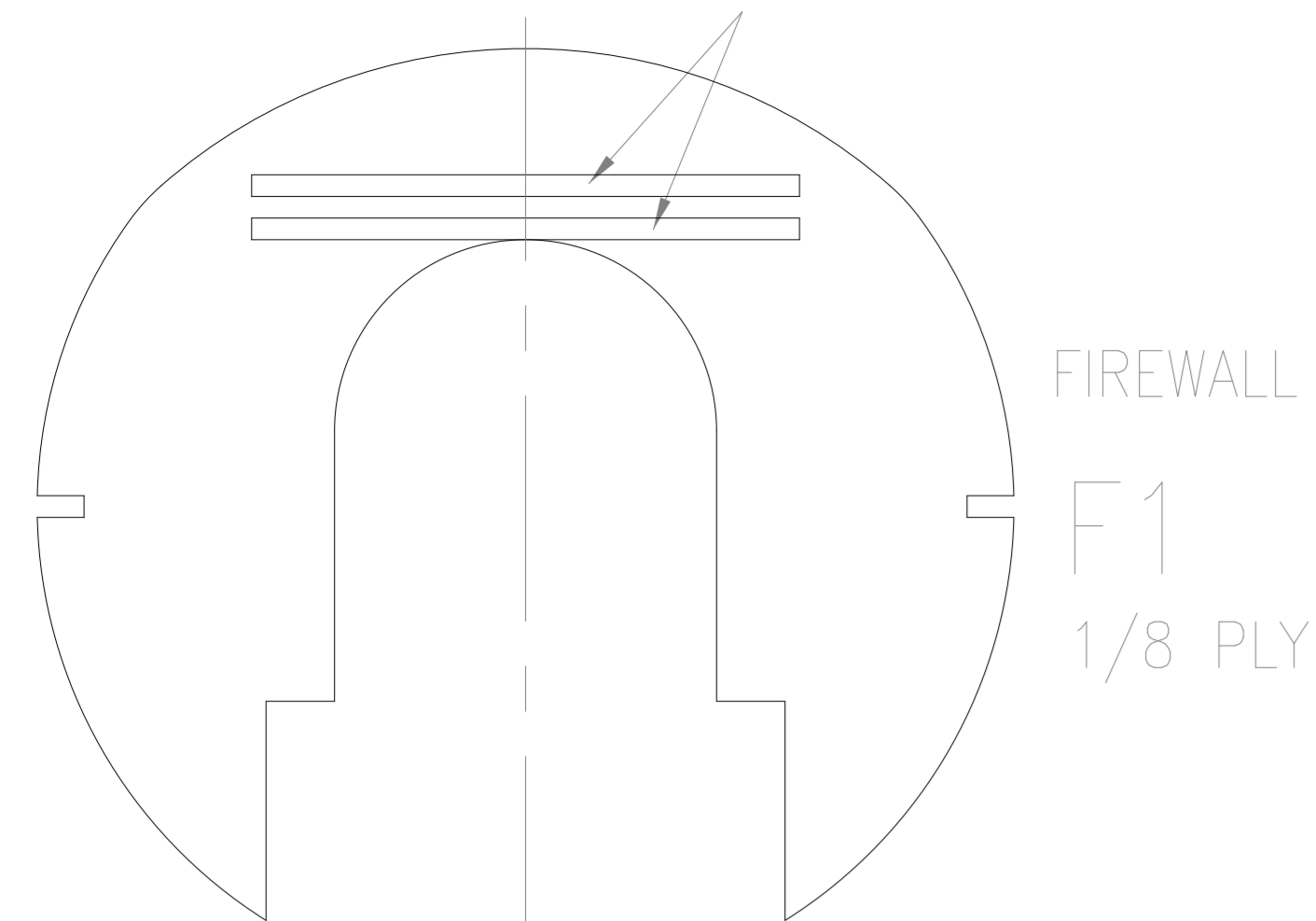
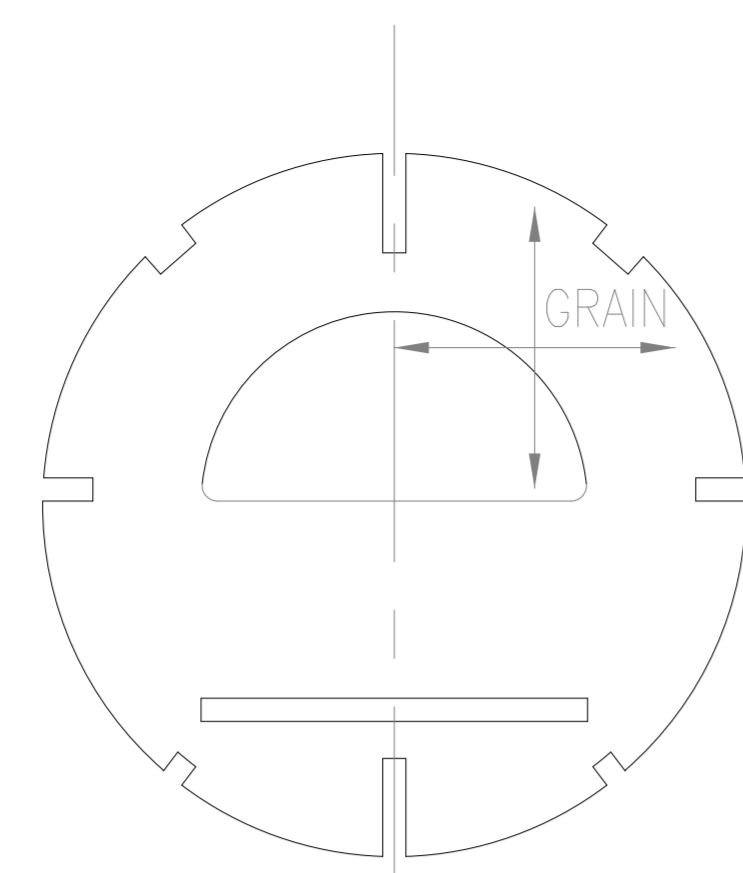




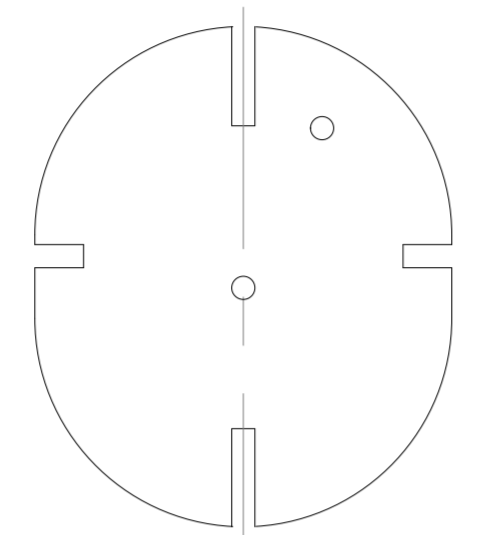
1/8 sq glued on back for F11 to fit into



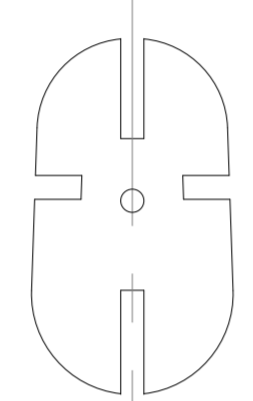
FIREWALL  
F1  
1/8 PLY



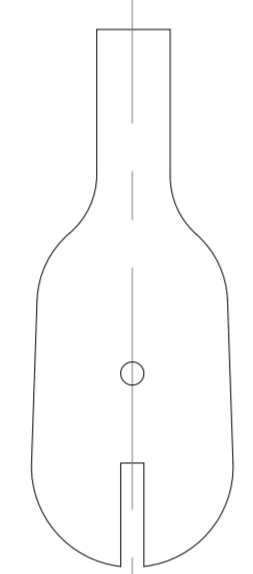
1/8 MEDIUM Balsa LAMINATED TO 1/8 Balsa  
CROSSED 90 DEGREES LIKE PLYWOOD  
F5



