

**AAMA 1503-09 THERMAL PERFORMANCE  
TEST REPORT**

**Rendered to:**

**INTERNATIONAL ARCHITECTURAL PRODUCTS, INC.  
DBA: UNITED STATES ALUMINUM**

**SERIES/MODEL: 8000  
TYPE: Vertical Slider (Single Hung)**

| Summary of Results                                         |                                                                                                                                                   |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal Transmittance (U-Factor)                           | 0.54                                                                                                                                              |
| Condensation Resistance Factor - Frame (CRF <sub>f</sub> ) | 50                                                                                                                                                |
| Condensation Resistance Factor - Glass (CRF <sub>g</sub> ) | 64                                                                                                                                                |
| Unit Size                                                  | 47-1/4" x 59" (1200 mm x 1499 mm)                                                                                                                 |
| Layer 1                                                    | 1/4" PPG Solarban 60 (e=0.035*, #2) with one 2" vertical mill finish aluminum muntin applied to the glass with 1-1/2" VHB and a silicone cap bead |
| Gap                                                        | 0.54" Gap, Aluminum Spacer (A1-D), 100% Air-Filled*                                                                                               |
| Layer 2                                                    | 5/16" Clear with one 2" vertical mill finish aluminum muntin applied to the glass with 1-1/2" VHB and a silicone cap bead                         |

Reference must be made to Report No. A0595.02-301-46, dated 06/25/10 for complete test specimen description and data.

**AAMA 1503-09 THERMAL PERFORMANCE TEST REPORT**

Rendered to:

INTERNATIONAL ARCHITECTURAL PRODUCTS, INC.  
DBA: UNITED STATES ALUMINUM  
720 Cel-River Road  
Rock Hill, South Carolina 29730

Report Number: A0595.02-301-46  
Test Date: 06/02/10  
Report Date: 06/25/10  
Test Record Retention Date: 06/02/14

**Test Sample Identification:**

**Series/Model:** 8000

**Type:** Vertical Slider (Single Hung)

**Test Sample Submitted by:** Client

**Test Procedure:** The condensation resistance factor (CRF) and thermal transmittance (U) were determined in accordance with AAMA 1503-09, *Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections*

- |                                                           |         |
|-----------------------------------------------------------|---------|
| 1. Average warm side ambient temperature                  | 69.81 F |
| 2. Average cold side ambient temperature                  | -0.69 F |
| 3. 15 mph dynamic wind applied to test specimen exterior. |         |
| 4. 0.0" $\pm$ 0.04" static pressure drop across specimen. |         |

**Test Results Summary:**

- |                                                               |      |
|---------------------------------------------------------------|------|
| 1. Condensation resistance factor - Frame (CRF <sub>f</sub> ) | 50   |
| Condensation resistance factor - Glass (CRF <sub>g</sub> )    | 64   |
| 2. Thermal transmittance due to conduction (U)                | 0.54 |
| (U-factors expressed in Btu/hr·ft <sup>2</sup> ·F)            |      |

**Test Sample Description:**

| <b>CONSTRUCTION</b>     | <b>Frame</b>                          | <b>Interior Sash</b>                  |
|-------------------------|---------------------------------------|---------------------------------------|
| Size (in.) Non-Standard | 47-1/4 x 59                           | 46 x 30-1/2                           |
| Daylight Opening (in.)  | 43-1/4 x 24-1/2                       | 43-1/4 x 24-1/2                       |
| <b>CORNERS</b>          | Coped                                 | Coped                                 |
| Fasteners               | Screws                                | Screws                                |
| Sealant                 | Yes                                   | Yes                                   |
| <b>MATERIAL</b>         | AT (0.25")<br>Skip/Debridge<br>2"/15" | AT (0.25")<br>Skip/Debridge<br>2"/15" |
| Color Exterior          | Gray                                  | Gray                                  |
| Finish Exterior         | Mill Finish                           | Mill Finish                           |
| Color Interior          | Gray                                  | Gray                                  |
| Finish Interior         | Mill Finish                           | Mill Finish                           |
| <b>GLAZING METHOD</b>   | Exterior                              | Exterior                              |

**Glazing Information:**

|                        |                                                                                                                                                   |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Layer 1</b>         | 1/4" PPG Solarban 60 (e=0.035*, #2) with one 2" vertical mill finish aluminum muntin applied to the glass with 1-1/2" VHB and a silicone cap bead |
| <b>Gap</b>             | 0.54" Gap, Aluminum Spacer (A1-D), 100% Air-Filled*                                                                                               |
| <b>Layer 2</b>         | 5/16" Clear with one 2" vertical mill finish aluminum muntin applied to the glass with 1-1/2" VHB and a silicone cap bead                         |
| <b>Gas Fill Method</b> | N/A*                                                                                                                                              |

*\*Stated per Client/Manufacturer*

*NA Non-Applicable*

*See Description Table Abbreviations*

**Test Sample Description:** (Continued)

| <b>COMPONENTS</b>                |                 |                                                      |
|----------------------------------|-----------------|------------------------------------------------------|
| <b>Type</b>                      | <b>Quantity</b> | <b>Location</b>                                      |
| <b>WEATHERSTRIP</b>              |                 |                                                      |
| Polypile with center & side fins | 2 Rows          | Sill.                                                |
| Polypile with center & side fins | 1 Row           | Jambs. Interior meeting rail. Exterior meeting rail. |
|                                  |                 |                                                      |
|                                  |                 |                                                      |
|                                  |                 |                                                      |
| <b>HARDWARE</b>                  |                 |                                                      |
| Block & tackle balance system    | 1               | Jambs.                                               |
| Metal auto-lock                  | 2               | Interior sill.                                       |
|                                  |                 |                                                      |
|                                  |                 |                                                      |
|                                  |                 |                                                      |
|                                  |                 |                                                      |
| <b>DRAINAGE</b>                  |                 |                                                      |
| 2" x 1/4" weephole               | 2               | Sill face.                                           |
|                                  |                 |                                                      |
|                                  |                 |                                                      |
|                                  |                 |                                                      |
|                                  |                 |                                                      |

### Test Duration:

1. The environmental systems were started at 13:49 hours, 06/01/10.
2. The thermal performance test results were derived from 01:56 hours, 06/02/10 to 05:56 hours, 06/02/10.

### Condensation Resistance Factor (CRF):

The following information, condensed from the test data, was used to determine the condensation resistance factor:

|         |   |                                                  |         |
|---------|---|--------------------------------------------------|---------|
| $T_h$   | = | Warm side ambient air temperature                | 69.81 F |
| $T_c$   | = | Cold side ambient air temperature                | -0.69 F |
| $FT_p$  | = | Average of pre-specified frame temperatures (14) | 35.62 F |
| $FT_r$  | = | Average of roving thermocouples (4)              | 26.75 F |
| $W$     | = | $[(FT_p - FT_r) / (FT_p - (T_c + 10))]$ x 0.40   | 0.135   |
| $FT$    | = | $FT_p(1-W) + W (FT_r)$ = Frame Temperature       | 34.42 F |
| $GT$    | = | Glass Temperature                                | 44.56 F |
| $CRF_g$ | = | Condensation resistance factor – Glass           | 64      |
|         |   | $CRF_g = (GT - T_c) / (T_h - T_c) \times 100$    |         |
| $CRF_f$ | = | Condensation resistance factor – Frame           | 50      |
|         |   | $CRF_f = (FT - T_c) / (T_h - T_c) \times 100$    |         |

The CRF number was determined to be 50 (on the size as reported). When reviewing this test data, it should be noted that the frame temperature (FT) was colder than the glass temperature (GT) therefore controlling the CRF number. Refer to the 'CRF Report' page and the 'Thermocouple Location Diagram' page of this report.

**Thermal Transmittance ( $U_o$ ):**

|                                     |   |                                                 |                                |
|-------------------------------------|---|-------------------------------------------------|--------------------------------|
| $T_h$                               | = | Average warm side ambient temperature           | 69.81 F                        |
| $T_c$                               | = | Average cold side ambient temperature           | -0.69 F                        |
| P                                   | = | Static pressure difference across test specimen | 0.00 psf                       |
|                                     |   | 15 mph dynamic perpendicular wind at exterior   |                                |
| Nominal sample area                 |   |                                                 | 19.36 ft <sup>2</sup>          |
| Total measured input to calorimeter |   |                                                 | 852.23 Btu/hr                  |
| Calorimeter correction              |   |                                                 | 109.33 Btu/hr                  |
| Net specimen heat loss              |   |                                                 | 742.91 Btu/hr                  |
| U                                   | = | Thermal Transmittance                           | 0.54 Btu/hr·ft <sup>2</sup> ·F |

**Glazing Deflection (in.):**

|                                                                                         | <b>Frame</b> | <b>Interior Sash</b> |
|-----------------------------------------------------------------------------------------|--------------|----------------------|
| Edge Gap Width                                                                          | 0.54         | 0.54                 |
| Estimated center gap width upon receipt of specimen in laboratory (after stabilization) | 0.50         | 0.50                 |
| Center gap width at laboratory ambient conditions on day of testing                     | 0.50         | 0.50                 |
| Center gap width at test conditions                                                     | 0.45         | 0.45                 |

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test.

A calibration of the Architectural Testing Inc. 'thermal test chamber' (ICN 004287) in Fresno, California was conducted in April 2010 in accordance with Architectural Testing Inc. calibration procedure.

Prior to testing the specimen was sealed with silicone on the interior side and checked for air infiltration per Section 9.3.4.

## CRF Report

**Time:**            03:55            04:25            04:55            05:26            05:56            AVERAGE

### **Pre-specified Thermocouples - Frame**

|                 |       |       |       |       |       |       |
|-----------------|-------|-------|-------|-------|-------|-------|
| 1               | 28.53 | 28.56 | 28.59 | 28.53 | 28.52 | 28.55 |
| 2               | 31.59 | 31.54 | 31.55 | 31.52 | 31.61 | 31.56 |
| 3               | 45.35 | 45.33 | 45.35 | 45.34 | 45.36 | 45.35 |
| 4               | 44.79 | 44.76 | 44.79 | 44.76 | 44.79 | 44.77 |
| 5               | 41.27 | 41.19 | 41.19 | 41.17 | 41.18 | 41.20 |
| 6               | 41.74 | 41.76 | 41.73 | 41.75 | 41.68 | 41.73 |
| 7               | 39.33 | 39.36 | 39.33 | 39.35 | 39.34 | 39.34 |
| 8               | 35.82 | 35.86 | 35.85 | 35.85 | 35.84 | 35.84 |
| 9               | 34.22 | 34.14 | 34.18 | 34.12 | 34.15 | 34.16 |
| 10              | 43.18 | 43.12 | 43.19 | 43.12 | 43.15 | 43.15 |
| 11              | 26.81 | 26.83 | 26.89 | 26.83 | 26.81 | 26.84 |
| 12              | 30.14 | 30.14 | 30.14 | 30.14 | 30.14 | 30.14 |
| 13              | 29.54 | 29.55 | 29.54 | 29.56 | 29.57 | 29.55 |
| 14              | 26.54 | 26.51 | 26.50 | 26.49 | 26.51 | 26.51 |
| FT <sub>p</sub> | 35.63 | 35.62 | 35.63 | 35.61 | 35.62 | 35.62 |

### **Pre-specified Thermocouples - Glass**

|    |       |       |       |       |       |       |
|----|-------|-------|-------|-------|-------|-------|
| 15 | 34.28 | 34.28 | 34.28 | 34.28 | 34.28 | 34.28 |
| 16 | 53.12 | 53.13 | 53.09 | 53.07 | 53.10 | 53.10 |
| 17 | 48.14 | 48.14 | 48.14 | 48.14 | 48.14 | 48.14 |
| 18 | 34.82 | 34.82 | 34.82 | 34.82 | 34.82 | 34.82 |
| 19 | 53.94 | 53.91 | 53.93 | 53.93 | 53.89 | 53.92 |
| 20 | 43.11 | 43.11 | 43.11 | 43.11 | 43.11 | 43.11 |
| GT | 44.57 | 44.56 | 44.56 | 44.56 | 44.56 | 44.56 |

