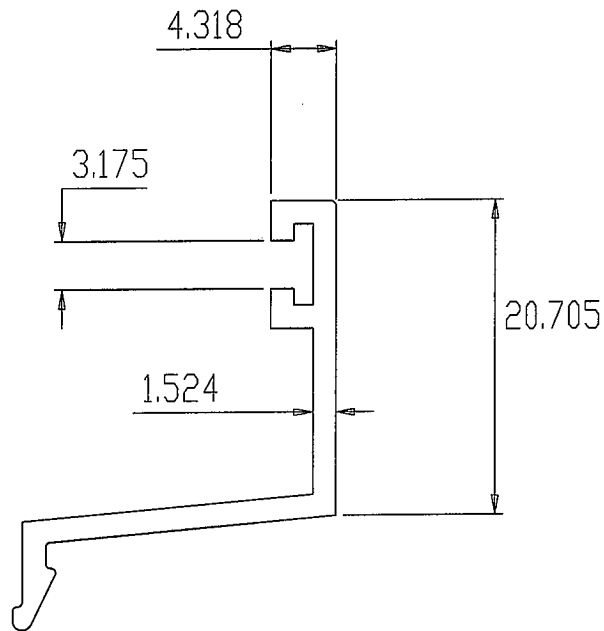
REV.

DESCRIPTION

DATE

APPROVED

TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED. TEST COMPLETE: 9/18/07 NCTL-110-10907-01



MGM INDUSTRIES  
287 FREEHILL ROAD  
HENDERSONVILLE, TN  
37075

DESCRIPTION:  
7010 Sill Tower

ALL RADI TO BE 3.8mm  
ALL WALL THK TO BE  
1.52mm UNLESS  
OTHERWISE SPECIFIED  
INTERNAL WALLS 0.050

DWG. NO.  
M-7007

REV.

DATE 4/26/06

WEIGHT  
0.079 Lb/ft

AREA  
xx

BY: ABG

DO NOT SCALE DRAWING

THIS SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED. FIRST COMPLETE: 9/18/07 CTL-110-10907-01

**MGM**  
INDUSTRIES, INC.

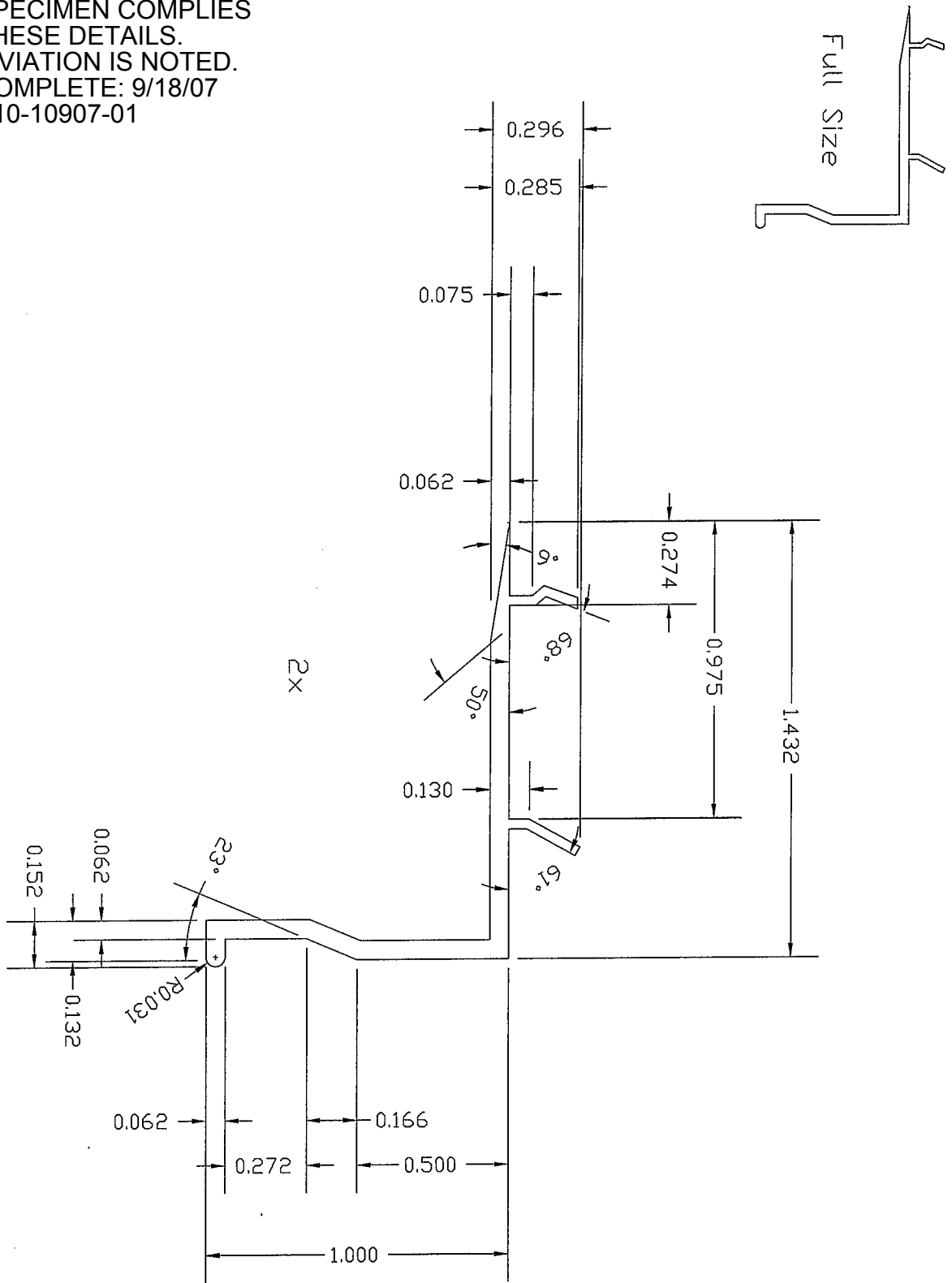
287 Freehill Road  
Hendersonville, Tn. 37075  
PH-615-824-6572  
Fax-615-822-6581  
1-800-476-5584