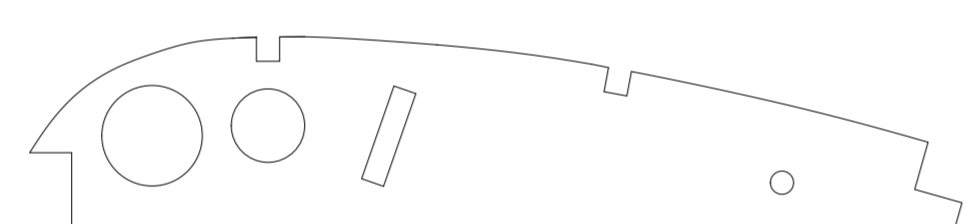
F6 1/8 MEDIUM Balsa



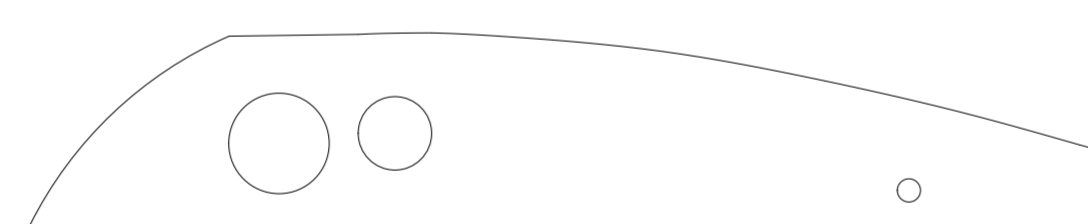
F7 1/8 MEDIUM Balsa



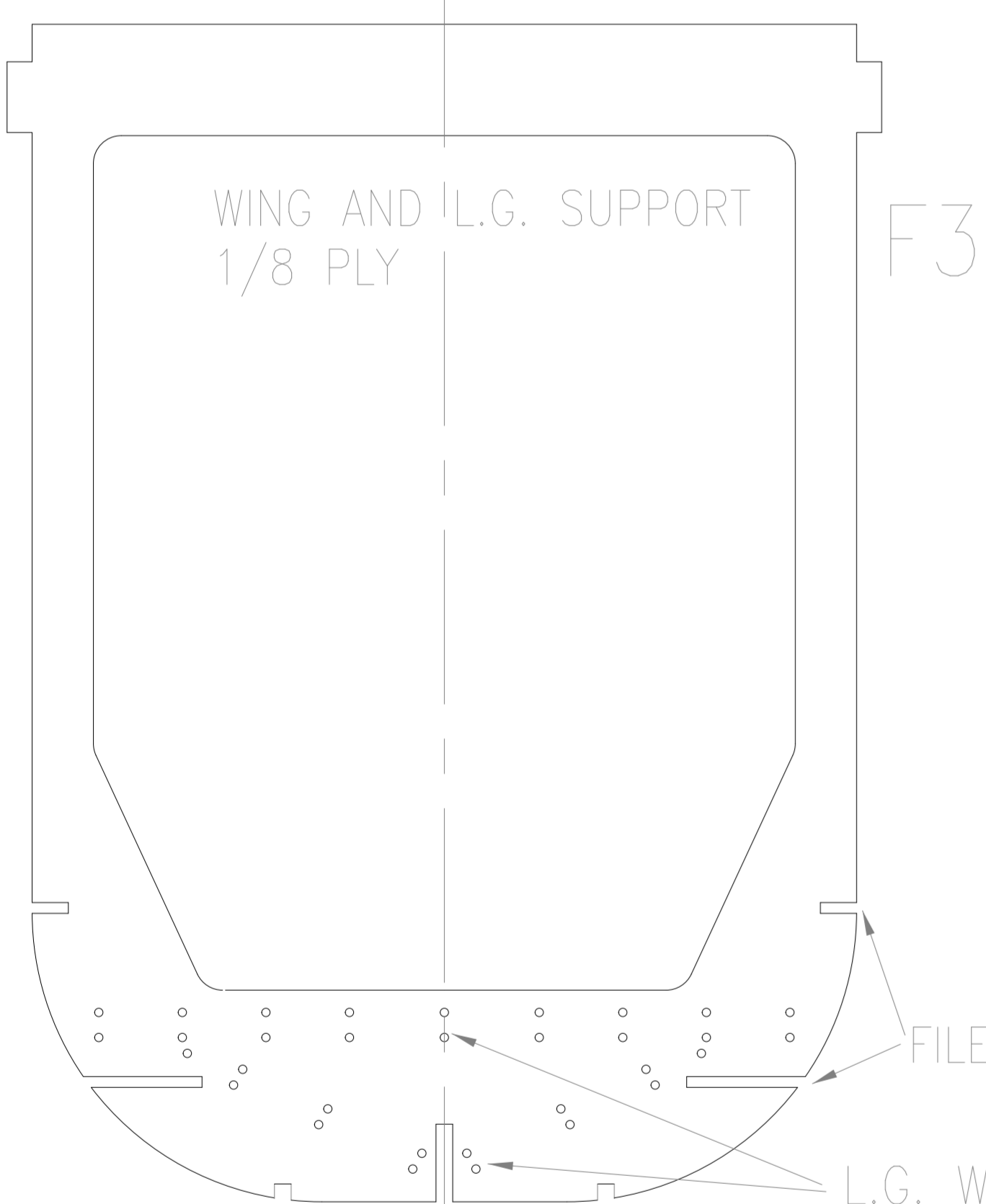
F8  
VERT STAB ANCHOR 1/16 ply



Fuse Rib 3/16 med balsa (2)

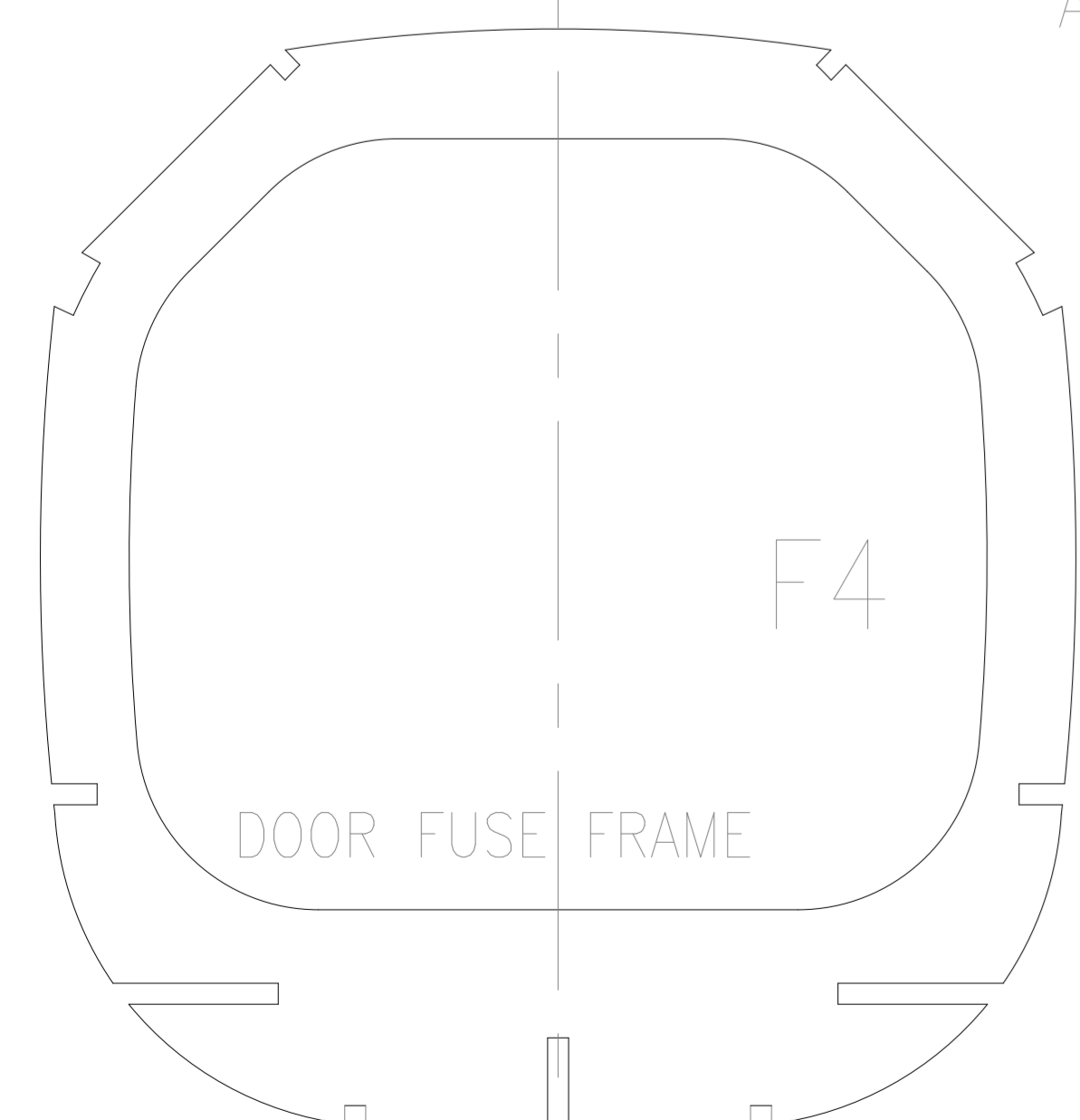


Wing Interface 1/16 ply (2)



WING AND L.G. SUPPORT  
1/8 PLY  
F3

L.G. WIRES WILL BE ATTACHED HERE  
BY LACING THIN METAL WIRE THRU HOLES  
AND EPOXYING SECURELY AFTER BINDING ALL PIECES TOGETHER