### **Cold Point (Roving) Thermocouples**

|                 |       |       |       |       |       |       |
|-----------------|-------|-------|-------|-------|-------|-------|
| 21              | 26.81 | 26.83 | 26.89 | 26.83 | 26.81 | 26.84 |
| 22              | 26.54 | 26.51 | 26.50 | 26.49 | 26.51 | 26.51 |
| 23              | 28.53 | 28.56 | 28.59 | 28.53 | 28.52 | 28.55 |
| 24              | 25.12 | 25.15 | 25.11 | 25.07 | 25.06 | 25.10 |
| FT <sub>R</sub> | 26.75 | 26.77 | 26.77 | 26.73 | 26.73 | 26.75 |
| W               | 0.13  | 0.13  | 0.13  | 0.14  | 0.14  | 0.13  |
| FT              | 34.43 | 34.43 | 34.44 | 34.41 | 34.41 | 34.42 |

### **Warm Side - Room Ambient Air Temperature**

|       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|
| 69.81 | 69.81 | 69.81 | 69.81 | 69.81 | 69.81 | 69.81 |
|-------|-------|-------|-------|-------|-------|-------|

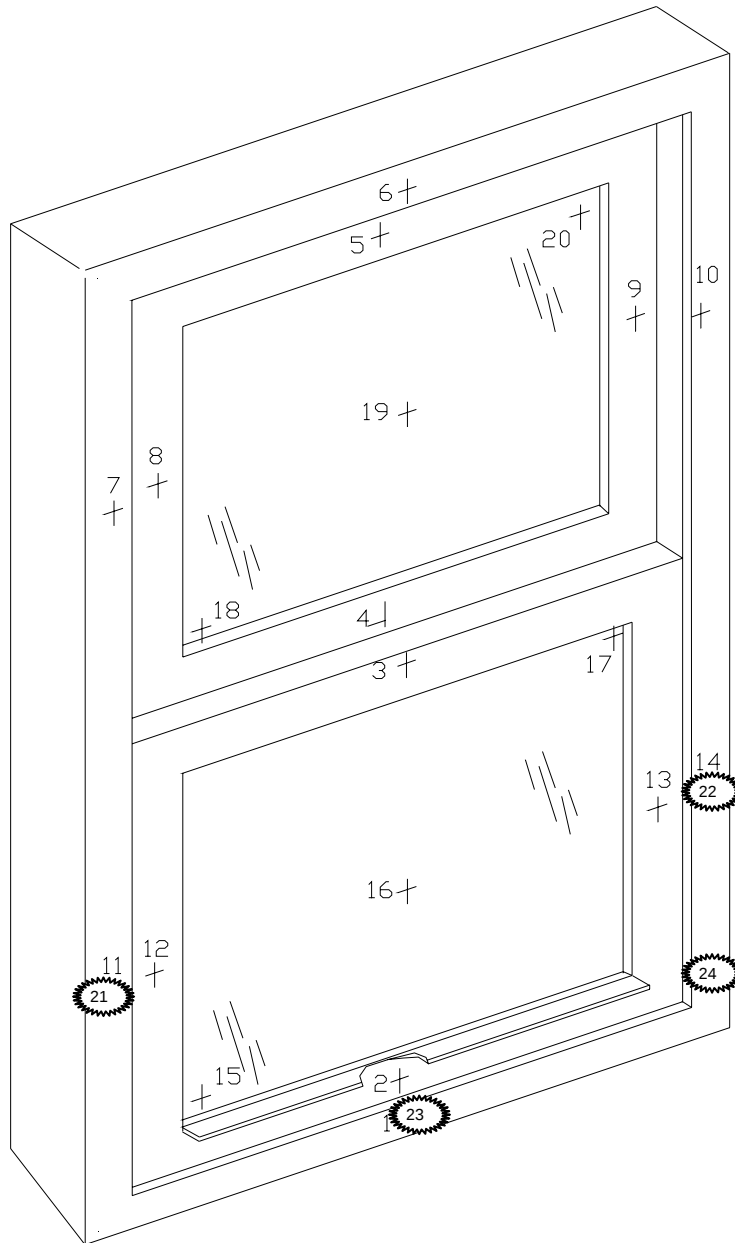
### **Cold Side - Room Ambient Air Temperature**

|       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|
| -0.69 | -0.69 | -0.69 | -0.69 | -0.69 | -0.69 | -0.69 |
|-------|-------|-------|-------|-------|-------|-------|

|                  |    |    |    |    |    |    |
|------------------|----|----|----|----|----|----|
| CRF <sub>f</sub> | 50 | 50 | 50 | 50 | 50 | 50 |
|------------------|----|----|----|----|----|----|

|                  |    |    |    |    |    |    |
|------------------|----|----|----|----|----|----|
| CRF <sub>g</sub> | 64 | 64 | 64 | 64 | 64 | 64 |
|------------------|----|----|----|----|----|----|

**Thermocouple Location Diagram**



**Cold Point Locations**

|           |           |
|-----------|-----------|
| <b>21</b> | 21. 26.84 |
| <b>22</b> | 22. 26.51 |
| <b>23</b> | 23. 28.55 |
| <b>24</b> | 24. 25.10 |

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period such materials shall be discarded without notice and the service life of this report by Architectural Testing will expire. Results obtained are tested values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

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Simon Smeds  
Technician

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Kenny C. White  
Laboratory Manager  
Individual-In-Responsible-Charge

WSS:he  
A0595.02-301-46

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

Appendix-A: Description Table Abbreviations (1)

Appendix-B: Drawings (17)

### Revision Log

| <b>Rev. #</b> | <b>Date</b> | <b>Page(s)</b> | <b>Revision(s)</b>                                                                                                                 |
|---------------|-------------|----------------|------------------------------------------------------------------------------------------------------------------------------------|
| 0             | 06/25/10    | All            | Original Report Issue. Work requested by Mr. Don Willard of International Architectural Products, Inc. DBA: United States Aluminum |

## Appendix A: Description Table Abbreviations

| CODE | Frame / Sash Types                                             |
|------|----------------------------------------------------------------|
| AI   | Aluminum w/ Vinyl Inserts (Caps)                               |
| AL   | Aluminum                                                       |
| AP   | Aluminum w/ Thermal Breaks - Partial                           |
| AS   | Aluminum w/ Steel Reinforcement                                |
| AT   | Aluminum w/ Thermal Breaks - All Members ( > 0.21")            |
| AU   | Aluminum Thermally Improved - All Members (0.062" - 0.209")    |
| AV   | Aluminum / Vinyl Composite                                     |
| AW   | Aluminum-clad Wood                                             |
| FG   | Fiberglass                                                     |
| PA   | ABS Plastic w/ All Members Reinforced                          |
| PC   | ABS Plastic-clad Aluminum                                      |
| PF   | ABS Plastic w/ Foam-filled Insulation                          |
| PH   | ABS Plastic w/ Horizontal Members Reinforced                   |
| PI   | ABS Plastic w/ Reinforcement - Interlock                       |
| PL   | ABS Plastic                                                    |
| PP   | ABS Plastic w/ Reinforcement - Partial                         |
| PV   | ABS Plastic w/ Vertical Members Reinforced                     |
| PW   | ABS Plastic-clad Wood                                          |
| ST   | Steel                                                          |
| VA   | Vinyl w/ All Members Reinforced                                |
| VC   | Vinyl-clad Aluminum                                            |
| VF   | Vinyl w/ Foam-filled Insulation                                |
| VH   | Vinyl w/ Horizontal Members Reinforced                         |
| VI   | Vinyl w/ Reinforcement - Interlock                             |
| VP   | Vinyl w/ Reinforcement - Partial                               |
| VV   | Vinyl w/ Vertical Members Reinforced                           |
| VW   | Vinyl-clad Wood                                                |
| VY   | Vinyl                                                          |
| WA   | Aluminum / Wood composite                                      |
| WD   | Wood                                                           |
| WV   | Vinyl / Wood composite                                         |
| WF   | Fiberglass/Wood Combination                                    |
| WC   | Composite/Wood Composite (Shaped vinyl/wood composite members) |
| CW   | Copper Clad Wood                                               |
| CO   | Vinyl/Wood Composite Material                                  |

| CODE | Spacer Types (See sealant)                  |
|------|---------------------------------------------|
| A1   | Aluminum                                    |
| A2   | Aluminum (Thermally-broken)                 |
| A3   | Aluminum-reinforced Polymer                 |
| A4   | Aluminum / Wood                             |
| A5   | Aluminum-reinforced Butyl (Swiggle)         |
| A6   | Aluminum / Foam / Aluminum                  |
| A7   | Aluminum U-shaped                           |
| A8   | Aluminum-Butyl (Corrugated) (Duraseal)      |
| ER   | EPDM Reinforced Butyl                       |
| FG   | Fiberglass                                  |
| GL   | Glass                                       |
| OF   | Organic Foam                                |
| P1   | Duralite                                    |
| PU   | Polyurethane Foam                           |
| SU   | Stainless Steel, U-shaped                   |
| CU   | Coated Steel, U-shaped (Intercept)          |
| S2   | Steel (Thermally-broken)                    |
| S3   | Steel / Foam / Steel                        |
| S5   | Steel-reinforced Butyl                      |
| S6   | Steel U-channel w/ Thermal Cap              |
| SS   | Stainless Steel                             |
| CS   | Coated Steel                                |
| TP   | Thermo-plastic                              |
| WD   | Wood                                        |
| ZE   | Elastomeric Silicone Foam                   |
| ZF   | Silicone Foam                               |
| ZS   | Silicone / Steel                            |
| N    | Not Applicable                              |
| TS   | Thermo-plastic w/ stainless steel substrate |

| CODE | Tint Codes                    |
|------|-------------------------------|
| AZ   | Azurlite                      |
| BL   | Blue                          |
| BZ   | Bronze                        |
| CL   | Clear                         |
| EV   | Evergreen                     |
| 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                        |
| BG   | Blinds between the Glazing    |
| DV   | Dynamic Glazing-Variable      |
| DY   | Dynamic Glazing-NonVariable   |

| CODE | Gap Fill Codes        |
|------|-----------------------|
| AIR  | Air                   |
| AR2  | Argon/Krypton Mixture |
| AR3  | Argon / Krypton / Air |
| ARG  | Argon/Air             |
| CO2  | Carbon Dioxide        |
| KRY  | Krypton/Air           |
| SF6  | Sulfur Hexafluoride   |
| XE2  | Xenon/Krypton/Air     |
| XE3  | Xenon/Argon/Air       |
| XEN  | Xenon/Air             |
| N    | Not Applicable        |

| DOOR DETAILS |                      |
|--------------|----------------------|
| N            | Not Applicable       |
| CODE         | Door Type            |
| EM           | Embossed             |
| FL           | Flush                |
| LF           | Full Lite            |
| LH           | 1/2 - Lite           |
| LQ           | 1/4 - Lite           |
| LT           | 3/4 - Lite           |
| RP           | Raised Panel         |
| CODE         | Skin                 |
| AL           | Aluminum             |
| FG           | Fiberglass           |
| GS           | Galvanized Steel     |
| ST           | Steel                |
| WD           | Wood                 |
| VY           | Vinyl                |
| CODE         | Panel                |
| FG           | Fiberglass           |
| PL           | Plastic              |
| WP           | Wood - Plywood       |
| WS           | Wood - Solid         |
| CODE         | Sub-Structure        |
| GS           | Galvanized Steel     |
| ST           | Steel                |
| WD           | Wood                 |
| VY           | Vinyl                |
| CODE         | Core Fill            |
| CH           | Cellular - Honeycomb |
| EP           | Expanded Polystyrene |
| PI           | Polyisocyanurate     |
| PU           | Polyurethane         |
| WP           | Wood - Plywood       |
| WS           | Wood - Solid         |
| XP           | Extruded Polystyrene |

| CODE | Spacer Sealant            |
|------|---------------------------|
| D    | Dual Seal Spacer System   |
| S    | Single Seal Spacer System |

| CODE | Grid Description        |
|------|-------------------------|
| N    | No Muntins              |
| G    | Grids between glass     |
| S    | Simulated Divided Lites |
| T    | True Muntins            |

| CODE | Grid Size Codes    |
|------|--------------------|
|      | Blank for no grids |
| 0.75 | Grids < 1"         |
| 1.5  | Grids >= 1"        |

| CODE | Thermal Breaks |
|------|----------------|
| F    | Foam           |
| U    | Urethane       |
| V    | Vinyl          |
| FB   | Fiberglass     |
| O    | Other          |
| AB   | ABS            |
| NE   | Neoprene       |
| AI   | Air            |
| N    | Not Applicable |
| P    | Polyamide      |