Title: Vinyl Head Insert

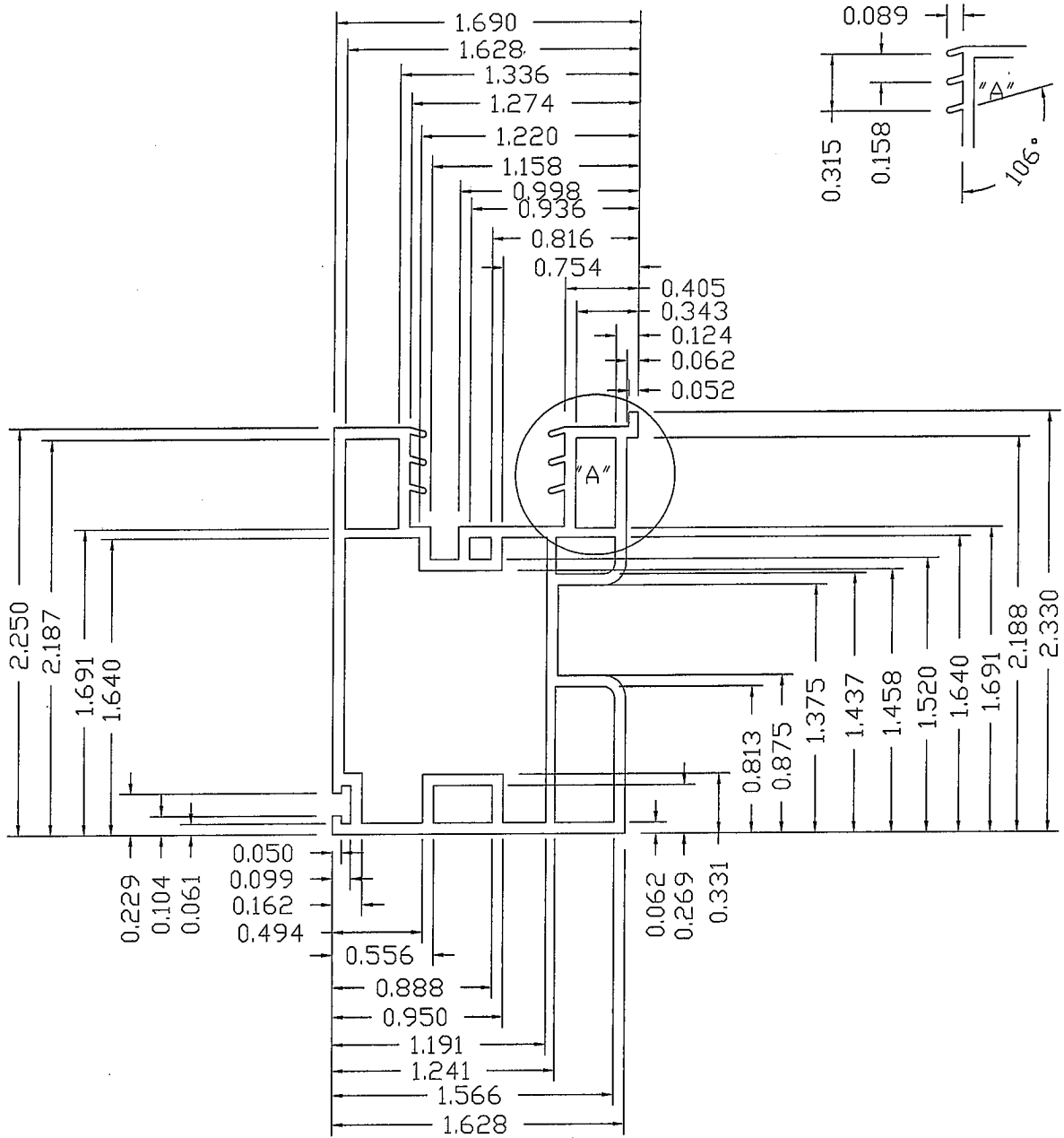
Die #: 2180

Series #: 4000  
Dwg. No.

By: R. Graves  
Date: 11/1/03



TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 9/18/07  
 NCTL-110-10907-01