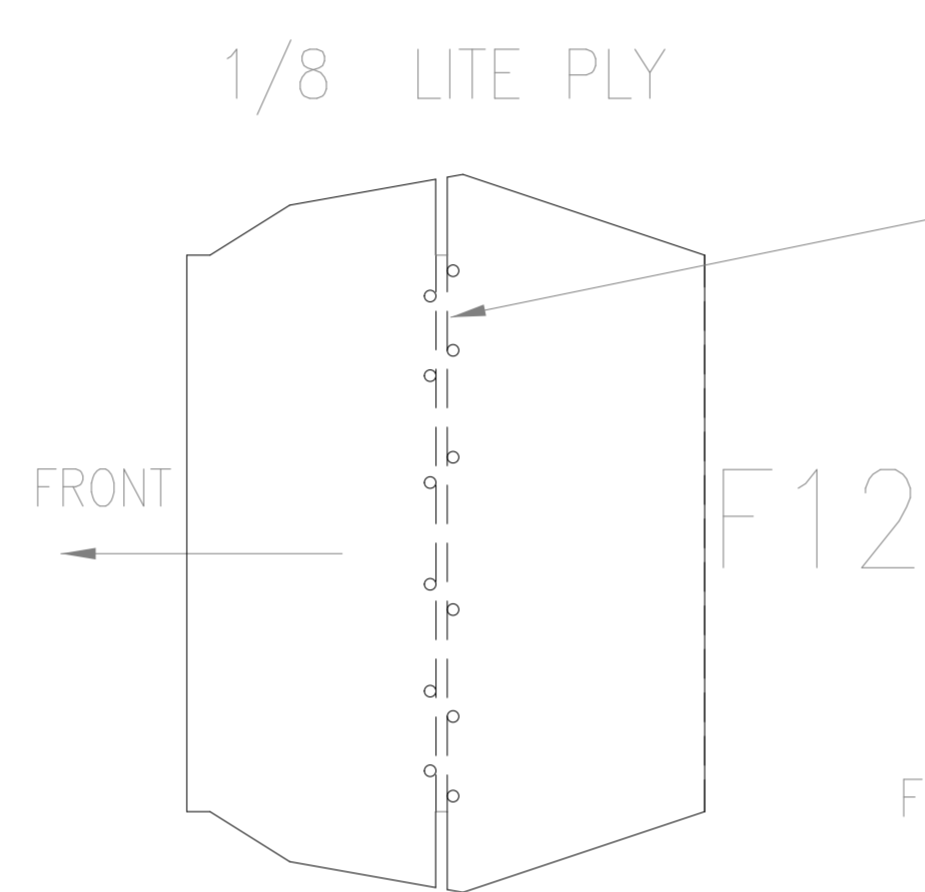


1/16 PLY LAMINATED TO 3/16 MEDIUM Balsa



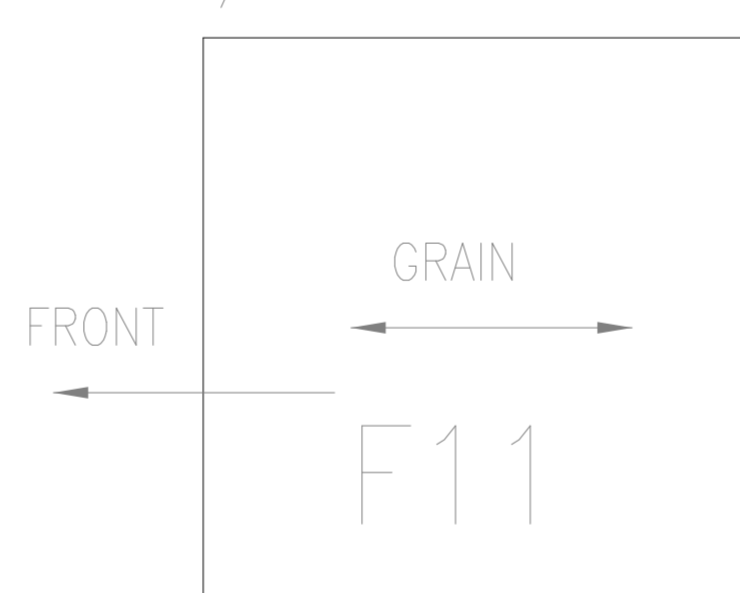
F13

L.G. FRONT STRUT WILL BE ATTACHED HERE  
BY LACING THIN METAL WIRE THRU HOLES  
AND EPOXYING SECURELY AFTER BINDING  
WITH REAR STRUT AND M.L.G. WIRE

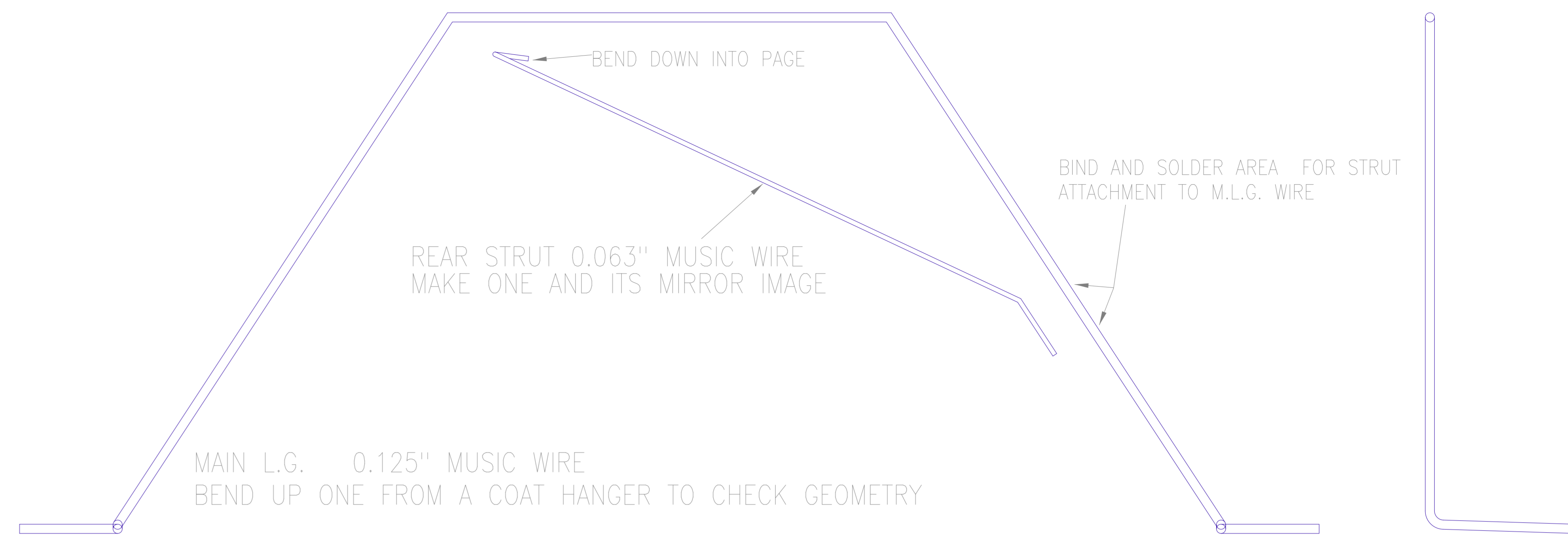


F12

TOP FIREWALL SPACER  
1/8 HARD Balsa



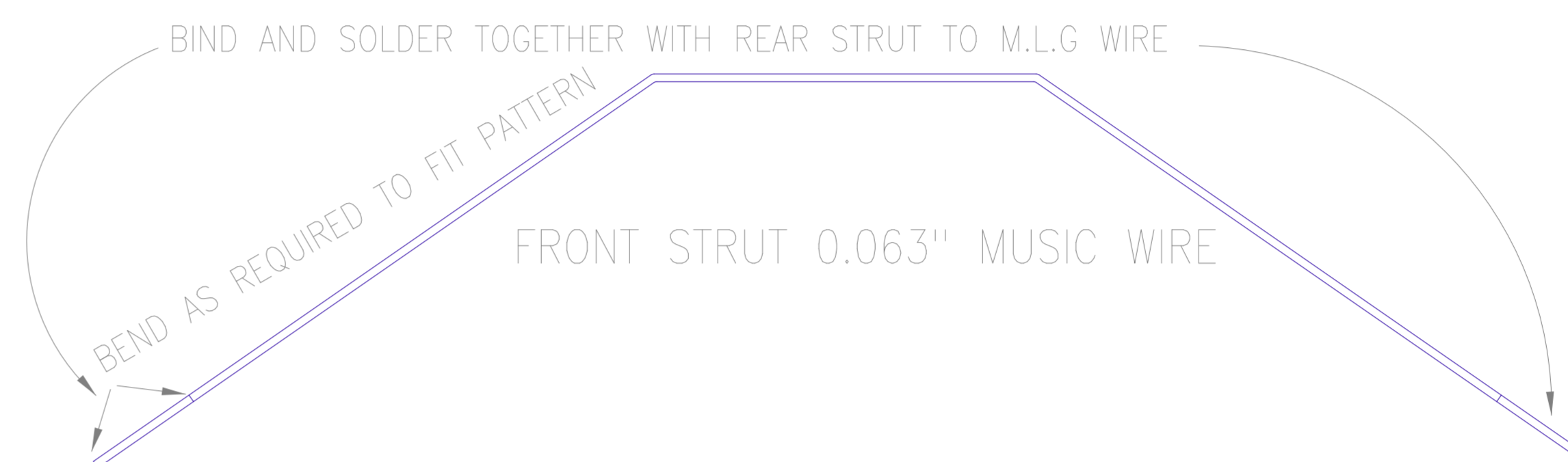
F11



REAR STRUT 0.063" MUSIC WIRE  
MAKE ONE AND ITS MIRROR IMAGE

MAIN L.G. 0.125" MUSIC WIRE  
BEND UP ONE FROM A COAT HANGER TO CHECK GEOMETRY

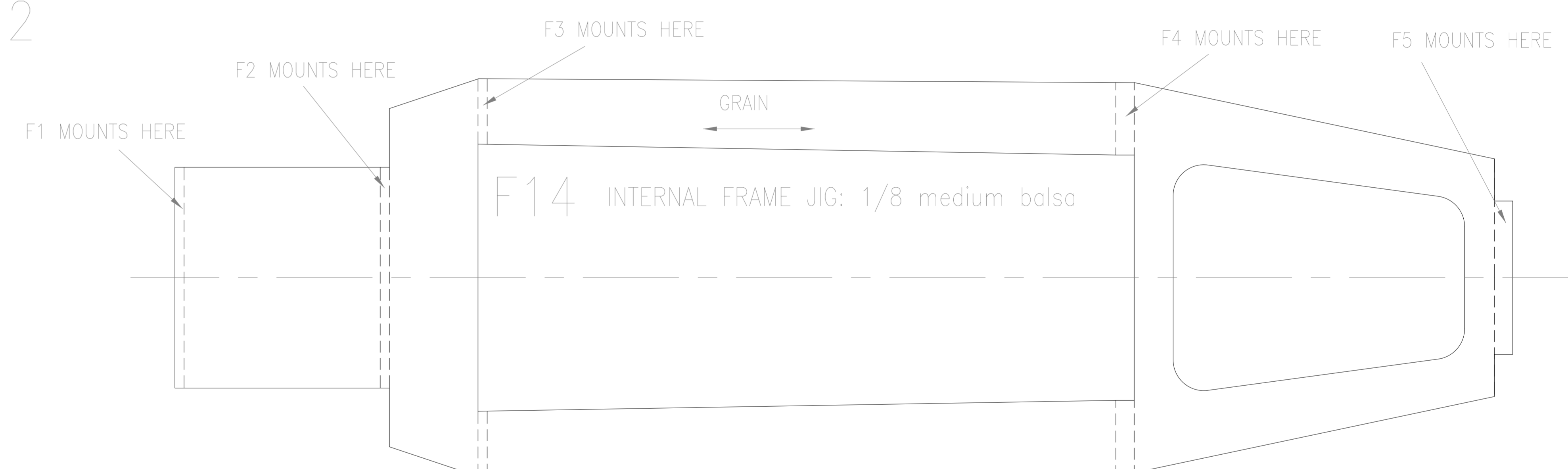
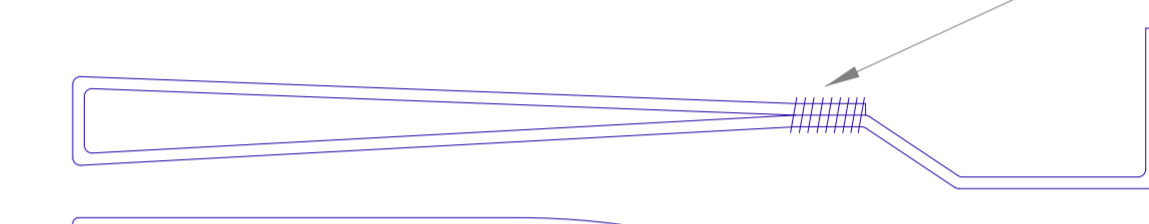
BIND AND SOLDER AREA FOR STRUT  
ATTACHMENT TO M.L.G. WIRE