## **Appendix B: Drawings**



A0595

JUN 24 2010

Drawn: *WJS*  
Date: *06/24/10*

8000-001  
1 of 4

**PRELIMINARY DRAWING**  
**DATE: APRIL 09, 2010**

- ADD SP11
- ADD FAS
- ADD LBS

**BILL OF MATERIALS FOR 8000 SERIES SINGLE HUNG WINDOW**

| ITEM # | EXTRUSION # | PART NO | DESCRIPTION                    | COMMENTS                           | VENDOR             | VENDOR PART NUMBER | QTY. |
|--------|-------------|---------|--------------------------------|------------------------------------|--------------------|--------------------|------|
| F1     | 61592       | SH862   | 4-1/2" FRAME HEAD              | COLOR TO MATCH P.O.                | INTEX              | 61592              | 1    |
| F2     | 61593       | SH863   | 4-1/2" FRAME SILL              | COLOR TO MATCH P.O.                | INTEX              | 61593              | 1    |
| F3     | 61594       | SH864   | 4-1/2" FRAME JAMB              | COLOR TO MATCH P.O.                | INTEX              | 61594              | 2    |
| F4     | 61596       | SH866   | MULLION                        | COLOR TO MATCH P.O.                | INTEX              | 61596              | 1    |
| F5     | 61595       | SH865   | GLAZING BEAD (BLAST)           | COLOR TO MATCH P.O.                | INTEX              | 61595              | 4    |
| F6     | NP881       | NP881   | INTERIOR GLAZING GASKET        | BLACK                              | TREMO              | TX18059E           | 4    |
| F7     | NP825       | NP825   | EXTERIOR GLAZING GASKET        | BLACK                              | TREMO              | TR-14677E          | 4    |
| F8     | WH808       | WH808   | HEAD PVC ISOLATOR              | GRAY H-81414 42 "C" (SEE NOTE # 3) | TEK PARTS/BANDLOCK |                    | 1    |
| F9     | WH811       | WH811   | SILL PVC ISOLATOR              | GRAY H-81414 42 "C" (SEE NOTE # 3) | TEK PARTS/BANDLOCK |                    | 1    |
| F10    | WH809       | WH809   | JAMB PVC ISOLATOR              | GRAY H-81414 42 "C" (SEE NOTE # 3) | TEK PARTS/BANDLOCK |                    | 2    |
| S1     | 61588       | SH854   | INTERLOOK                      | COLOR MATCH TO P.O.                | INTEX              | 61588              | 1    |
| S2     | 61587       | SH852   | BOTTOM RAIL                    | COLOR MATCH TO P.O.                | INTEX              | 61587              | 1    |
| S3     | 61589       | SH855   | STILE                          | COLOR MATCH TO P.O.                | INTEX              | 61589              | 2    |
| S4     | 61595       | SH865   | GLAZING BEAD (BLAST)           | COLOR MATCH TO P.O.                | INTEX              | 61595              | 4    |
| S5     | NP881       | NP881   | INTERIOR GLAZING GASKET        | BLACK                              | TREMO              | TX18059E           | 4    |
| S6     | NP825       | NP825   | EXTERIOR GLAZING GASKET        | BLACK                              | TREMO              |                    | 4    |
| S7     |             |         |                                |                                    |                    |                    |      |
| S8     |             |         |                                |                                    |                    |                    |      |
| S9     |             |         |                                |                                    |                    |                    |      |
| SC1    | H-8044      | CO676   | EXTRUDED SCREEN FRAME          | COLOR MATCH TO P.O.                | RITE SCREEN        | H-8044             | 4    |
| SC2    |             | WH59100 | SCREEN SPLINE                  | BLACK                              | RITE SCREEN        |                    | 4    |
| SC3    |             | WH43616 | 18 x 16 FIBERGLASS SCREEN MESH | DARK CHARCOAL OR BLACK             | RITE SCREEN        |                    | 1    |
| SC4    |             | WH451   | SCREEN TAB                     |                                    | RITE SCREEN        |                    | 2    |
| SC5    |             | WH452   | SCREEN TENSION SPRING          |                                    | RITE SCREEN        |                    | 2    |
| SC6    |             | LU802   | SCREEN LABEL                   |                                    | RITE SCREEN        |                    | 1    |
| SC7    |             | WH581   | SCREEN CORNER ANGLE            |                                    | RITE SCREEN        |                    | 4    |

**NOTE:**

1. ALL PARTS MUST BE U.S. MADE.
2. ALL NYLON MOLDED PARTS TO MATCH WITH CLEAR ANODIZING TO BE GR21 (PRESSOUT CHIP IS CSBK758N) FROM:

COLOR SCIENCE  
12500 E. GLENWOOD PLACE  
SOUTH GAVAZO, CA 92707-3000  
714/434-1033

3. COLOR: L = +71.60  
a = -0.30  
b = -0.66

|                                                     |                        |                              |
|-----------------------------------------------------|------------------------|------------------------------|
| International Aluminum Corporation                  |                        | 8000-001                     |
| DIVISION                                            |                        | UNITED STATES ALUMINUM CORP. |
| DATE: 03/01/10                                      | BY: <i>[Signature]</i> | DWG NO. 8000-001             |
| BILL OF MATERIALS FOR 8000 SERIES S/H (SERIES 7300) |                        | 1 of 4                       |

Approved Drawing  
 100-100000-000000-000000

A0395

JUN 24 2010

8000-001  
 2 of 4

**BILL OF MATERIALS FOR 8000 SERIES SINGLE HUNG WINDOW**

**PRELIMINARY DRAWING**  
**DATE: APRIL 09, 2010**

- ADD SP11
- ADD FAS
- ADD LB5

| ITEM # | EXTRUSION # | PART NO     | DESCRIPTION                                         | COMMENTS                                               | VENDOR                 | VENDOR PART NUMBER | QTY. |
|--------|-------------|-------------|-----------------------------------------------------|--------------------------------------------------------|------------------------|--------------------|------|
| SP1    |             | WH805       | VENT STOP                                           | MEDIUM GRAY (NOTE 2)                                   | PETERSON MOLD          |                    | 2    |
| SP2    |             | WH804       | SASH CAP                                            | MEDIUM GRAY (NOTE 2)                                   | PETERSON MOLD          |                    | 2    |
| SP3    |             | WH803       | SASH FULL END CAP                                   | MEDIUM GRAY (NOTE 2)                                   | PETERSON MOLD          |                    | 4    |
| SP4    |             | BL517       | SASH CLIP                                           | STAINLESS STEEL                                        | BSI                    | 51700              | 2    |
| SP5    |             | BL035       |                                                     |                                                        |                        |                    |      |
|        |             | BL040       | BSI CLASS 5 SUPER BOOST/BAL. GUIDE 15600            | TRAVEL . TUBE LENGTH-3"                                | BSI                    |                    | 2    |
| SP6    |             | BL045       |                                                     |                                                        |                        |                    |      |
| SP7    |             | R1125       | PVC GUIDE                                           | BLACK                                                  | RYKO                   | VY8920             | A/R  |
| SP8    |             | WH276       | WEEP HOLE COVER                                     | MEDIUM GRAY (NOTE 2)                                   | ASTRO EJECTION MOLDING |                    | 2    |
| SP9    |             | SB881       | SASH SETTING BLOCK                                  | BLACK                                                  | TREXCO                 | TX18060E           | 2    |
| SP10   |             | SB882       | FIXED SETTING BLOCK                                 | BLACK                                                  | TREXCO                 | TX18059E           | 2    |
| SP11   |             | WH806       | BALANCE RETAINER                                    | MEDIUM GRAY (NOTE 2)                                   | PETERSON MOLD          |                    | 2    |
| • SP11 |             | WB601       | EDGE BLOCK                                          | FIXED AND VENT PANEL                                   | TREXCO                 |                    | 4    |
| W1     |             |             |                                                     |                                                        |                        |                    |      |
| W2     |             | W-027       | .270 x .250 TRI-FIN                                 | GRAY COLOR USED AT JAMB, SILL (2), MULLION & INTERLOCK | ULTRA FAB              |                    | A/R  |
| W3     |             |             |                                                     |                                                        |                        |                    |      |
| W4     |             |             |                                                     |                                                        |                        |                    |      |
| W5     |             |             |                                                     |                                                        |                        |                    |      |
| W6     |             |             |                                                     |                                                        |                        |                    |      |
| G1     |             | GL103115129 | 1.932 INSULATED GLASS UNIT (IGU) 1/8" x 1/8" x 1/8" | VENT GLASS                                             |                        |                    | 1    |
| G2     |             | GL103115429 | 1.932 INSULATED GLASS UNIT (IGU) 1/8" x 1/8" x 1/8" | FIXED GLASS                                            |                        |                    | 1    |
| FA1    |             | ST1212      | #8 x 1-1/4" PHIL HEX WASHER HD SMS A SS             | MULLION (4) BALANCE (2)                                |                        |                    | 6    |
| FA2    |             | ST206       | #8 x 1/2" PHIL PAN HD SMS TYPE AB SS                | SASH GUIDE (2)                                         |                        |                    | 2    |
| FA3    |             | MS121       | #8-32 x 1/4" PHIL FLAT HD UNDERCUT SMS SS           | LATCH HOUSING (2)                                      |                        |                    | 2    |
| FA4    |             | ST191       | #8 x 3/4" PHIL FLAT HD SMS SS                       | BALANCE RETAINER                                       |                        |                    | 4    |
| • FAS  |             | ST196(42)   | #8 x 1" PHIL HEX WASHER HD SMS TYPE AB SS           | FRAME (8) TOP RAIL (4) BOTTOM RAIL (8)                 |                        |                    | 20   |
| H1     |             | SH857       | LATCH HOUSING                                       |                                                        | KENMAR/FABCO           |                    | 2    |
| H2     |             | SH858       | SASH RELEASE LEVER                                  | DARK GRAY ANODIZED                                     | KENMAR/FABCO           |                    | 2    |
| H3     |             | WH829       | SS LATCH SPRING                                     |                                                        | KELLY TOOL & DIE       |                    | 2    |
| LB1    |             | LU801       | USAC LOGO WITH INSTRUCTIONS                         |                                                        | USAC PRINTER           |                    | 1    |
| LB2    |             | LU801       | AAMA LABEL                                          | AAMA CERT. + SECURITY TAB + NFRC TAP                   | ALI                    |                    | 1    |
| LB3    |             | LU811       | NFRC TEMPORARY LABEL                                |                                                        | USAC/SC                |                    | 1    |
| LB4    |             | LU921       | NFRC PERMIT LABEL                                   |                                                        | USAC PRINTER           |                    | 1    |
| • LB5  |             | LB006       | THIS SIDE UP LABEL                                  |                                                        | USAC PRINTER           |                    | 1    |

**NOTE:**

1. ALL PARTS MUST BE U.S. MADE.
2. ALL NYLON MOLDED PARTS TO MATCH WITH CLEAR ANODIZING TO BE GR21 (PRESSOUT CHIP IS 058K756N) FROM:

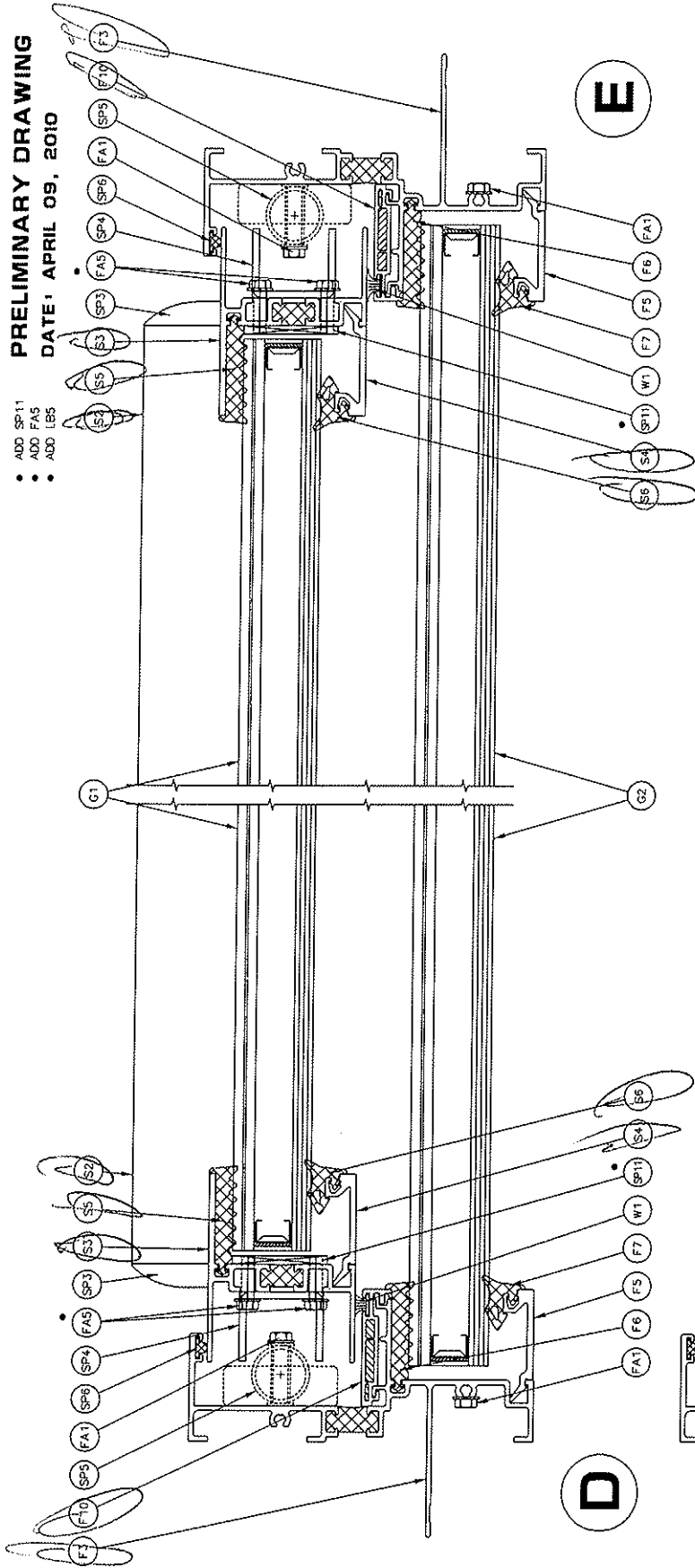
COLOR SCIENCE  
 1230 E GLENWOOD PLACE  
 SANITARY, CA 92707-3000  
 714/434-1033

|                                    |                              |                   |                     |
|------------------------------------|------------------------------|-------------------|---------------------|
| International Aluminum Corporation |                              |                   |                     |
| DIVISION                           | UNITED STATES ALUMINUM CORP. | DWG NO.           | 8000-001            |
| DATE                               | 03/01/10                     | BILL OF MATERIALS | FOR 8000 SERIES S/H |
| DATE                               | 03/01/10                     | (SERIES 7300)     | 2 of 4              |

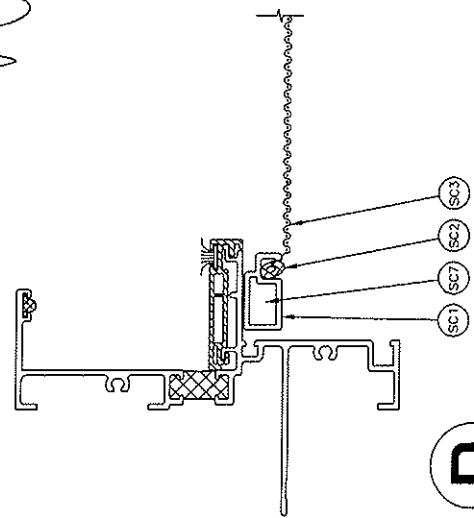
# PRELIMINARY DRAWING

DATE: APRIL 09, 2010

- ADD SP11
- ADD FAS
- ADD LBS



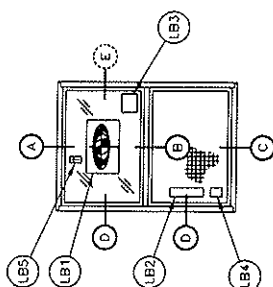

  
 A0595 JUN 24 2010
   
 Report: 



SHOWING THE SCREEN

|                                    |  |                           |  |                |  |
|------------------------------------|--|---------------------------|--|----------------|--|
| International Aluminum Corporation |  | U.S. ALUMINUM CORPORATION |  | DWG. NO.       |  |
| DIVISION                           |  | SINGLE HUNG LAYOUT        |  | 8000SH-001     |  |
| DATE: 02/26/10                     |  | BY: [Signature]           |  | 4 of 4         |  |
| REVISION                           |  | DATE                      |  | SERIES 8000    |  |
| SYN                                |  | FULL SIZE                 |  | SAC. (P. 1000) |  |

- ADD SP11
- ADD FA5
- ADD LB5

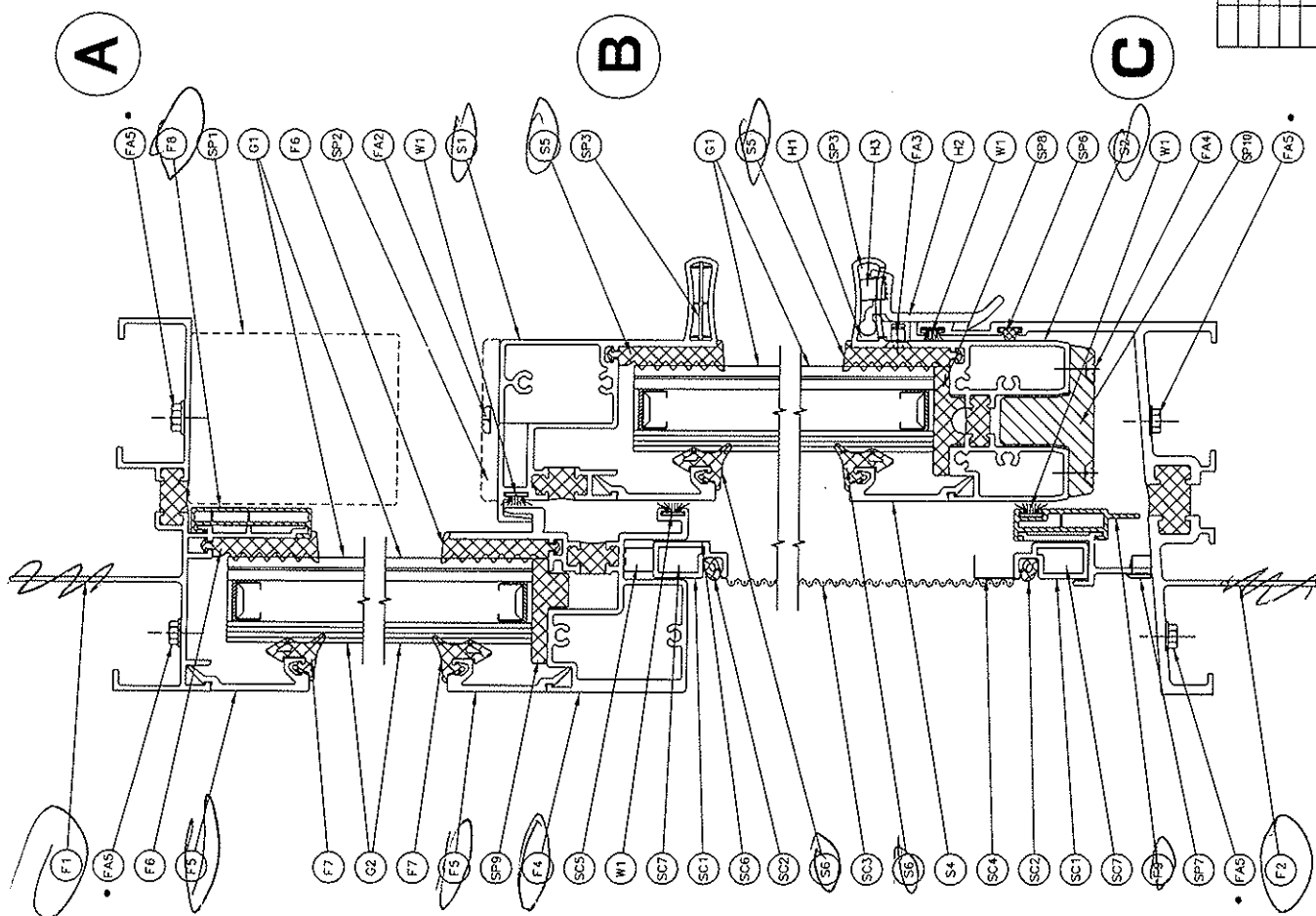


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Approved for Release by NSA on 09-11-2013 pursuant to E.O. 13526

A0595 JUN 24 2010

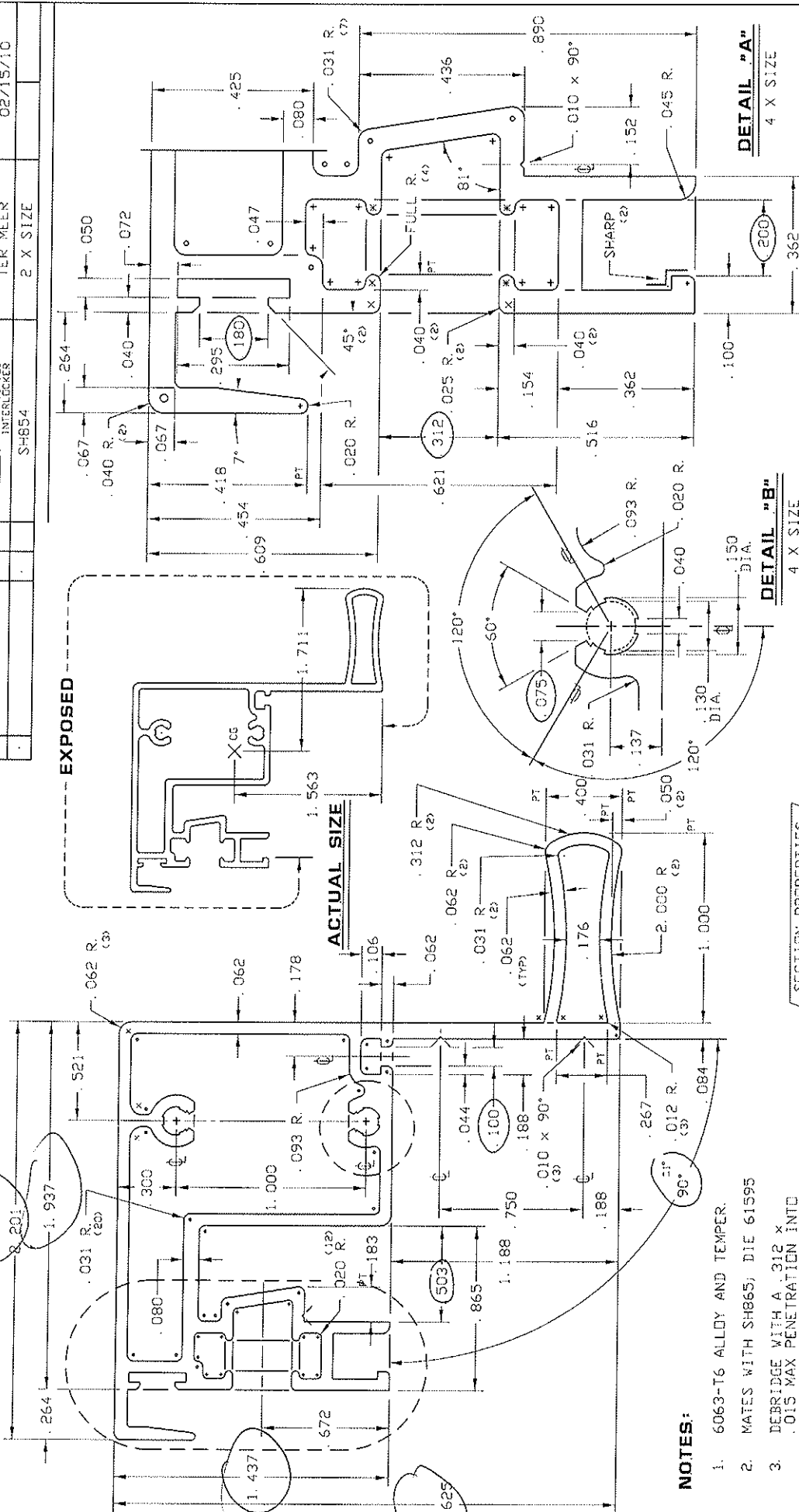
5000

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U.S. ALUMINUM CORP.  
8000 SERIES INTERLOCKER  
SH854  
TER MEER  
02/15/10  
2 X SIZE