MGM INDUSTRIES  
 287 FREEHILL RD  
 HENDERSONVILLE, TN  
 37075

DESCRIPTION:  
 Bottom Sash  
 Bottom Rail

DO NOT SCALE

DATE: 08/11/00

ALL RADI TO BE 0.015.  
 ALL WALL THK TO BE  
 0.0625 UNLESS  
 OTHERWISE SPECIFIED.  
 ALL INTERNAL RADI .052

AREA .7808

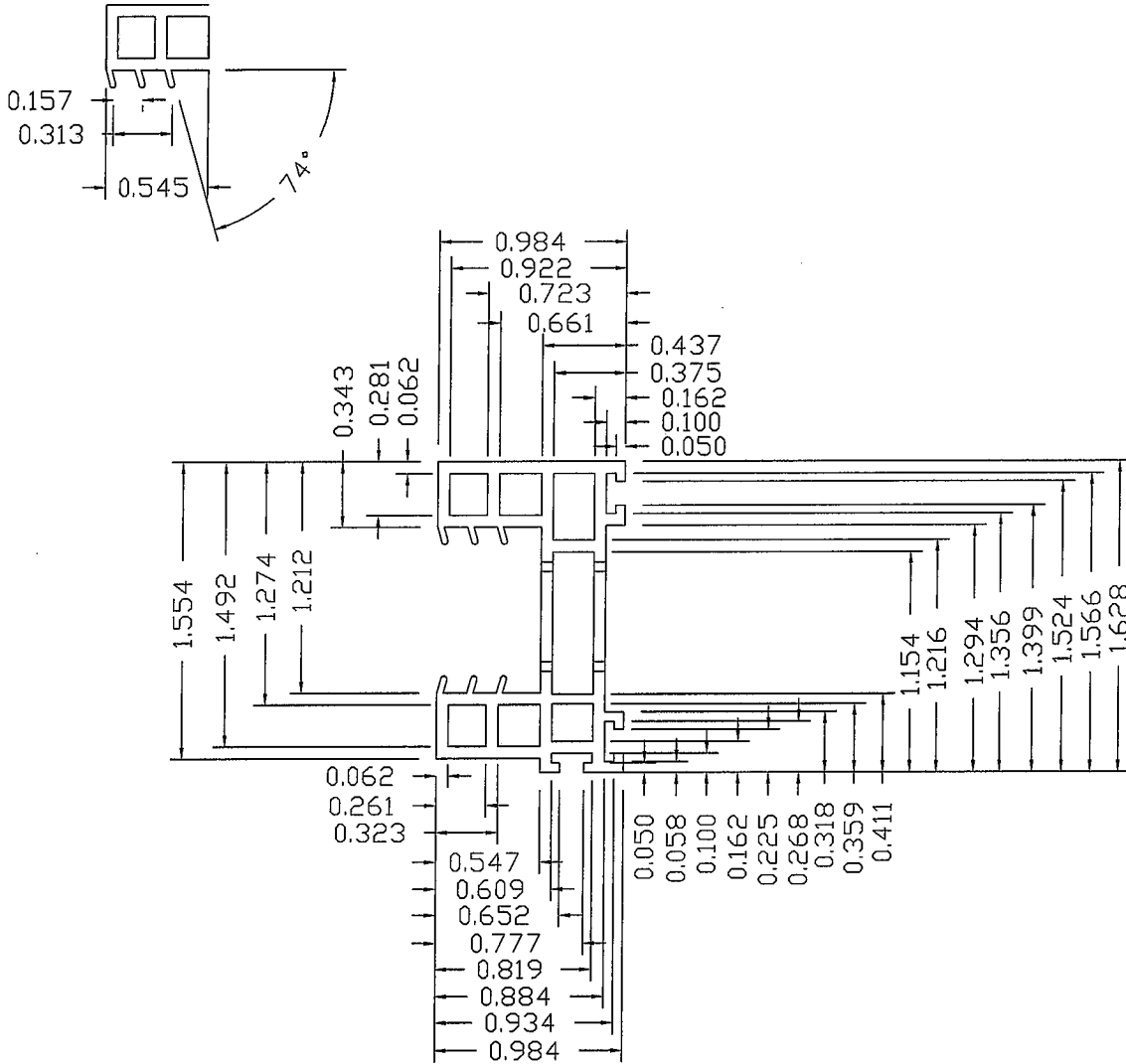
WT/FT .4863

DWG. NO.:  
 V-8002

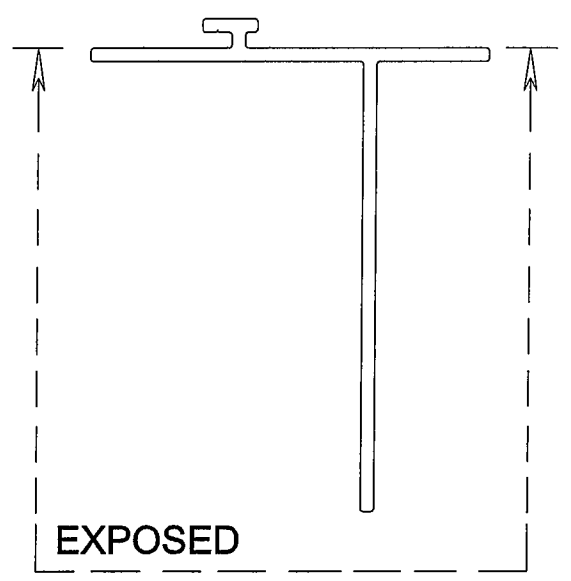
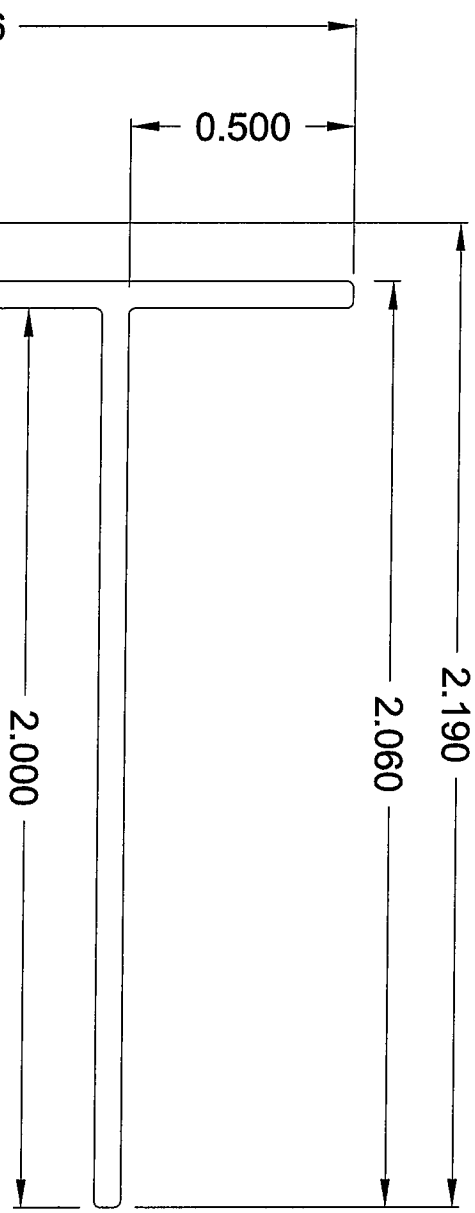
REV.:  
 4