BIND AND SOLDER TOGETHER WITH REAR STRUT TO M.L.G. WIRE

FRONT STRUT 0.063" MUSIC WIRE

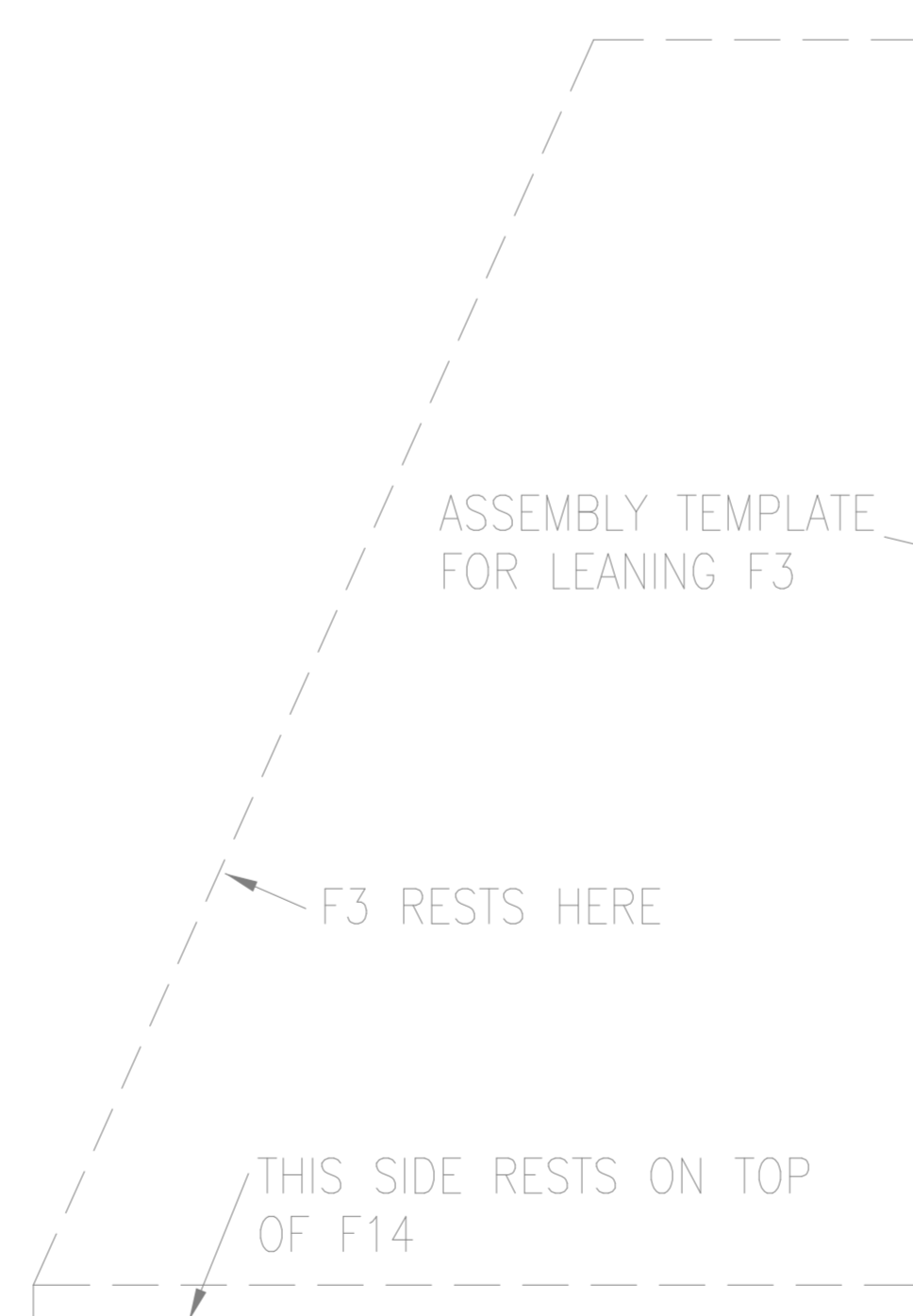
TAIL WHEEL GEAR 0.063" MUSIC WIRE  
BIND WITH COPPER WIRE AND SOLDER



F14 INTERNAL FRAME JIG: 1/8 medium balsa

NOTE ON ASSEMBLY: BEGIN BY MAKING A SUBASSEMBLY OF FORMERS F1 THRU F5  
SEATED ON THE INTERNAL FRAME F14. NOTE THE SIDE VIEW INDICATING  
THE LEAN ANGLE OF FORMER F3. MAKE AN ANGLE TEMPLATE FROM SCRAP WOOD  
TO SPAN F14 WITH A BASE AND A TRIANGLE GLUED TO IT WITH THE CORRECT  
ANGLE AS SHOWN IN SHEET 2 SIDE VIEW, OR USE THE TEMPLATE SHOWN HERE

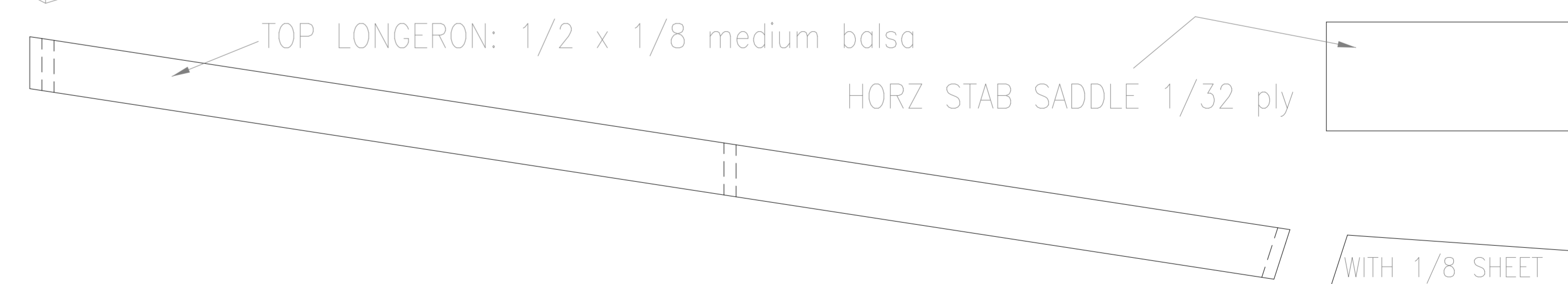
ADD KEEL, BUILD UP LONGERONS, THEN WIRE TOGETHER  
THE LANDING GEAR WIRES WHEN STRUCTURE IS STIFF ENOUGH



