

Bron Template™

Precision-Printed and Adhesive-Applied Clear Graphic Assembly Tool



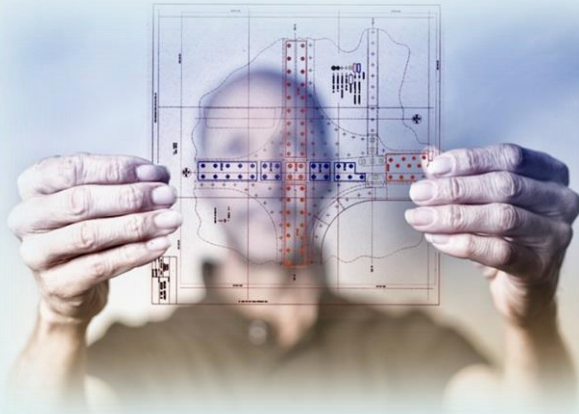
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Bron Aerotech, Inc. is an AS9100-certified small business supplying BAC-specified material solutions, as well as a full line of Aircraft, MRO and Space-Qualified products.

The **Bron Template™** is a unique Adhesive Mylar Technology for Aerostructure assembly, fabrication and modification.

This innovative new Tool has been developed and approved for application ***throughout the Boeing fleet.***



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Improving on traditional aircraft mylars, the Bron Template™ brings a trusted and proven assembly tool into the modern era of aircraft assembly, providing many advantages and improved process capabilities.

The Bron Template™ provides Aerostructure builders with improvements in quality and speed of production, allowing engineering and automated assembly resources to be utilized more **efficiently**.



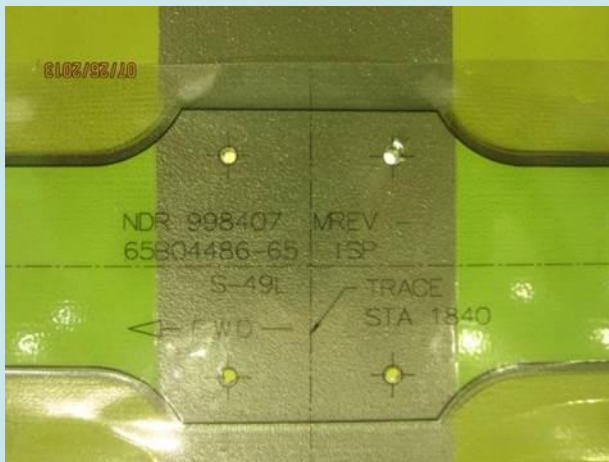
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The Bron Template™ is a clear, precision-printed, 4-mil polyester adhesive film, approved for use on Boeing aircraft (BAC5307 - part marking & BAC5034 - drilling, countersinking, installation, machining) - it applies **directly to the workpiece**.

The Bron Template™ is accurately **indexed** (+/- 0.0015") using tooling features (EOP's, tooling holes, DA's, etc.) and adhesively applied to any aircraft surface.



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For assembly operations, fabrications, and modifications, all necessary instructions, planning information, feature locations, or specifications can be **precision-printed** onto the Bron Template™.

The **aircraft assembly mechanic** is no longer required to refer to engineering drawings or assembly planning documentation. The Bron Template™ is quickly applied to the part and work begins.



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In July, 2013, **Triumph Aerostructures** applied Bron Template™ technology in the production of a replacement AOG 747-400 46-section fuselage skin. This was accomplished at Triumph's (Hawthorne, CA) 747 fuselage skin fabrication facility.

In this application, the Bron Template™ was applied to the 46-section skin assembly using EOP features of the internal skin doublers, defining fastener hole location, size and countersink configuration, as well as providing inspectors with a qualified means for **product acceptance**.