BY: ABG

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 9/18/07  
 NCTL-110-10907-01



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



BEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED. TEST COMPLETE: 9/18/07 NCTL-110-10907-01

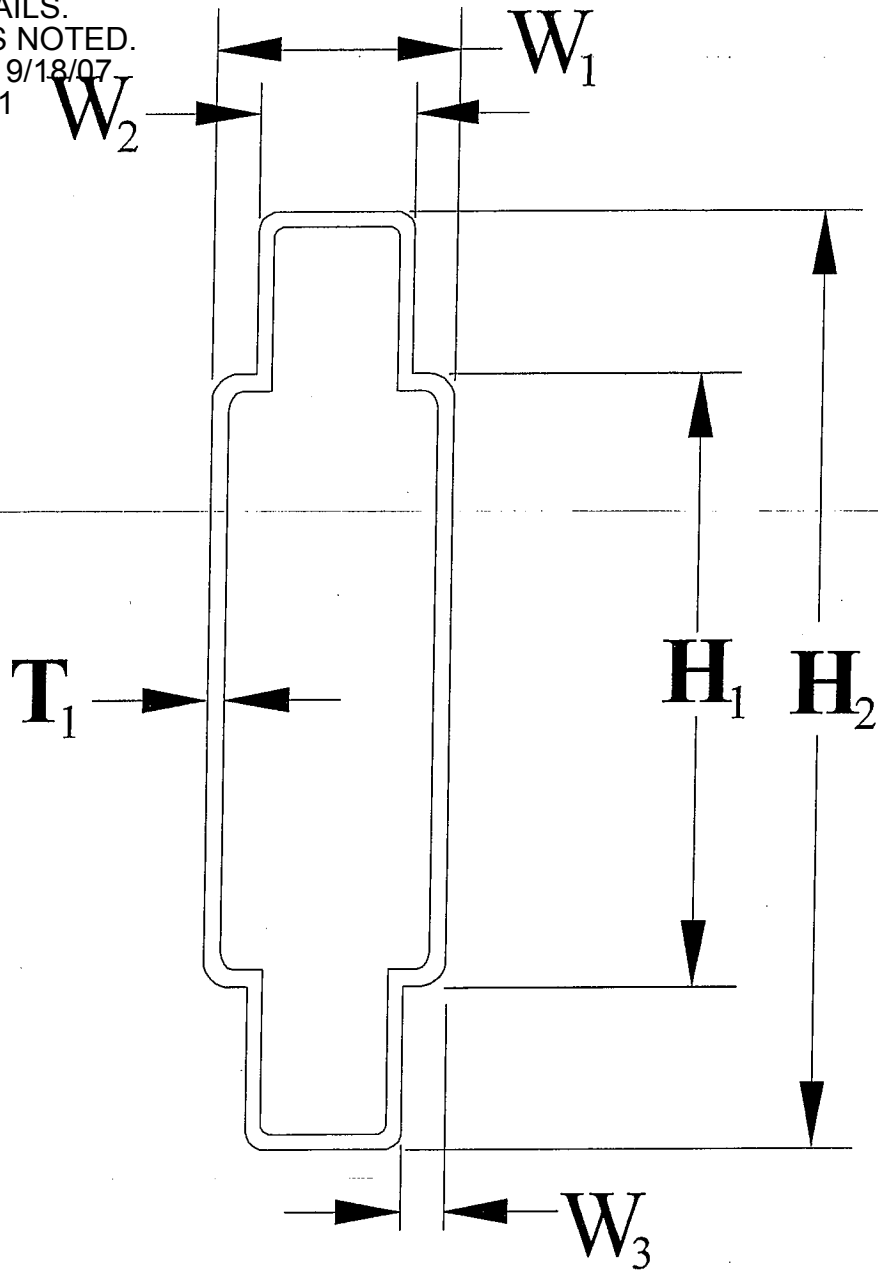
**MGM**

Unmarked Base Radius: All Corners: .015 Radius Unless Specified: Unspecified Wall Thickness: .060 Alloy/Temper: 6063-T6 Aluminum Vendor Die Number: 22095 A