ASSEMBLY TEMPLATE  
FOR LEANING F3

F3 RESTS HERE

THIS SIDE RESTS ON TOP  
OF F14



TOP LONGERON: 1/2 x 1/8 medium balsa

HORZ STAB SADDLE 1/32 ply

WITH 1/8 SHEET  
GLUE THIS PORTION  
ON TO THE KEEL

KEEL: 1/2 x 1/8 medium balsa

PZL-104 WILGA 80

55.25" Electric Radio Controlled Scale Aircraft

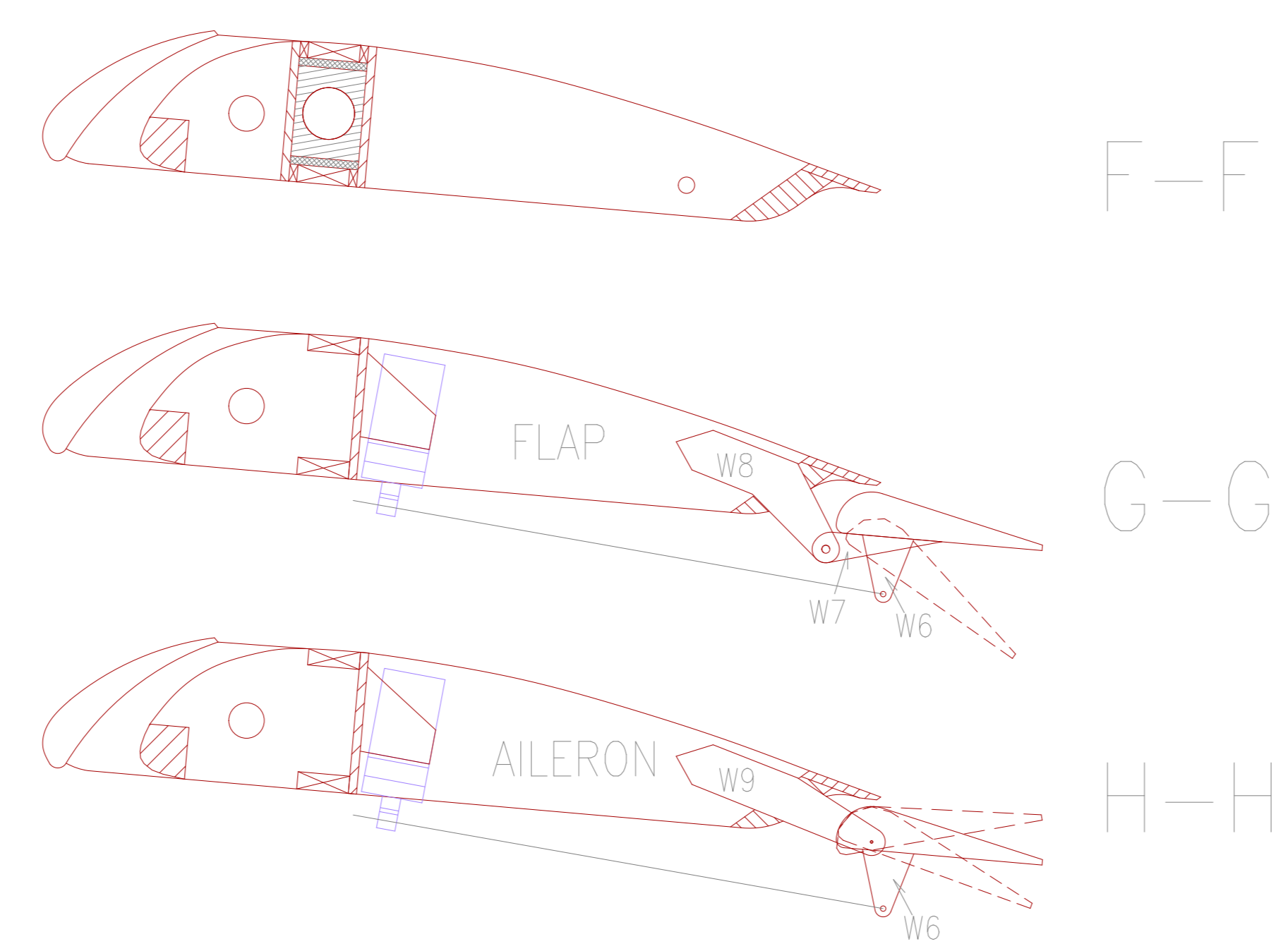
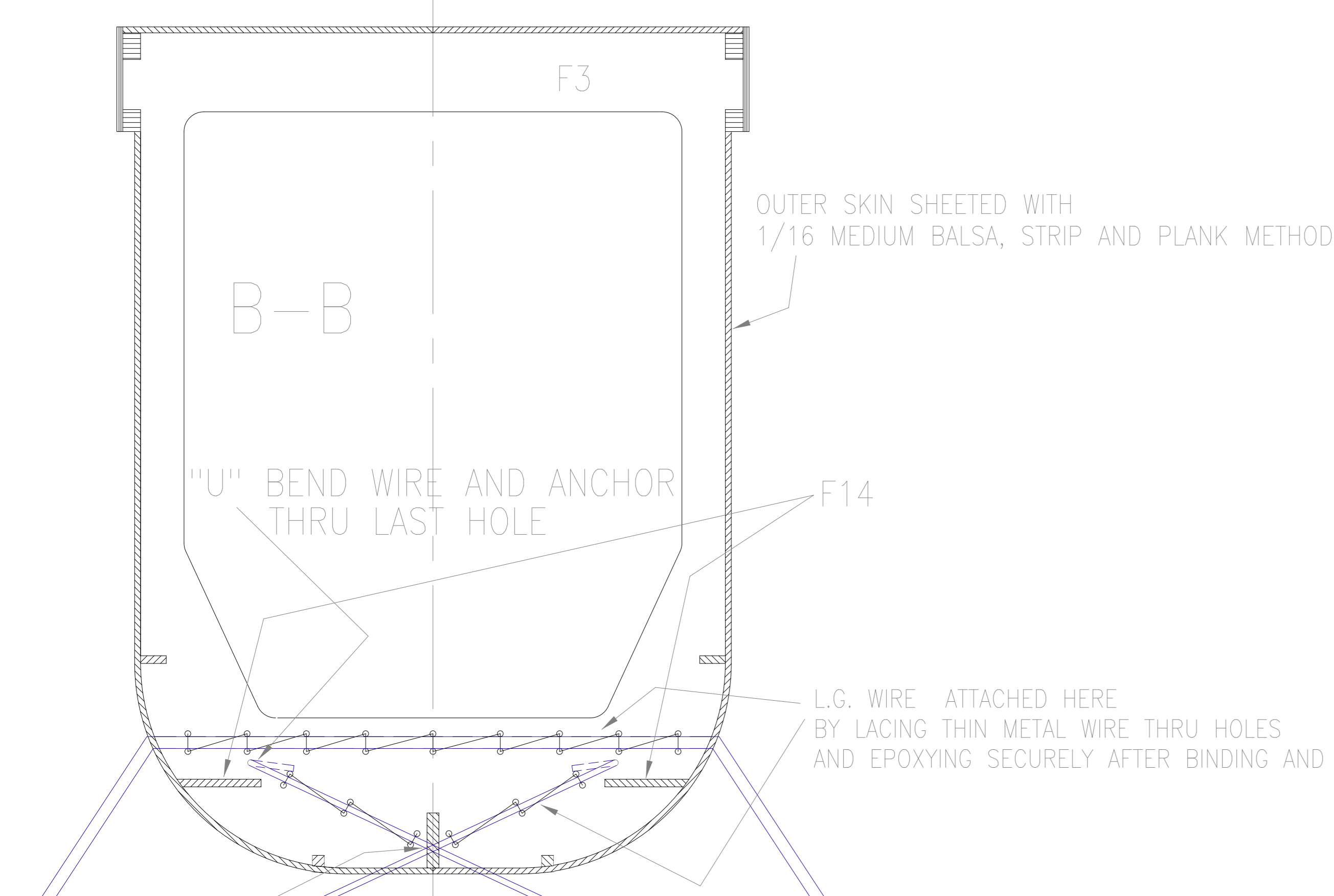
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FUSELAGE AND LANDING GEAR COMPONENTS