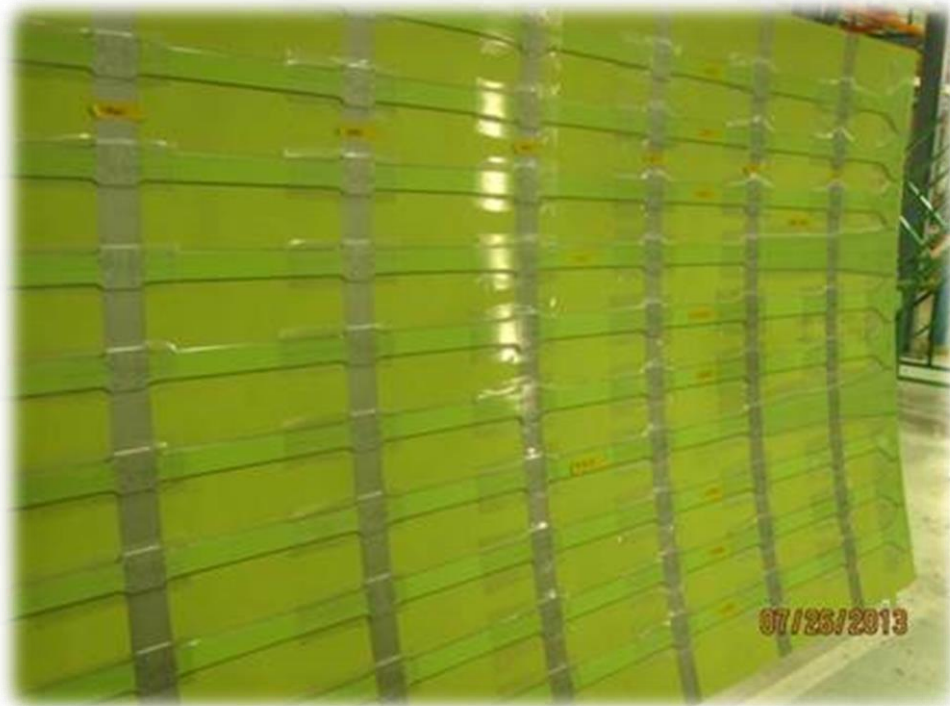
The Bron Template replaced CNC drilling operations, thereby eliminating days-worth of scheduling, tool orders, CNC programming/tooling/set-up & try-out, allowing assembly mechanics to **accurately locate, drill and install** qty. (450) precision fastener holes on the replacement skin panel within a single shift, with **100% product acceptance**.

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On the Boeing 747, Bron Aerotech products are relied upon at **Triumph Aerostructures** (Hawthorne & Dallas) as well as the assembly line and paint hangar at Boeing, Everett, Washington.



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Failure Modes / Rework Issues addressed by Bron Template™

- Countersink missing
- Countersink should not have been drilled
- Holes are missing
- Holes should not have been drilled (stay-outs)
- Holes should not be full-size (piloted until the next assembly sequence)
- High-density field fasteners with multiple sizes and configurations
- Irregular fastener patterns
- Holes are off due to mis-reading/transferring the print/plan definition
- Rework due to mis-drilled holes

Getting the right hole in the right location – that's the challenge!



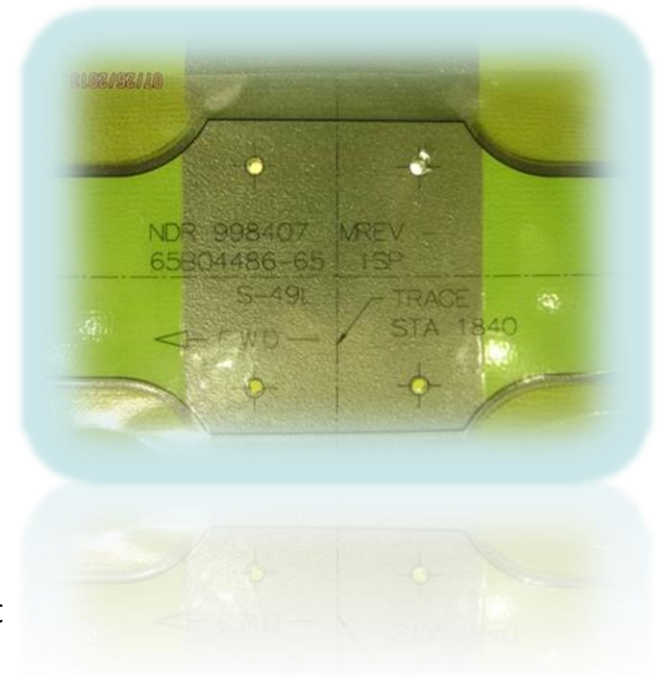
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Bron Template™ Features & Benefits