**INDUSTRIES, INC.**  
287 Freehill Road  
Hendersonville, Tennessee 37075  
(615)-824-6572

Title:	8006 Nail Fin	Est. Area:	.245	Scale:	2 X 1	Series#:	8000	BY:	R.Graves
Vendor:	Alcoa Extruded Construction Products	Est. Perimeter:	8.219	Est. Wt. Per Ft.:	.294	Date:	05/15/02		
						Customer #:	A-127		

TEST SPECIMEN COMPLIES  
 WITH THESE DETAILS.  
 ANY DEVIATION IS NOTED.  
 TEST COMPLETE: 9/18/07  
 NCTL-110-10907-01



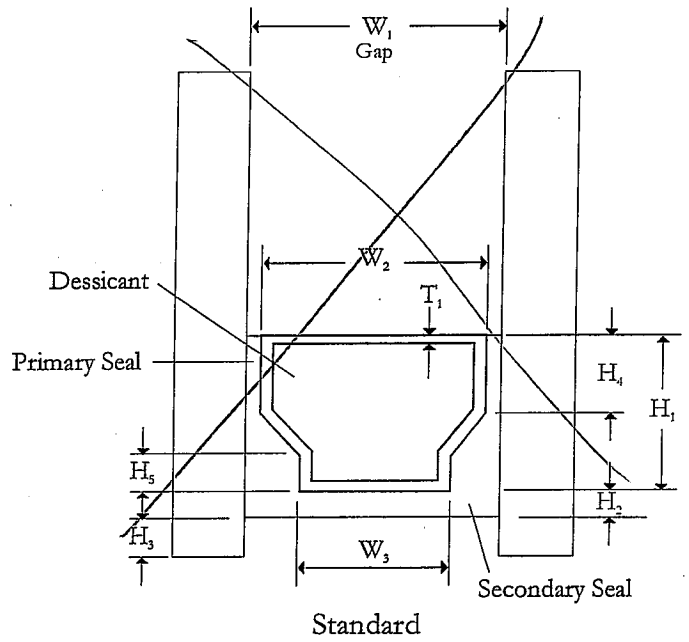
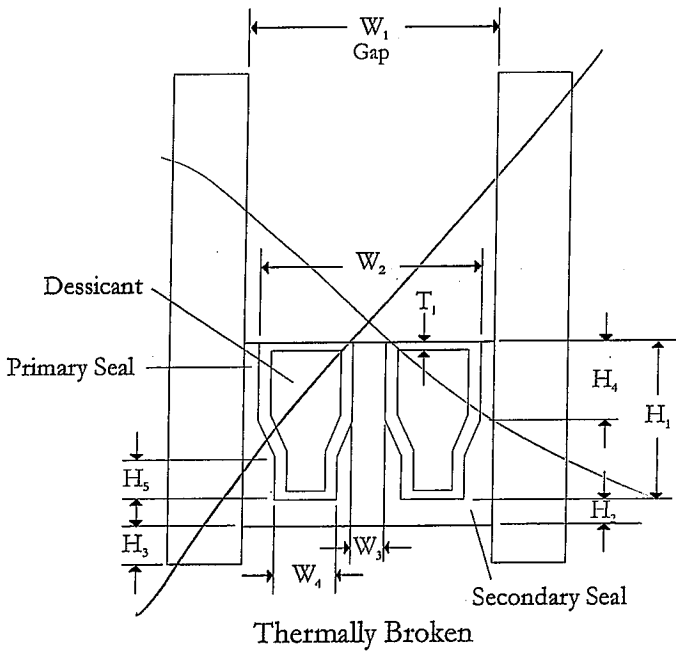
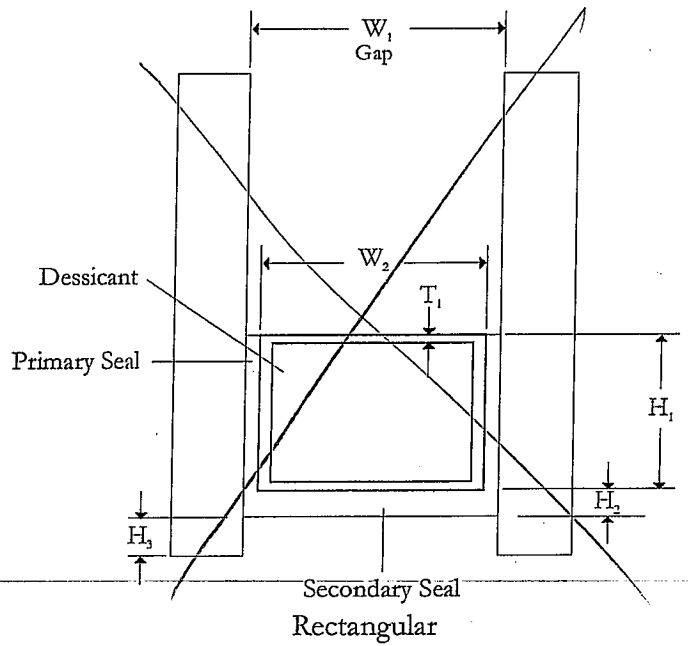
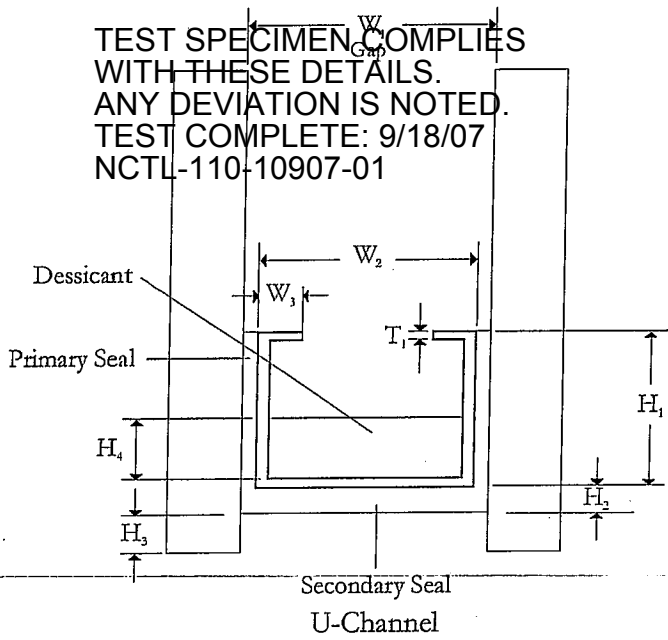
# Decorative