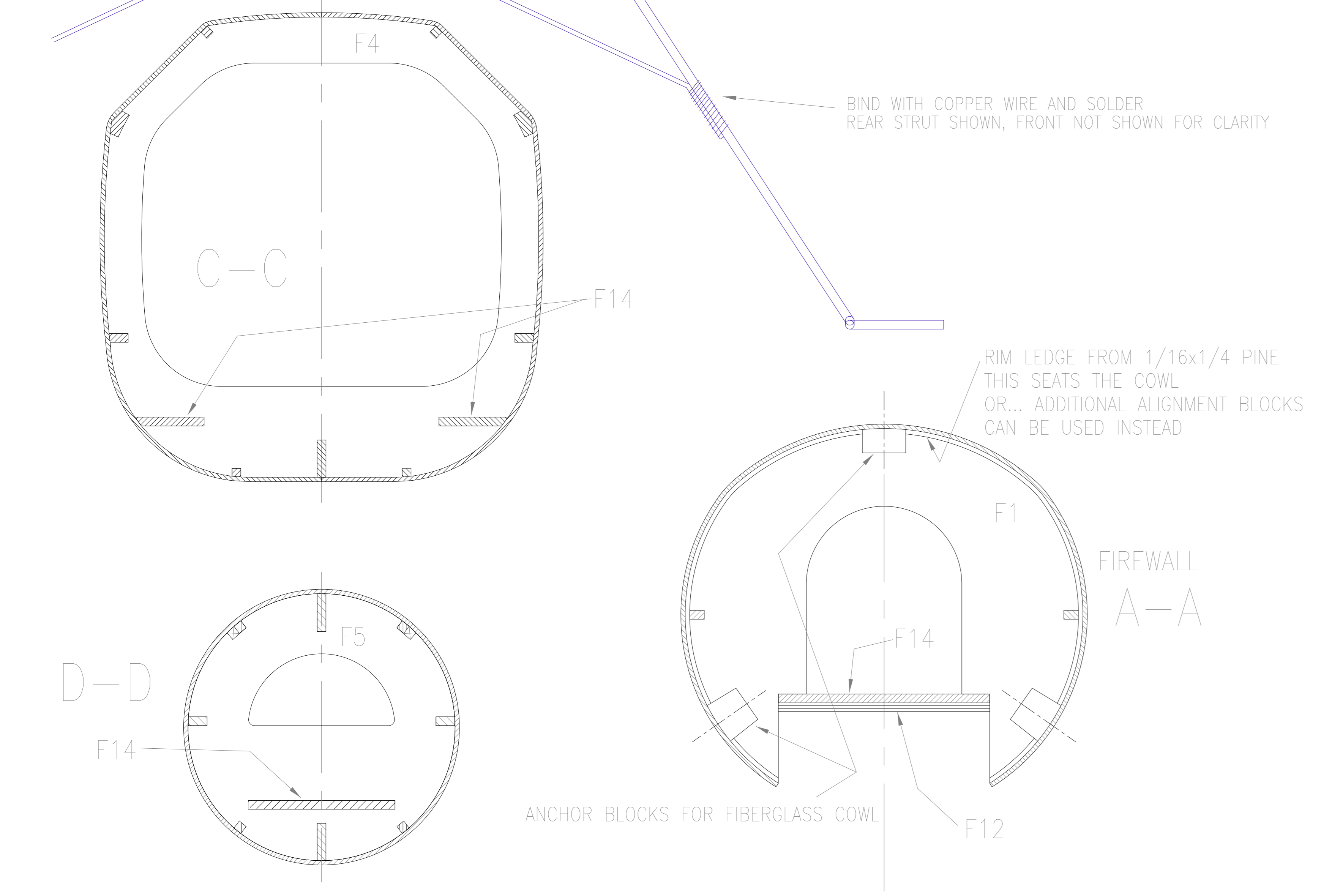
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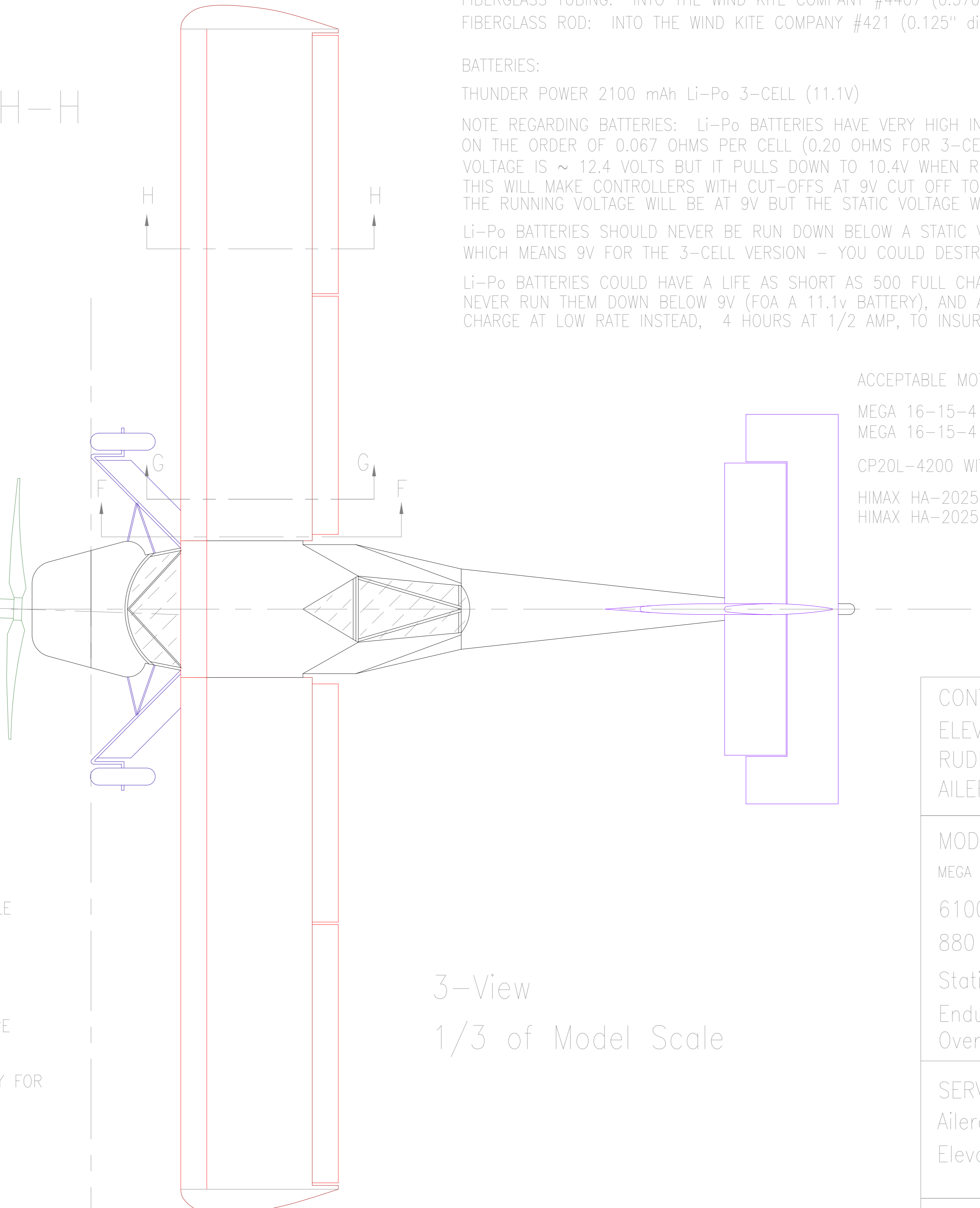
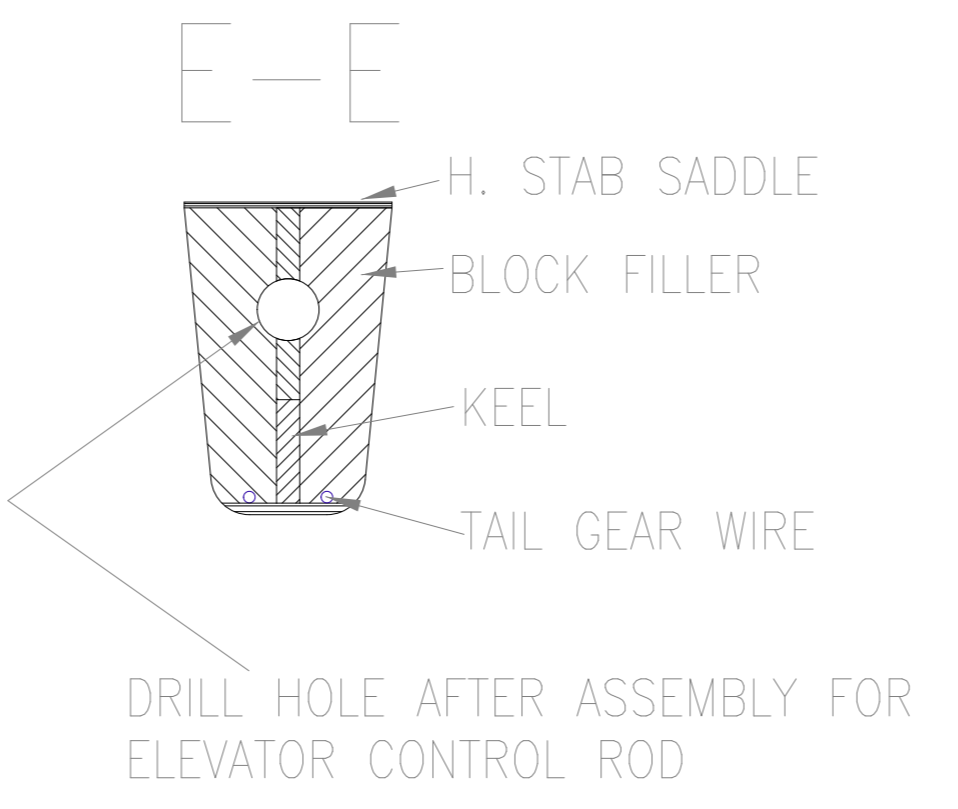
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CROSS SECTIONS FULL MODEL SCALE



2.0° RIGHT THRUST



SUPPLIER LIST

BRUSHLESS MOTORS:  
 MEGA 16-15-4 Kv = 2200 RPM/VOLT, R = 0.045 OHMS, I<sub>o</sub> = 1.1 AMP  
 CHILIPEPPER CP20L-4200 Kv = 4200 RPM/VOLT, R = 0.04 OHMS, I<sub>o</sub> = 2.4 AMP  
 HIMAX HA-2025-5300 COMBO WITH 6.6:1 GEAR Kv = 5300 RPM/VOLT, R = 0.44 OHMS, I<sub>o</sub> = 1.4 AMPS

GEAR BOXES:  
 MODELAIR-TECH H-100 MKII BELT DRIVE 3.6:1  
 MODEL ELECTRONICS CORPORATION SUPERBOX 4:1 www.modelelectronicscorp.com  
 CHILIPEPPER 6:1 www.flyinghobbies.com  
 HIMAX 6.6:1 www.maxxprod.com

FIBERGLASS TUBING: INTO THE WIND KITE COMPANY #4407 (0.370" diameter) www.intothewind.com  
 FIBERGLASS ROD: INTO THE WIND KITE COMPANY #421 (0.125" diameter) www.intothewind.com

BATTERIES:  
 THUNDER POWER 2100 mAh Li-Po 3-CELL (11.1V)

NOTE REGARDING BATTERIES: Li-Po BATTERIES HAVE VERY HIGH INTERNAL RESISTANCE ON THE ORDER OF 0.067 OHMS PER CELL (0.20 OHMS FOR 3-CELL). THE ACTUAL CHARGED VOLTAGE IS ~ 12.4 VOLTS BUT IT PULLS DOWN TO 10.4V WHEN RUNNING 10 AMPS. THIS WILL MAKE CONTROLLERS WITH CUT-OFFS AT 9V CUT OFF TOO SOON. THE RUNNING VOLTAGE WILL BE AT 9V BUT THE STATIC VOLTAGE WILL BE AT 10.5-11V

Li-Po BATTERIES SHOULD NEVER BE RUN DOWN BELOW A STATIC VOLTAGE OF 1V PER CELL, WHICH MEANS 9V FOR THE 3-CELL VERSION - YOU COULD DESTROY THE CHEMISTRY.