H-61588

EXPOSED



SECTION PROPERTIES  
Ixx = 0.670 in<sup>4</sup>  
Iyy = 0.392 in<sup>4</sup>  
Sxx = 0.630 in<sup>3</sup>  
Syy = 0.416 in<sup>3</sup>

DETAIL "A"  
4 X SIZE

DETAIL "B"  
4 X SIZE

|        |               |                  |
|--------|---------------|------------------|
| .932   | C-1788        | .062             |
| 1.118  | 3.840         | 1                |
| 27.715 | HOLLOW III    | PORT-HOLE 10X5.5 |
| 25     | 8" 57/PRESS 4 | 12X7.5 61588     |
|        |               | H-61588          |

AC 1095 ~~July 24, 2010~~

2000

630

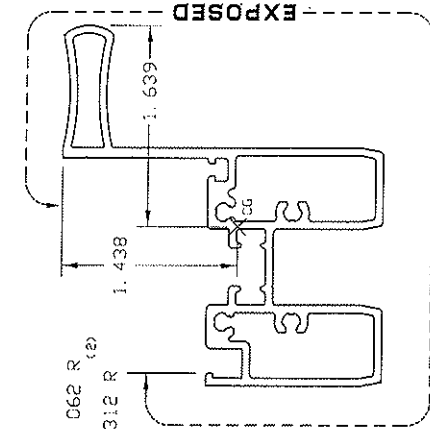
**U.S. ALUMINUM CORP.**

78-61587

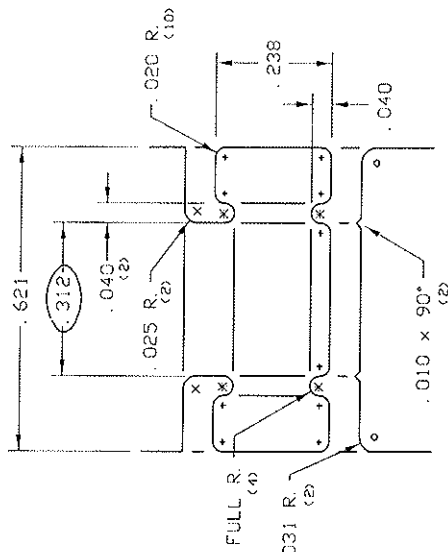
BOOKS RECEIVED

SECRET

02/15/10

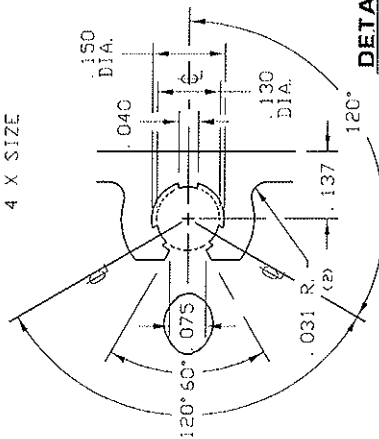


**ACTUAL SIZE**



### DETAIL "A"

4 X SIZE

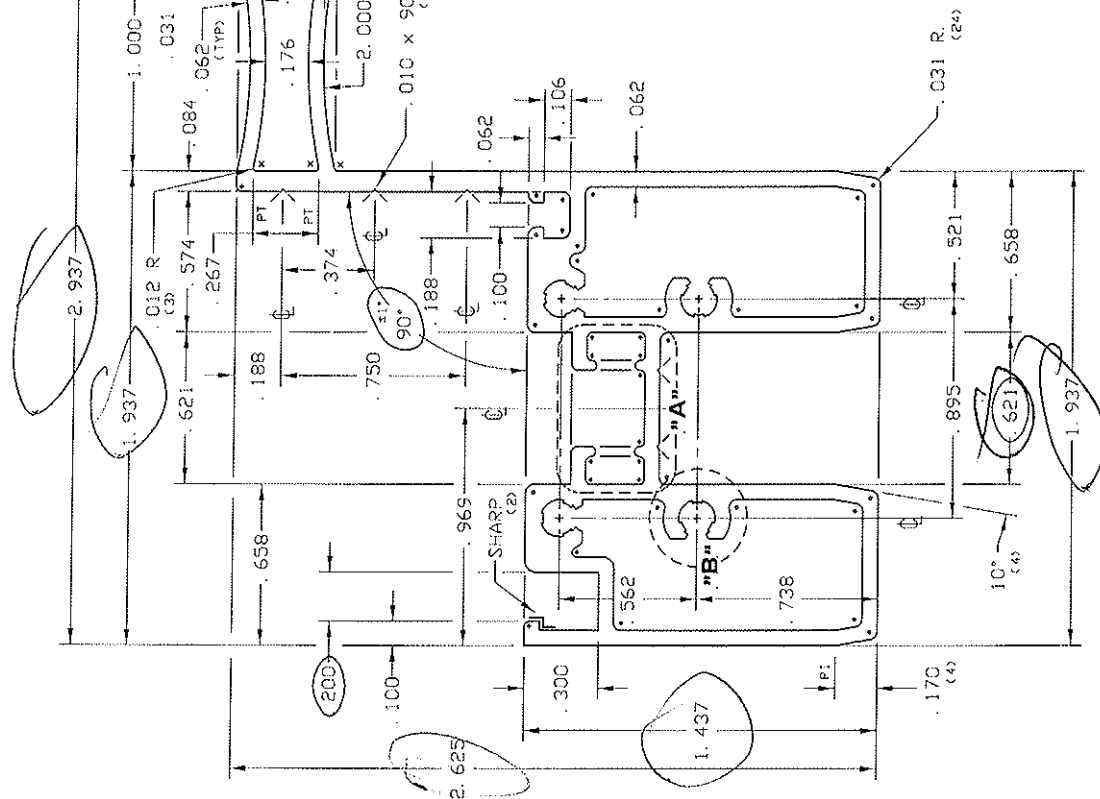


### DETAIL "B"

4 X 517E

(SIN 4 PLACES)

- NOTES:**
1. 5063-T5 ALLOY AND TEMPER.
  2. NATES WITH SH865; DIE 61589
  3. DEBRIDGE WITH A .312 X  
0.15 MAX PENETRATION INTO  
THERMAL AREA.
  4. THERMAL DETAIL AREA: .209;  
(MODIFIED 'DD')
  5. PAINT PERIMETER: 9.708"
  6. OUTSIDE PERIMETER: 15.470"



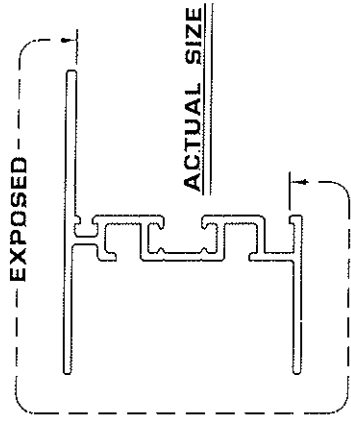
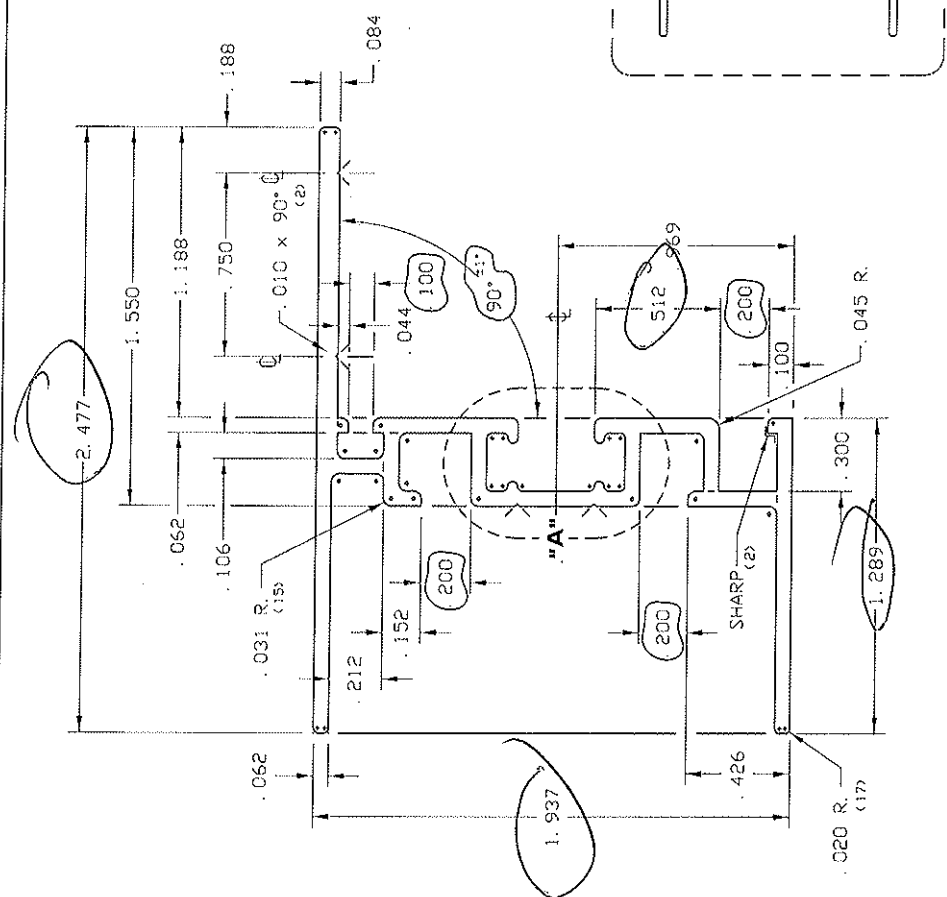
|  |        |               |               |      |
|--|--------|---------------|---------------|------|
|  | .912   | C-1789        | 1             | .062 |
|  | 1.094  | 4.000         | PERTHLE 10X.5 |      |
|  | 26.647 | HOLLOW III    | 61588         |      |
|  | 24     | 8" 59/PRESS 4 | H-61587       |      |

|                     |          |          |
|---------------------|----------|----------|
| U.S. ALUMINUM CORP. |          | T-61589  |
| 8000 SERIES STILE   | TER MEER | 02/15/10 |
| SH855               | 2 X SIZE |          |