- ❖ Qualified to Boeing:
 - BAC 5034-4 (tapes)
 - 5034-1 (Surface Protection)
 - 5037 (Part Marking)
 - BSS 8110-9 (Use of Mylar)
- ❖ Proprietary material **qualified** for use on aluminum body aircraft
- ❖ Proven in industry- **approved** for surface protection
- ❖ **Eliminates** hand layouts
- ❖ **Locates** within .0015
- ❖ Impressive **reduction** in rework tags and defects
- ❖ Can be applied to **flat or curved** surfaces
- ❖ Contains **instructions** as well as **locations**
- ❖ **Eliminates** need for assembly mechanics to interpret engineering requirements/drawings
- ❖ Quality Product **acceptance**
- ❖ **Color** differentiation/coding to discriminate fastener types, sizes and stayouts
- ❖ A **visual** planning tool
- ❖ Time and labor **savings** -effective use of mechanics' time
- ❖ **Size**: Up to 50" x 100"
- ❖ **Easy** to apply
- ❖ **Repositionable**



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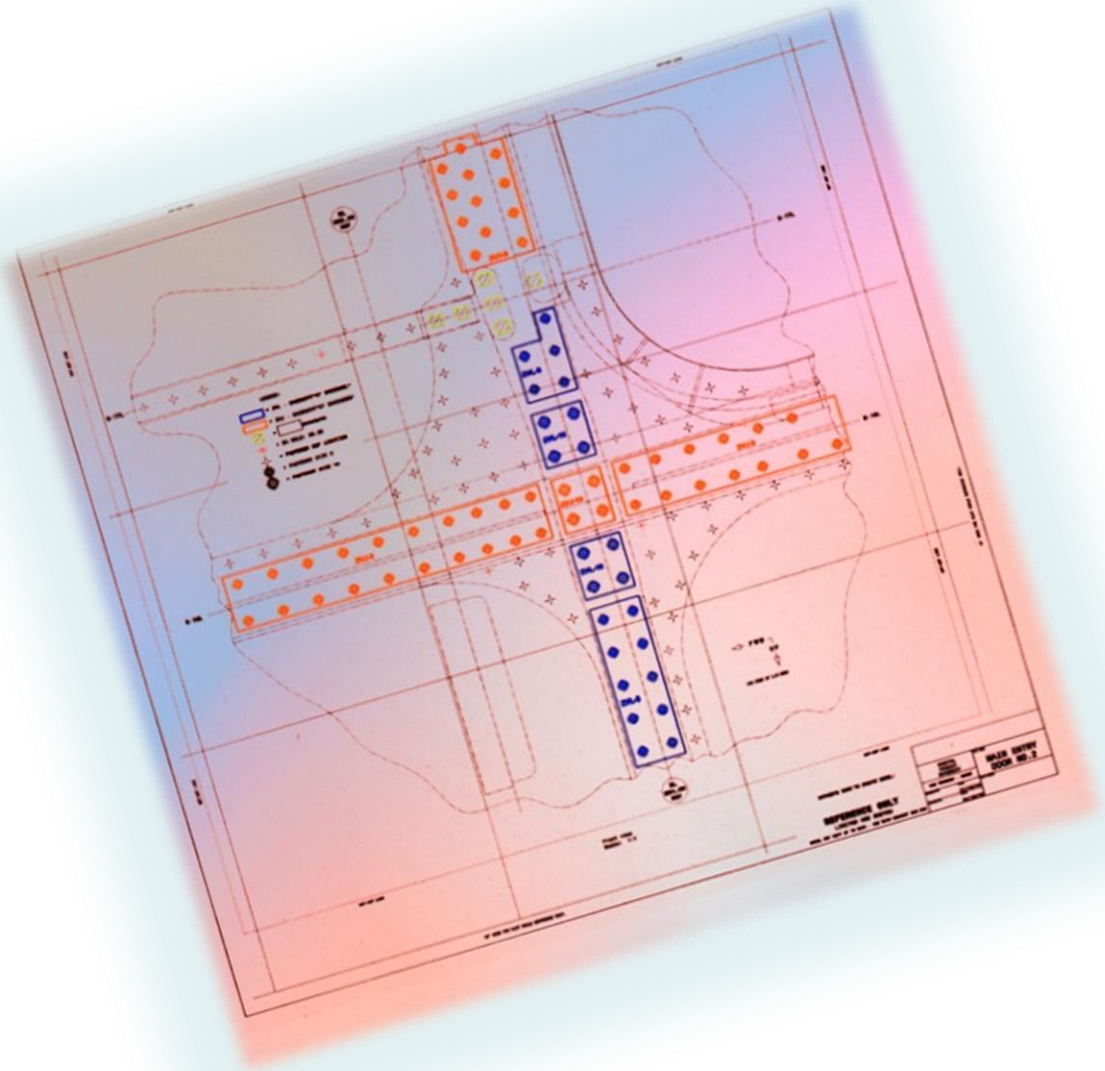
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