Li-Po BATTERIES COULD HAVE A LIFE AS SHORT AS 500 FULL CHARGE CYCLES, SO YOU SHOULD NEVER RUN THEM DOWN BELOW 9V (FOA A 11.1v BATTERY), AND AVOID FAST CHARGING. CHARGE AT LOW RATE INSTEAD, 4 HOURS AT 1/2 AMP, TO INSURE LONGEVITY

ACCEPTABLE MOTOR/GEAR/PROP COMBINATIONS

MEGA 16-15-4 WITH 3.6:1 GEAR WITH 12X6E APC PROP  
 MEGA 16-15-4 WITH 4:1 GEAR WITH 12X8E APC PROP  
 CP20L-4200 WITH 6:1 GEAR WITH 12X6E APC PROP (hot!)  
 HIMAX HA-2025-5300 6.6:1 GEAR WITH 12X6E APC PROP (hot!)  
 HIMAX HA-2025-5300 6.6:1 GEAR WITH 112X5.5E APC PROP

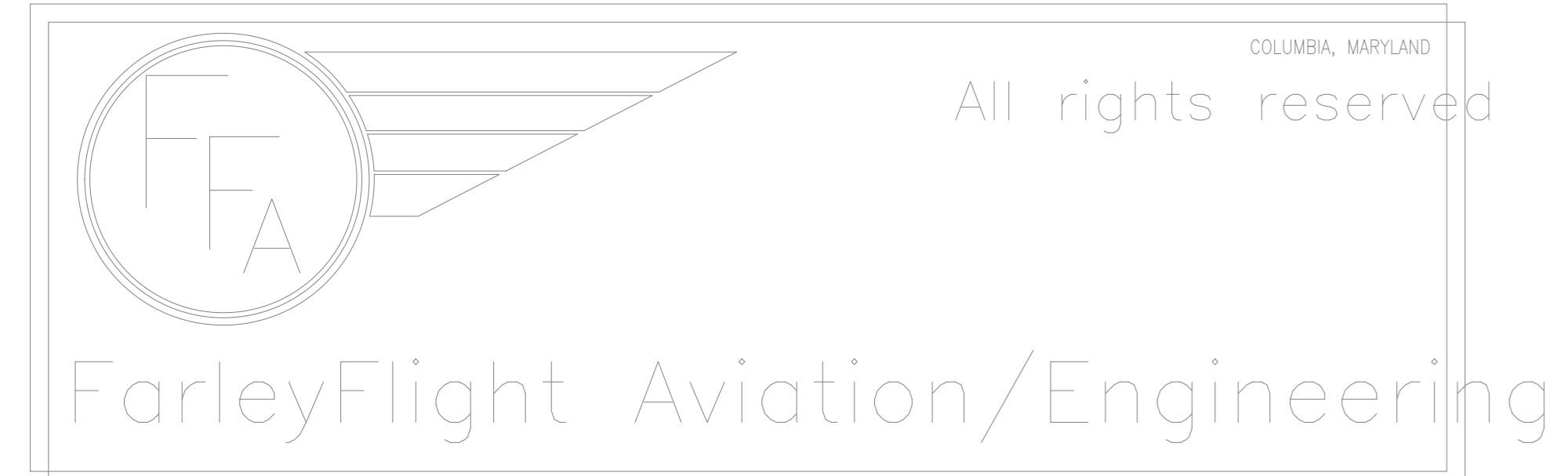
CONTROL TRAVEL:  
 ELEVATOR 0.75", 0.63" DOWN  
 RUDDER 1"  
 AILERON 0.63"

MODEL PERFORMANCE:  
 MEGA 16-15-4, 3.6:1 gear, 12x6E APC prop:  
 6100 rpm @ 9.6 amps  
 880 ft/min rate of climb  
 Static thrust / weight ratio = 0.87  
 Endurance over 10 minutes full power  
 Over 15 minutes @ 1/2 power

SERVO SCHEDULE:  
 Ailerons and Flaps: Hitec HS-55 (4)  
 Elevator and Rudder: Hitec HS-81 (2)

SPECS:  
 Wing Span = 55.25"  
 Length = 39.3"  
 Weight = 39 oz (1.11 kg)  
 Wing Area = 400 sq inch  
 Wing Loading = 14.1 oz / sq ft  
 Power Loading = 49 watts/ lb

Prototype model begun 1995  
 First flight 2004  
 PROTOTYPE MODEL HAD FIXED FLAPS AT 15° DOWN



GENERAL ARRANGEMENT AND CROSS-SECTIONS

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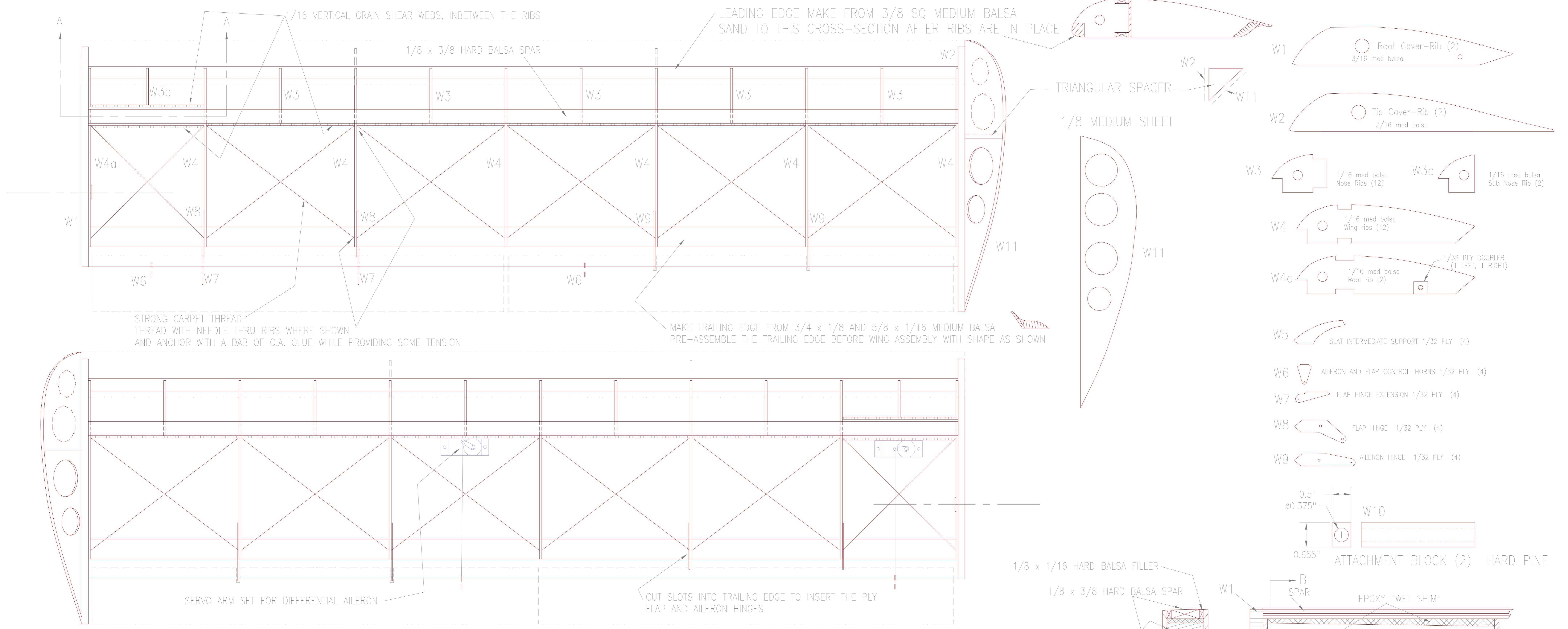
55.25" Electric Radio Controlled Scale Aircraft