A. J. ...

A0595 JUN 24 2010

Report LSB Date



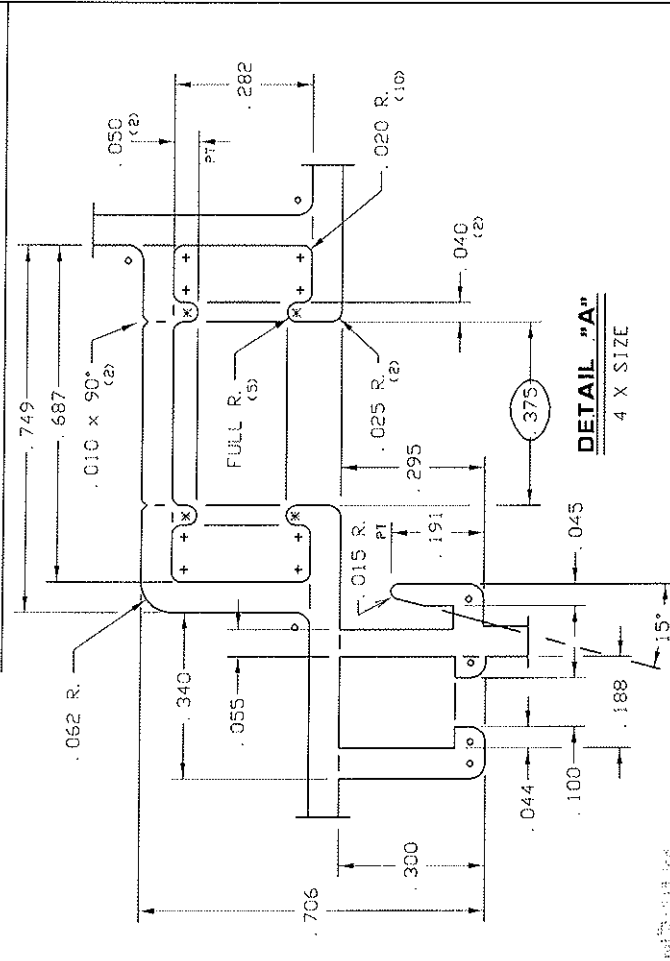
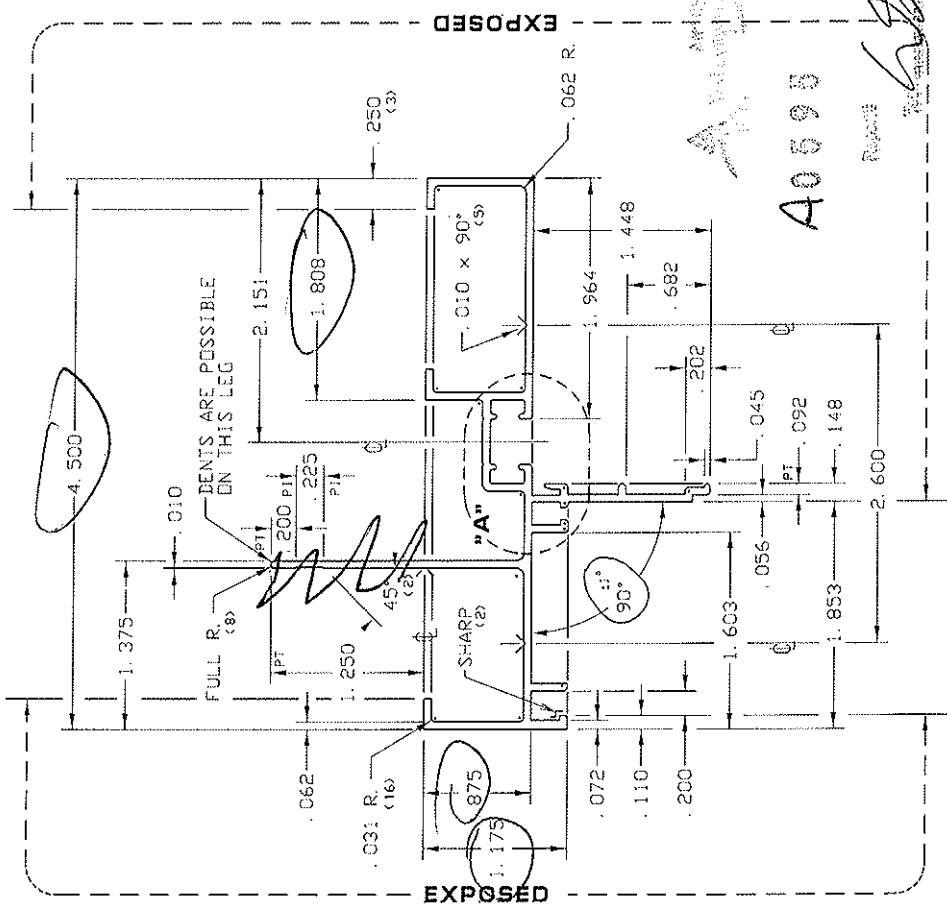
**NOTES:**

1. 6063-T5 ALLOY AND TEMPER.
2. MATES WITH SH865; DIE 61595
3. DEBRIDGE WITH A .312 X .015 MAX PENETRATION INTO THERMAL AREA.
4. THERMAL DETAIL AREA: .147; (MODIFIED "DD")
5. PAINT PERIMETER: 6.418"

**DETAIL "A"**  
 4 X SIZE

|                    |               |
|--------------------|---------------|
| 9X2 DIE 1/2 RECESS |               |
| .488               | C-1792        |
| .586               | 3.128         |
| 14.641             | SOLID         |
| 25                 | 7" 83/PRESS 3 |
|                    | T-61589       |

|                     |           |          |
|---------------------|-----------|----------|
| U.S. ALUMINUM CORP. |           | T-61592  |
| 8000 SERIES HEAD    | TER MEER  | 02/12/10 |
| SH862               | FULL SIZE |          |



**NOTES:**

1. 6063-T5 ALLOY AND TEMPER.
2. MATES WITH SH865; DIE 61595
3. DEBRIDGE WITH A .218 X .015 MAX PENETRATION INTO THERMAL AREA.
4. THERMAL DETAIL AREA: .209; (MODIFIED "EE")
5. PAINT PERIMETER: 9.144"

APPROVED FOR RELEASE  
 AUTHORITY: 100-1000000000  
 DATE: 01-01-2011

40595 JUN 24 2010

Route 100  
 T-61592

9X2 DIE 1/2 RECESS

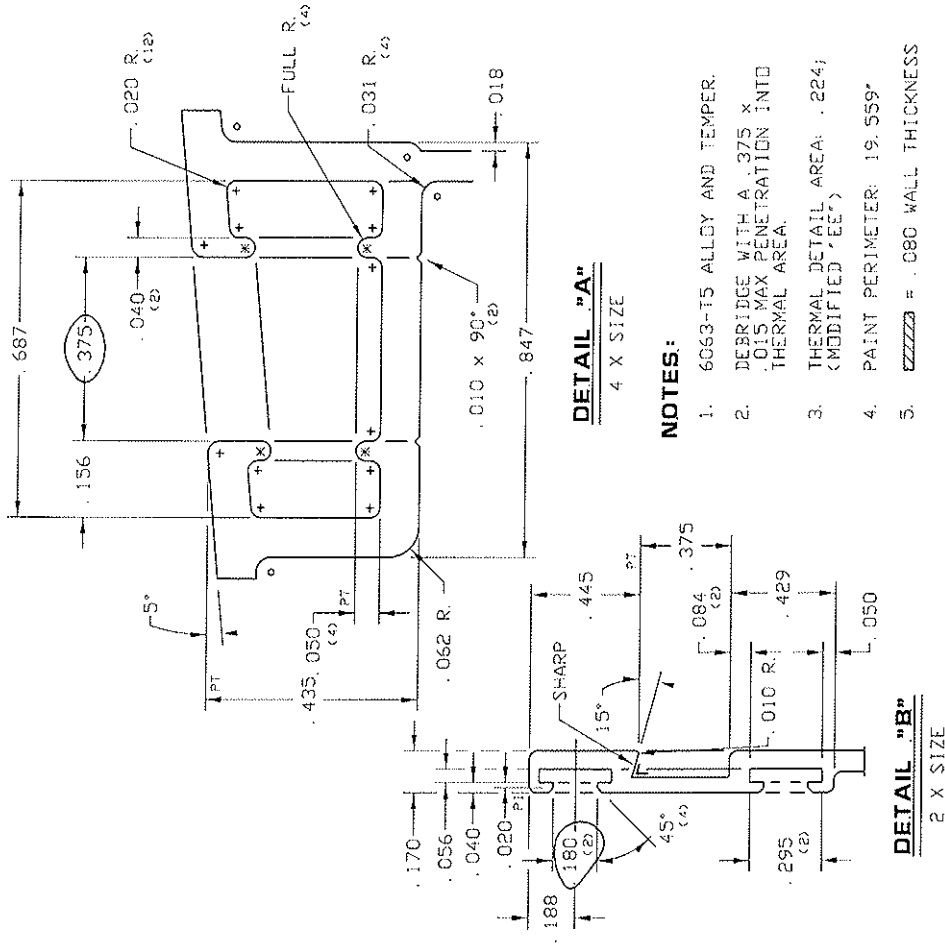
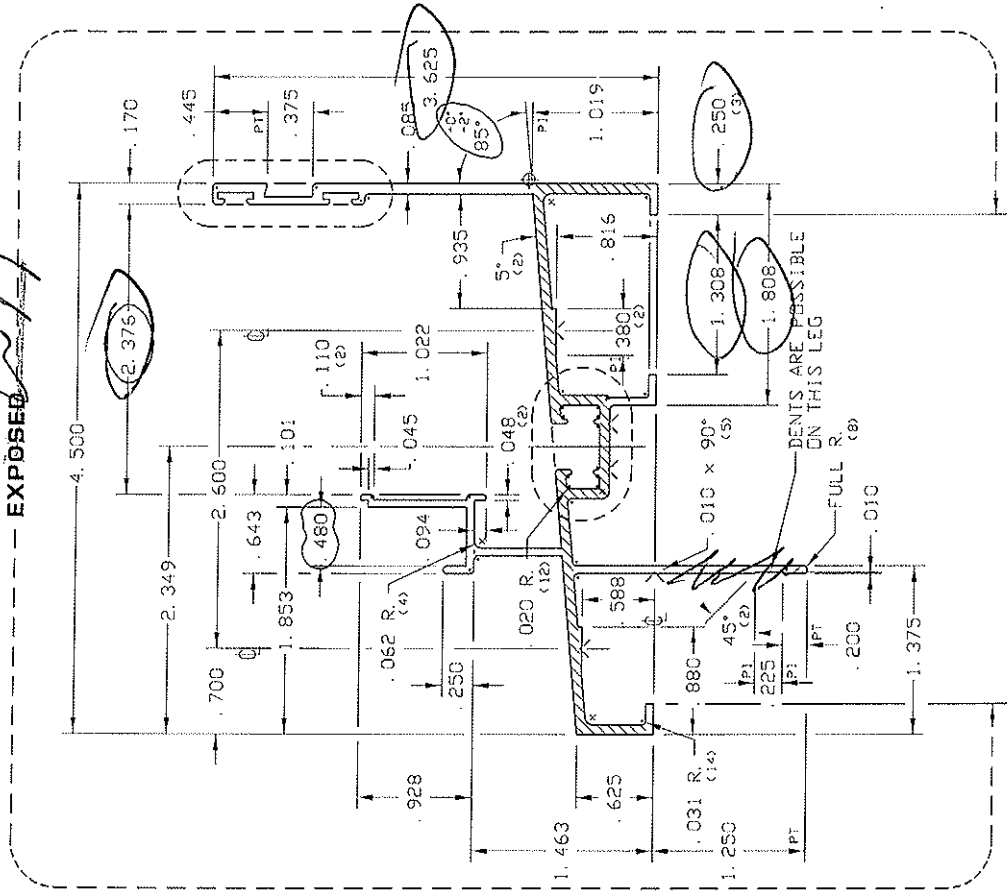
|        |               |
|--------|---------------|
| .062   |               |
| .814   | C-1785        |
| .977   | 4.661         |
| 26.176 | SOLID         |
| 27     | 8" 65/PRESS 4 |
|        | T-61592       |

4039 242010

12

3

# EXPOS



**DETAIL "B"**

2 x 2 x 2

# DETAIL "A"

3215 X 7

## NOTES:

1. 6063-T5 ALLOY AND TEMPER.
2. DEBRIDGE WITH A .375 x .015 MAX PENETRATION INTO THERMAL AREA.
3. THERMAL DETAIL AREA: .224;  
(MODIFIED 'EE')
4. PAINT PERIMETER: 19.559"
5. ~~XXXXXXXX~~ = .080 WALL THICKNESS

|  |        |               |
|--|--------|---------------|
|  | 0      | .062          |
|  | 1.151  | C-179C        |
|  | 1.381  | 5.857         |
|  | 31.324 | SOLID         |
|  | 23     | 8" 46/PRESS 4 |
|  |        | T-61593       |