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>.1215</u> "	<input type="checkbox"/> $W_2$ <u>.151</u> "	<input type="checkbox"/> $W_3$ <u>.1664</u> "	<input checked="" type="checkbox"/> Aluminum	<input type="checkbox"/> Steel - Galvanized	<input type="checkbox"/> Other _____
<input type="checkbox"/> $H_1$ <u>.1360</u> "	<input type="checkbox"/> $H_2$ <u>.1715</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: 9/18/07  
 NCTL-110-10907-01



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"/> Dessicant
<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>.1074</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>.1045</u> "	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Foam _____	
<input type="checkbox"/> H <sub>3</sub> <u>.108</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> "				

Client: MGM INDUSTRIES

Product Line: 7010 RC

TEST SPECIMEN COMPLIANCE WITH THE FOLLOWING DETAILS ANY DEVIATIONS NOTED: 7/5/07

TEST COMPLETE: 9/18/07

NCTL # 090701

Prod #	Layer 1				Cavity 1				Layer 2				Cavity 2				Layer 3				Divisor Style
	Lite Thickness	Surface/Coating	Gap Width	Spacer/Sealants	Gas	Spacer/Sealants	Gas	Lite Thickness	Surface/Coating	Gap Width	Spacer/Sealants	Gas	Lite Thickness	Surface/Coating	Spacer/Sealants	Gas	Lite Thickness	Surface/Coating			
1	3mm	Clear	0.490"	Bayform Thermal Edge	Arg-90 Air-10	Bayform Thermal Edge	Arg-80 Krv-10	3mm	Cardinal LoE <sup>2</sup> -172 Surface #3	0.200"	Bayform Thermal Edge	Arg-80 Krv-10	3mm	Cardinal LoE <sup>2</sup> -172 Surface #5	Bayform Thermal Edge	Arg-80 Krv-10	3mm	Cardinal LoE <sup>2</sup> -172 Surface #5	Bayform Contour		
2	3mm	Cardinal LoE <sup>2</sup> -172 Surface #2	0.200"	Bayform Thermal Edge	Arg-80 Krv-10	Bayform Thermal Edge	Arg-80 Krv-10	2mm	Clear	0.200"	Bayform Thermal Edge	Arg-80 Krv-10	2mm	Clear	Bayform Thermal Edge	Arg-80 Krv-10	2mm	Cardinal LoE <sup>2</sup> -172 Surface #5	Bayform Contour		
3	1.085"	CLEAR ANNEAL	.58"	Bayform Thermal Edge	Arg-80 Krv-10	Bayform Thermal Edge	Arg-80 Krv-10	1.085"	CLEAR ANNEAL	.58"	Bayform Thermal Edge	Arg-80 Krv-10	1.085"	CLEAR ANNEAL	Bayform Thermal Edge	Arg-80 Krv-10	1.085"	Cardinal LoE <sup>2</sup> -172 Surface #5	Bayform Contour		
4	1.115"	CLEAR ANNEAL	.52"	Bayform Thermal Edge	Arg-80 Krv-10	Bayform Thermal Edge	Arg-80 Krv-10	1.115"	CLEAR ANNEAL	.52"	Bayform Thermal Edge	Arg-80 Krv-10	1.115"	CLEAR ANNEAL	Bayform Thermal Edge	Arg-80 Krv-10	1.115"	Cardinal LoE <sup>2</sup> -172 Surface #5	Bayform Contour		
5	1.085"	CLEAR ANNEAL	.58"	Bayform Thermal Edge	Arg-80 Krv-10	Bayform Thermal Edge	Arg-80 Krv-10	1.085"	CLEAR ANNEAL	.58"	Bayform Thermal Edge	Arg-80 Krv-10	1.085"	CLEAR ANNEAL	Bayform Thermal Edge	Arg-80 Krv-10	1.085"	Cardinal LoE <sup>2</sup> -172 Surface #5	Bayform Contour		
6	1.115"	CLEAR ANNEAL	.52"	Bayform Thermal Edge	Arg-80 Krv-10	Bayform Thermal Edge	Arg-80 Krv-10	1.115"	CLEAR ANNEAL	.52"	Bayform Thermal Edge	Arg-80 Krv-10	1.115"	CLEAR ANNEAL	Bayform Thermal Edge	Arg-80 Krv-10	1.115"	Cardinal LoE <sup>2</sup> -172 Surface #5	Bayform Contour		
7																					
8																					
9																					
10																					

Notes: (Please be detailed in the descriptions - use the following abbreviations for your convenience)  
 Spacer / Material / Sealant: List spacer type along with material. Please provide detailed NCTL configuration sheets.  
 List the sealants by using the following abbreviations: B - Butyl, S - Silicone, P - Polysulphide, U - Polyurethane at Dual Seal (DS); or Single Seal (SS);  
 Gas: List gas type if applicable. If gases are mixed please note the percentages. Circle filling technique: S - Single (Timed) Probe; D - Dual (Sensor) Probe; E - Evacuated Filling  
 Divisor (Grid, Muntin) Type: List manufacturer, type and size. Circle "Both" if the option is available with and without a divider. Please include manufacturer's detailed drawing.  
 Glazing Configurations: Please list IG glazing method: T - Tape glazed; S - Silicone; M - Marine Channel, etc. Please send detailed drawings where applicable and list material with conductivity values and units.  
 Reinforcement: Please provide all reinforcement configurations on assembly drawing and detailed drawings of reinforcement extrusions.

**Due to the NFRC Laboratory and Manufacturer requirements, the requested information is required to complete the computer modeling.**

TEST SPECIMEN COMPLIES  
WITH THESE DETAILS.  
ANY DEVIATION IS NOTED.  
TEST COMPLETE: 9/18/07  
NCTL-110-10907-01




## NATIONAL CERTIFIED TESTING LABORATORIES

FIVE LEIGH DRIVE • YORK, PENNSYLVANIA 17402 • TELEPHONE (717) 846-1200  
FAX (717) 767-4100  
www.nctlinc.com

Company: MGM. INDUSTRIES  
Address: 287 FINE HILL RD  
City, St. Zip: HENDERSONVILLE, TN. 37075

We authorize NCTL to release our NFRC reports to the following certification program. (Check only one)

- ALI
- KCI
- NAMI
- WDMA
- Other \_\_\_\_\_

  
\_\_\_\_\_  
Authorized Signature

8/21/07  
Date