# U.S. ALUMINUM CORP.

H-61596

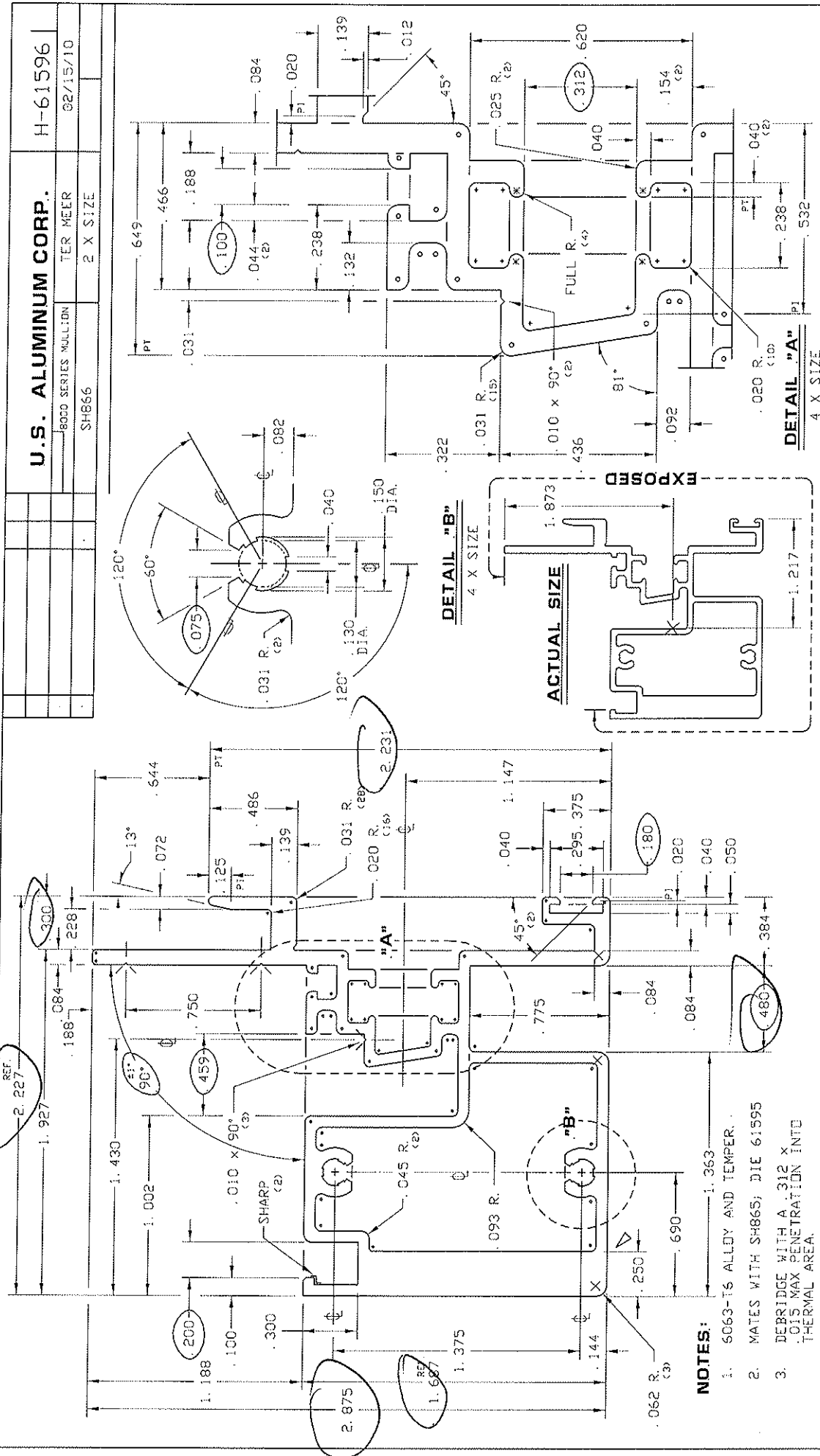
8000 SERIES MULLION

TER MEER

2 X SIZE

SH866

02/15/10



## SECTION PROPERTIES

|     |                         |
|-----|-------------------------|
| Ixx | = 0.551 in <sup>4</sup> |
| Sxx | = 0.294 in <sup>3</sup> |
| Iyy | = 0.666 in <sup>4</sup> |
| Syy | = 0.547 in <sup>3</sup> |

Aluminum Testing, Inc.

1.137

1.364

25.521

19

8" 47/PRESS 4

H-61596

PERF HOLE 10X5.5

61588

062

1

C-1787

3.447

HOLLOW 11

8" 47/PRESS 4

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JUN 2 1960

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HOLLOW 11

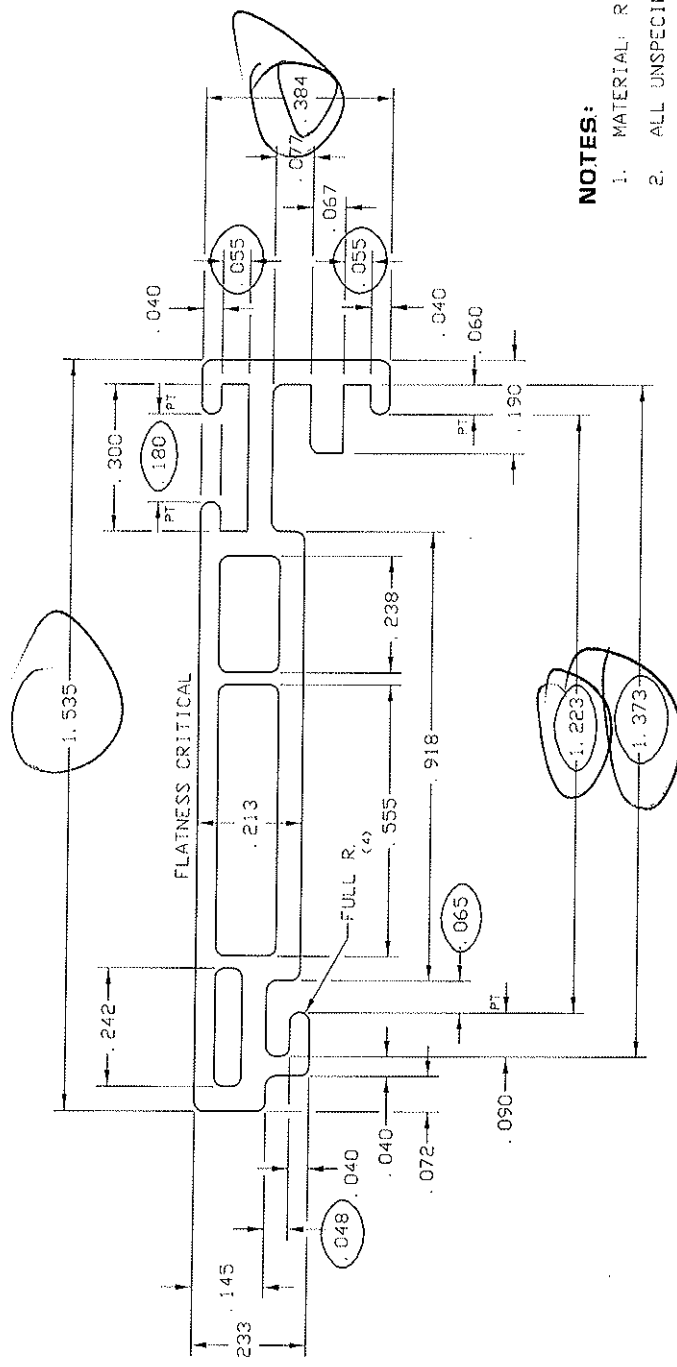
8" 47/PRESS 4

H-61596

REF. DRAWING: IW1841



**ACTUAL SIZE**



## RADIUS SCHEDULE

- |       |     |     |     |     |     |
|-------|-----|-----|-----|-----|-----|
| S     | 5   | 4   | 3   | 2   | 1   |
| -     | -   | -   | -   | -   | -   |
| .     | 060 | 045 | 030 | 020 | 015 |
| .     | 030 | 020 | 015 | 012 | 006 |
| STARP | 2   | 2   | 2   | 2   | 2   |

## NOTES:

1. MATERIAL: RIGID PVC TO MEET AAMA 303-07
2. ALL UNSPECIFIED RADII = .020
3. TYPICAL EXTERIOR WALL THICKNESS: .050  
TYPICAL INTERIOR WALL THICKNESS: .025
4. AREA: .181
5. MINIMUM SHEEN ALLOWED 56.0 USING A  
GARDNER MICRO-GLOSS 60° GLOSS METER.
6. TOLERANCE UNLESS OTHERWISE NOTED  $\pm .012$
7. WALL THICKNESS TOLERANCE TO BE  $\pm .006$

PVC TOLERANCES FOR PVC EXTRUDED SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE

[illegible]

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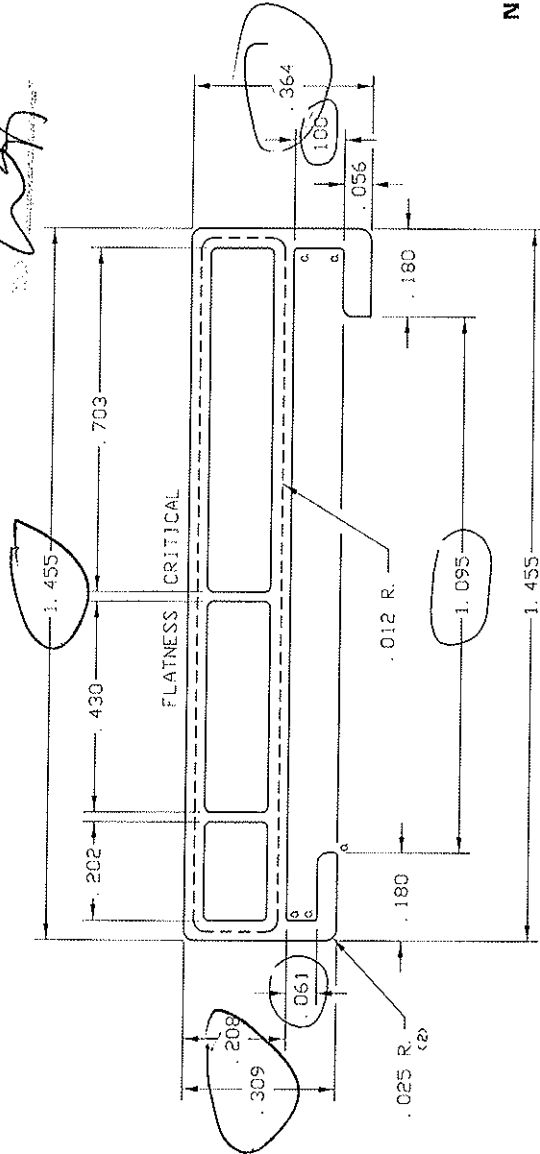
8000SH-038B

Advertisement Testing, Inc.  
—For more information, contact with these details

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1833

1. MATERIAL: RIGID PVC TO MEET AAMA 303-07
2. ALL UNSPECIFIED RADII = .020
3. TYPICAL EXTERIOR WALL THICKNESS: .040  
TYPICAL INTERIOR WALL THICKNESS: .020
4. AREA: .155
5. MINIMUM SHEEN ALLOWED 56.0 USING A  
GARDNER MICRO-GLOSS 60° GLOSS METER

| S     | R   | U   | R   | E   | S   | O   |
|-------|-----|-----|-----|-----|-----|-----|
| SHARP | 00S | 013 | 015 | 020 | 030 | 045 |
|       | R   | R   | R   | R   | R   | R   |

INVC TOLERANCES FOR PVC EXTRUDED SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE

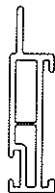
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**ACTUAL SIZE**

RELEASE FOR PRODUCTION  
DATE: MARCH 9, 2010  
APPROVED BY JOHN FREY

**NOTES:**

1. MATERIAL: RIGID PVC TO MEET AAMA 303-07
2. ALL UNSPECIFIED RADII = .012
3. TYPICAL EXTERIOR WALL THICKNESS: .050  
TYPICAL INTERIOR WALL THICKNESS: .020
4. AREA: RIGID PVC- .180
5. MINIMUM SHEEN ALLOWED 56.0 USING A  
GARDNER MICRO-GLOSS 60° GLOSS METER.
6. TOLERANCE UNLESS OTHERWISE NOTED ± .012.
- ⑦ 7. WALL THICKNESS TOLERANCE TO BE ± .006

## RADIUS SCHEDULE

- |       |      |      |      |      |      |      |
|-------|------|------|------|------|------|------|
| S     | 8    | D    | P    | R    | E    | T    |
|       |      |      |      |      |      |      |
| SHARP | .006 | .012 | .015 | .020 | .030 | .045 |
|       |      |      |      |      |      | .060 |

PVC TOLERANCES FOR PVC EXTRUDED SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE

UNITED STATES ALUMINUM CORP.

[illegible]

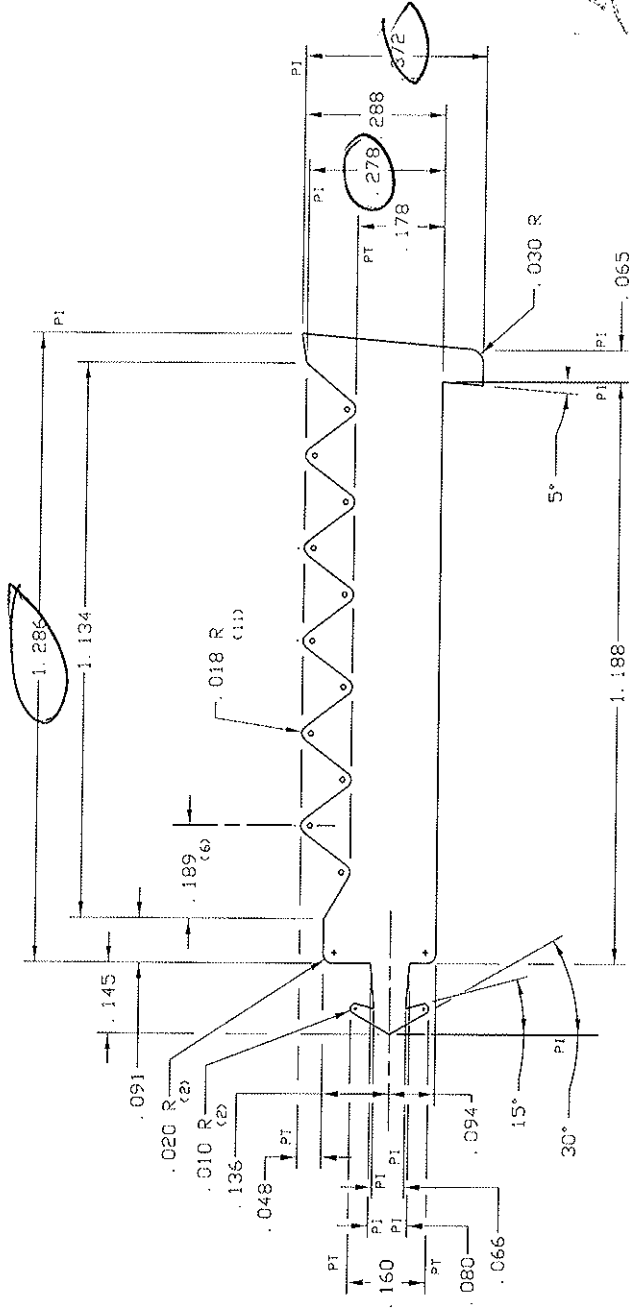
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8000SH-037B

8000SH-011



ACTUAL SIZE



**NOTES:**

1. AREA: .308 IN<sup>2</sup>
2. MATERIAL: EPDM SPONGE
3. PART NO. NP881

A0595 JUN 24 2010

*Handwritten signature/initials*

UNITED STATES ALUMINUM CORP.

INTERIOR GLAZING  
GASKET (8000 SH WINDOW)  
PART# NP881

8000SH-011

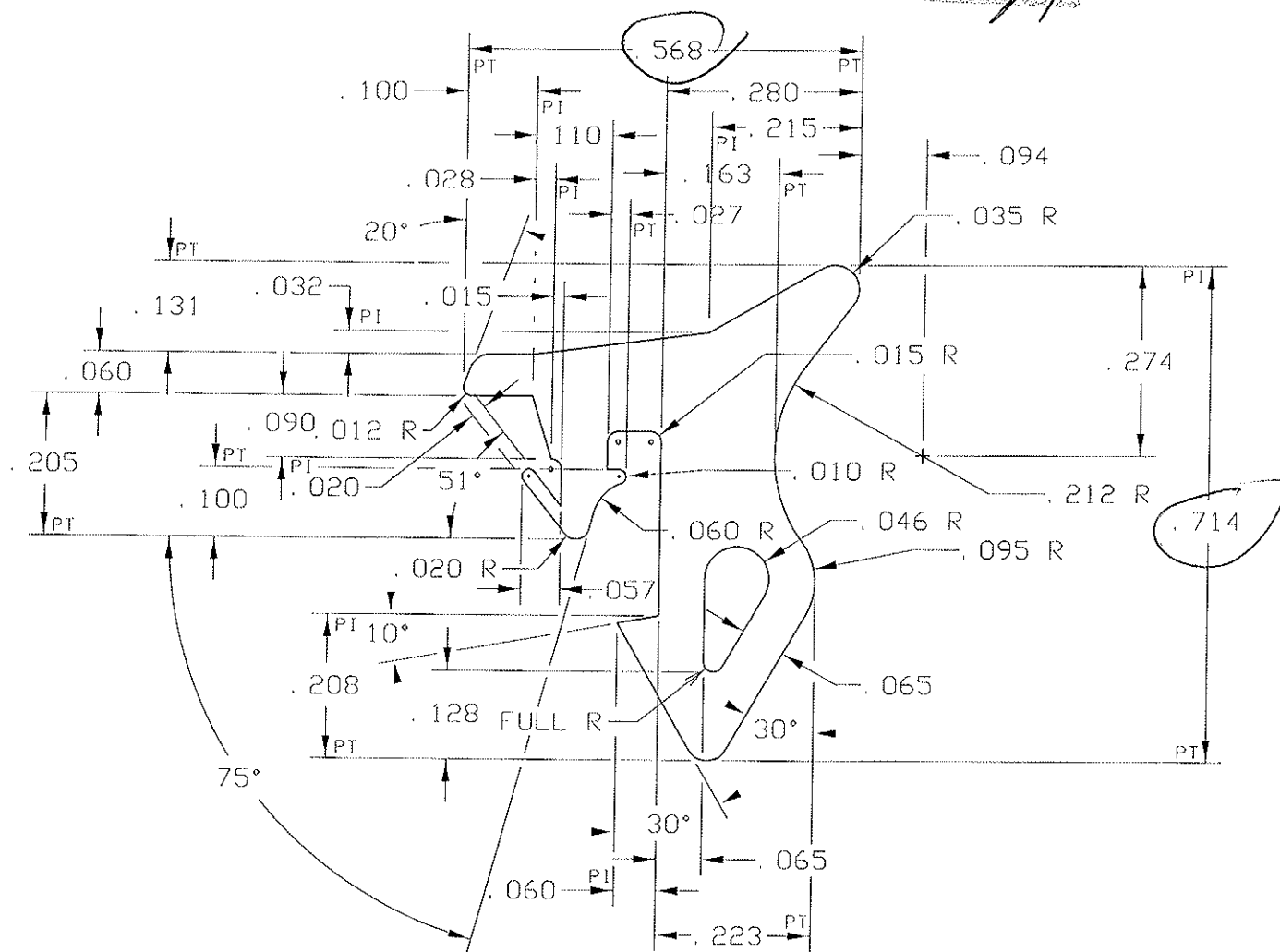
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A0595

3512-2000

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11



1. AREA = .151 in<sup>2</sup>
2. MATERIAL: EPDM DENSE
3. DUROMETER: 70 ±5 SHORE
4. PART NO. NP825

PRESTON

05/16/06

4 X SIZE

EXTERIOR GLAZING GASKET  
FOR IG500/IG600 SYSTEM

PART# : NP825

USA--2957

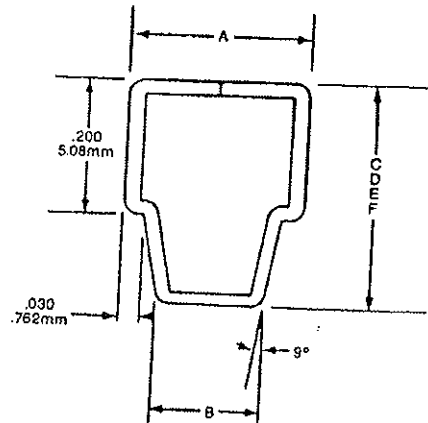
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JUN 24 2010

**ALLMETAL**INC.  
SINCE 1915

Report

Date

**Standard Air Spacer****\*LASER WELDED****TOLERANCES:**A,  $\pm .005$  .127mmB,  $\pm .005$  .127mmC, D, E, F  $\pm .005$  .127mmDECIMAL  
IN INCHES

\*3/16 &amp; 5mm Not Welded at this Time

"C" — .0135" Clear Anodized Aluminum Height — .309 7.85mm

"D" — .0165" Clear Anodized Aluminum Height — .315 8mm

"E" — .0170" Mill Finish Aluminum Height — .316 8.03mm

"F" — .0150" Electro-Galvanized &amp; Black Steel Height — .318 8.07mm

Available with serrations at no extra charge on inside of Aluminum spacer at "A" dimension; not recommended for spacers to be bent.

**FRACTIONAL  
DECIMAL IN INCHES**

| Size  | A    | B    |
|-------|------|------|
| 3/16  | .188 | .088 |
| 7/32  | .219 | .119 |
| 1/4   | .250 | .150 |
| 17/64 | .266 | .166 |
| 9/32  | .281 | .181 |
| 19/64 | .297 | .197 |
| 5/16  | .313 | .213 |
| 11/32 | .344 | .244 |
| 23/64 | .359 | .259 |
| 3/8   | .375 | .275 |
| 13/32 | .406 | .306 |
| 7/16  | .438 | .338 |
| 15/32 | .469 | .369 |
| 1/2   | .500 | .400 |
| 17/32 | .531 | .431 |
| 9/16  | .563 | .463 |
| 19/32 | .594 | .494 |
| 5/8   | .625 | .525 |
| 21/32 | .656 | .556 |
| 11/16 | .688 | .588 |
| 23/32 | .719 | .619 |
| 3/4   | .750 | .650 |
| 13/16 | .813 | .713 |
| 7/8   | .875 | .775 |

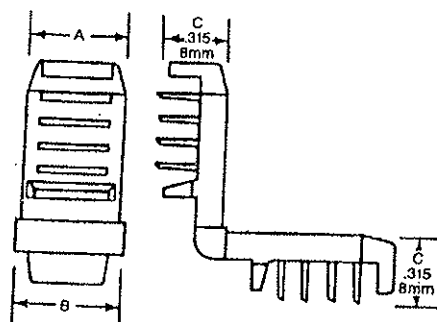
**MILLIMETERS  
DECIMAL IN INCHES**

| Size | A    | B    |
|------|------|------|
| 5    | .197 | .097 |
| 6    | .236 | .136 |
| 7    | .276 | .176 |
| 7.5  | .296 | .196 |
| 8    | .315 | .215 |
| 9    | .354 | .254 |
| 10   | .394 | .294 |
| 11   | .433 | .333 |
| 11.5 | .453 | .353 |
| 12   | .472 | .372 |
| 13   | .512 | .412 |
| 13.2 | .520 | .420 |
| 14   | .551 | .451 |
| 15   | .591 | .491 |
| 15.5 | .610 | .510 |
| 16   | .630 | .530 |
| 17   | .669 | .569 |
| 18   | .709 | .609 |
| 18.5 | .728 | .628 |
| 19   | .748 | .648 |
| 20   | .787 | .687 |
| 22   | .866 | .766 |

**Standard Fixed Nylock Corner Key with Fin****COMPOUND:**

#6 Nylon

Also available upon request, at no additional cost, glass reinforced nylon for added strength.



DECIMAL IN INCHES

**TOLERANCES:**A,  $\pm .005$  .127mmB,  $\pm .005$  .127mmC,  $\pm .005$  .127mm**FRACTIONAL  
DECIMAL IN INCHES**

| Size       | A    | B    |
|------------|------|------|
| 3/16-.188  | .148 | .178 |
| 7/32-.219  | .178 | .208 |
| 1/4-.250   | .210 | .240 |
| 17/64-.266 | .226 | .256 |
| 9/32-.281  | .241 | .271 |
| 19/64-.297 | .257 | .287 |
| 5/16-.313  | .273 | .303 |
| 11/32-.344 | .304 | .334 |
| 23/64-.359 | .314 | .344 |
| 3/8-.375   | .335 | .365 |
| 13/32-.406 | .366 | .396 |
| 7/16-.438  | .397 | .427 |
| 15/32-.469 | .438 | .468 |
| 1/2-.500   | .456 | .490 |
| 17/32-.531 | .487 | .521 |
| 9/16-.563  | .518 | .552 |
| 19/32-.594 | .550 | .584 |
| 5/8-.625   | .581 | .615 |
| 21/32-.656 | .612 | .646 |
| 11/16-.688 | .644 | .678 |
| 23/32-.719 | .674 | .708 |
| 3/4-.750   | .706 | .740 |
| 13/16-.813 | .769 | .803 |
| 7/8-.875   | .831 | .865 |

**MILLIMETERS  
DECIMAL IN INCHES**

| Size      | A    | B    |
|-----------|------|------|
| 5-.197    | .148 | .178 |
| 6-.236    | .196 | .226 |
| 7-.276    | .241 | .271 |
| 7.5-.297  | .257 | .287 |
| 8-.315    | .273 | .303 |
| 9-.354    | .314 | .344 |
| 10-.394   | .354 | .384 |
| 11-.433   | .397 | .427 |
| 11.5-.453 | .413 | .443 |
| 12-.472   | .438 | .468 |
| 13-.512   | .468 | .502 |
| 14-.551   | .507 | .541 |
| 15-.591   | .550 | .584 |
| 15.5-.610 | .566 | .600 |
| 16-.630   | .581 | .615 |
| 17-.669   | .625 | .659 |
| 18-.709   | .664 | .698 |
| 19-.748   | .706 | .740 |
| 20-.787   | .737 | .771 |
| 22-.866   | .831 | .865 |