Designed and Drawn by Rodger Farley 1/7.9 scale

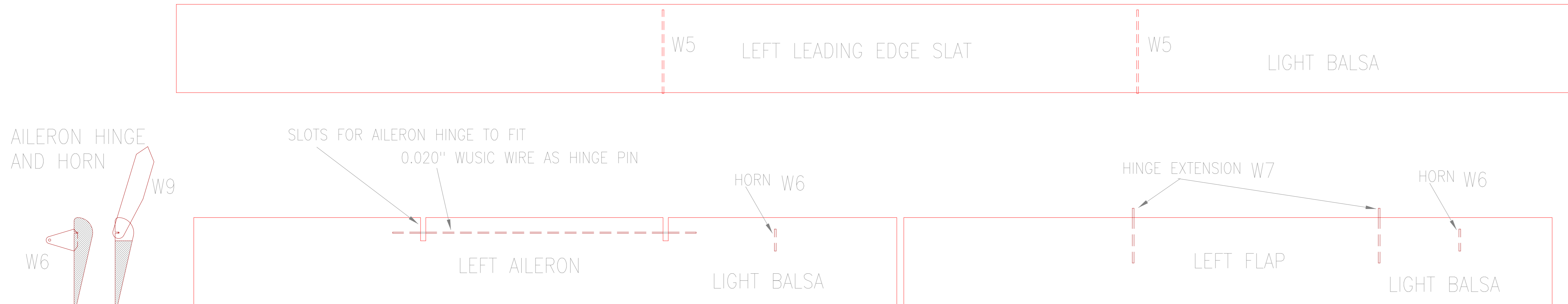
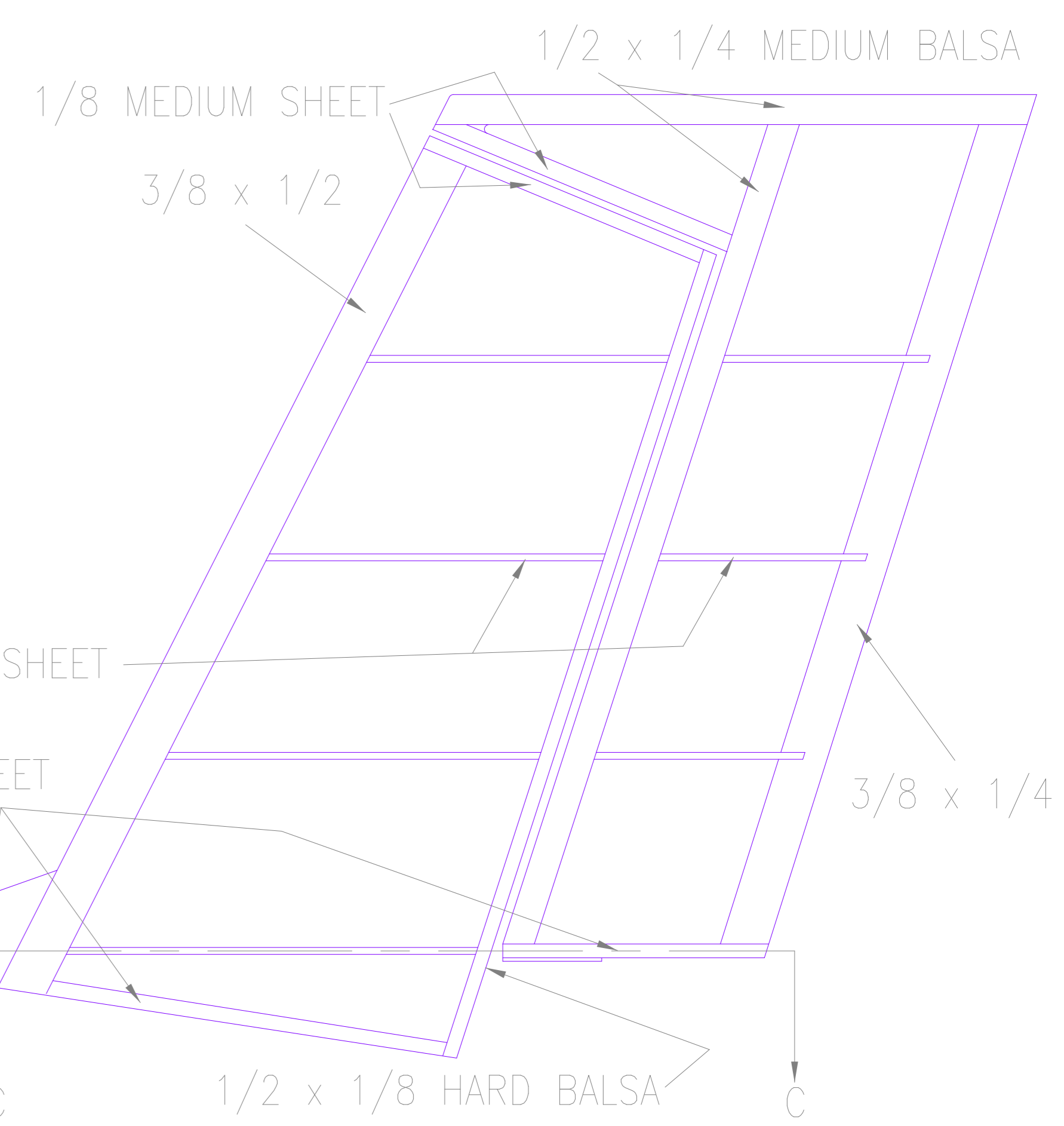
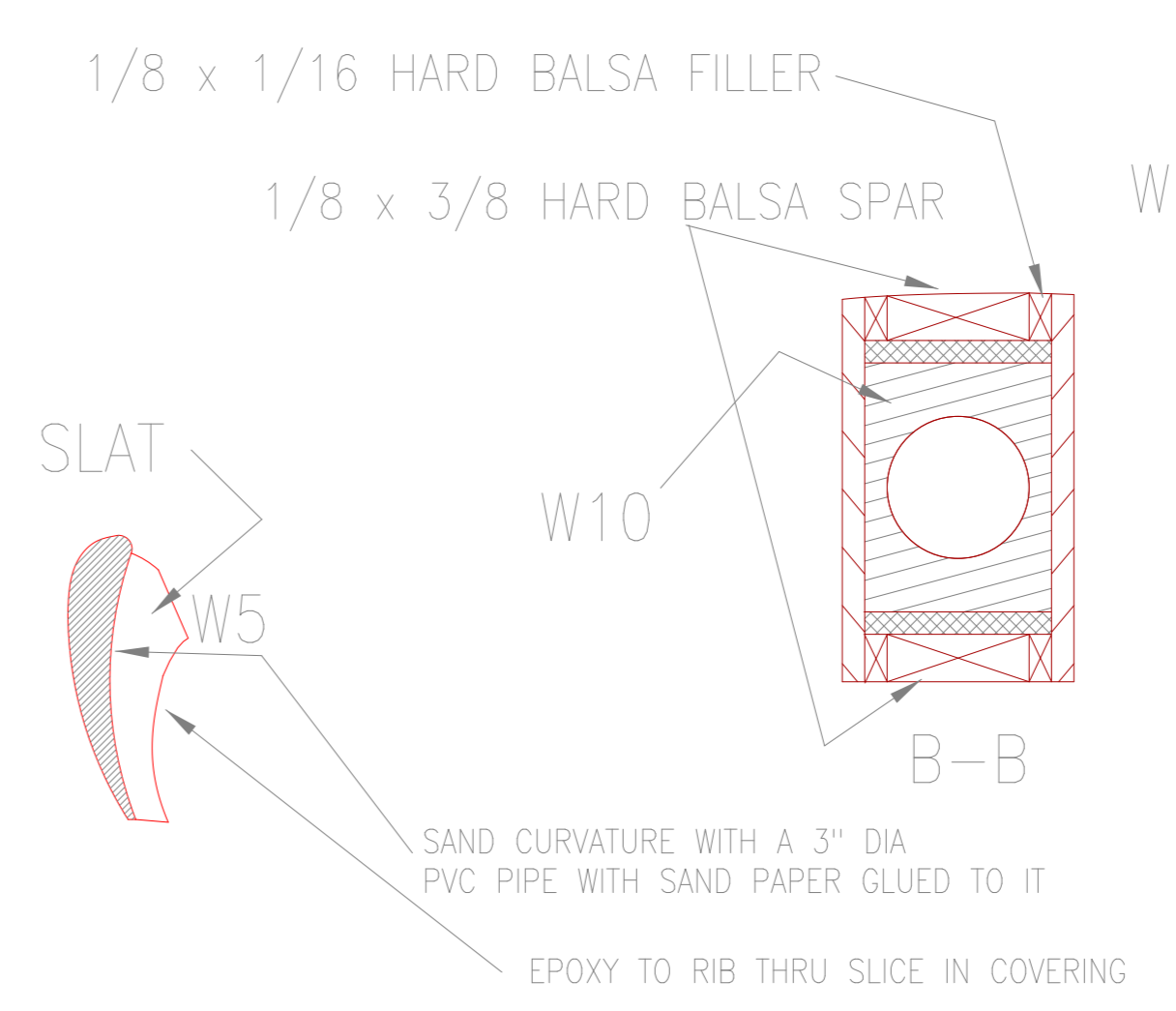
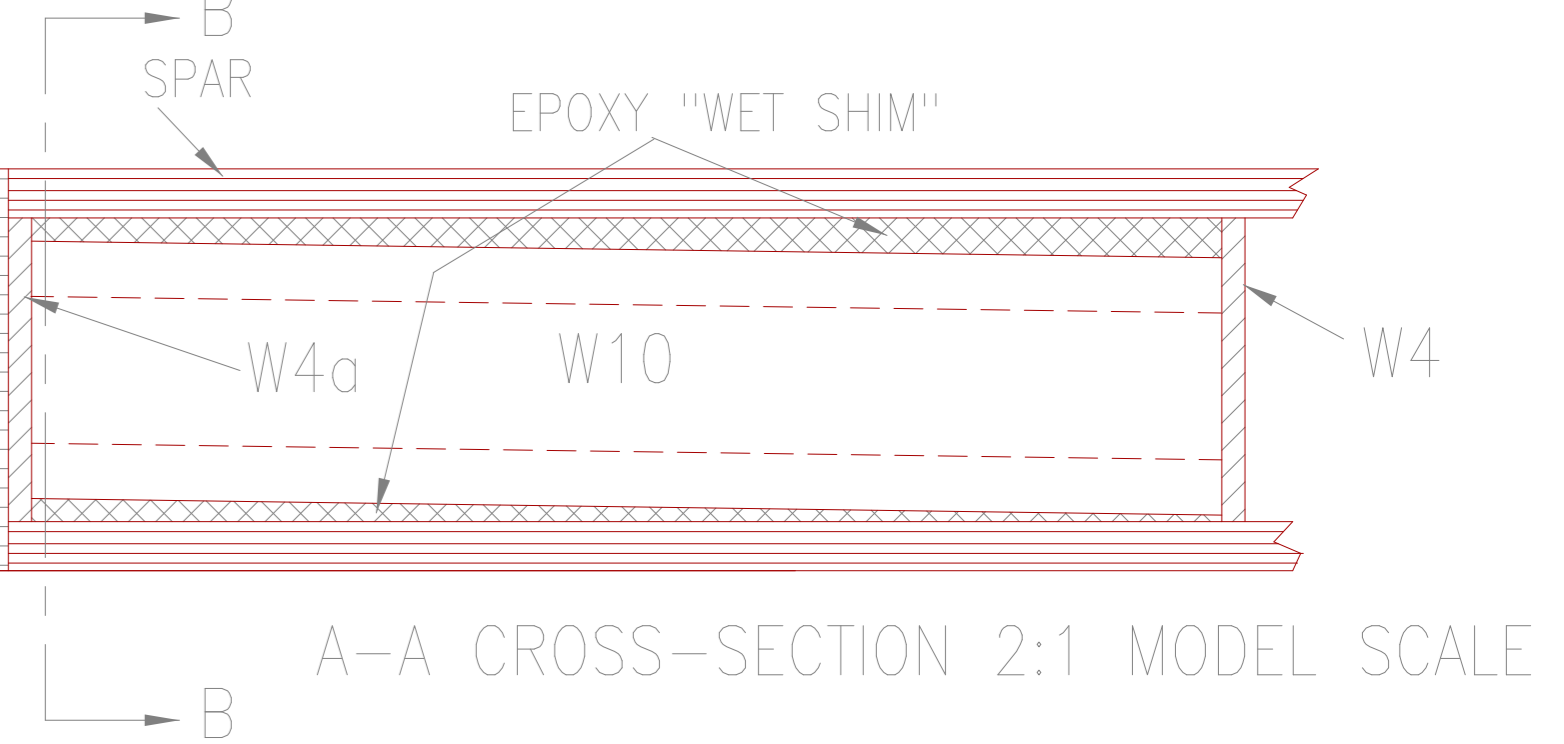
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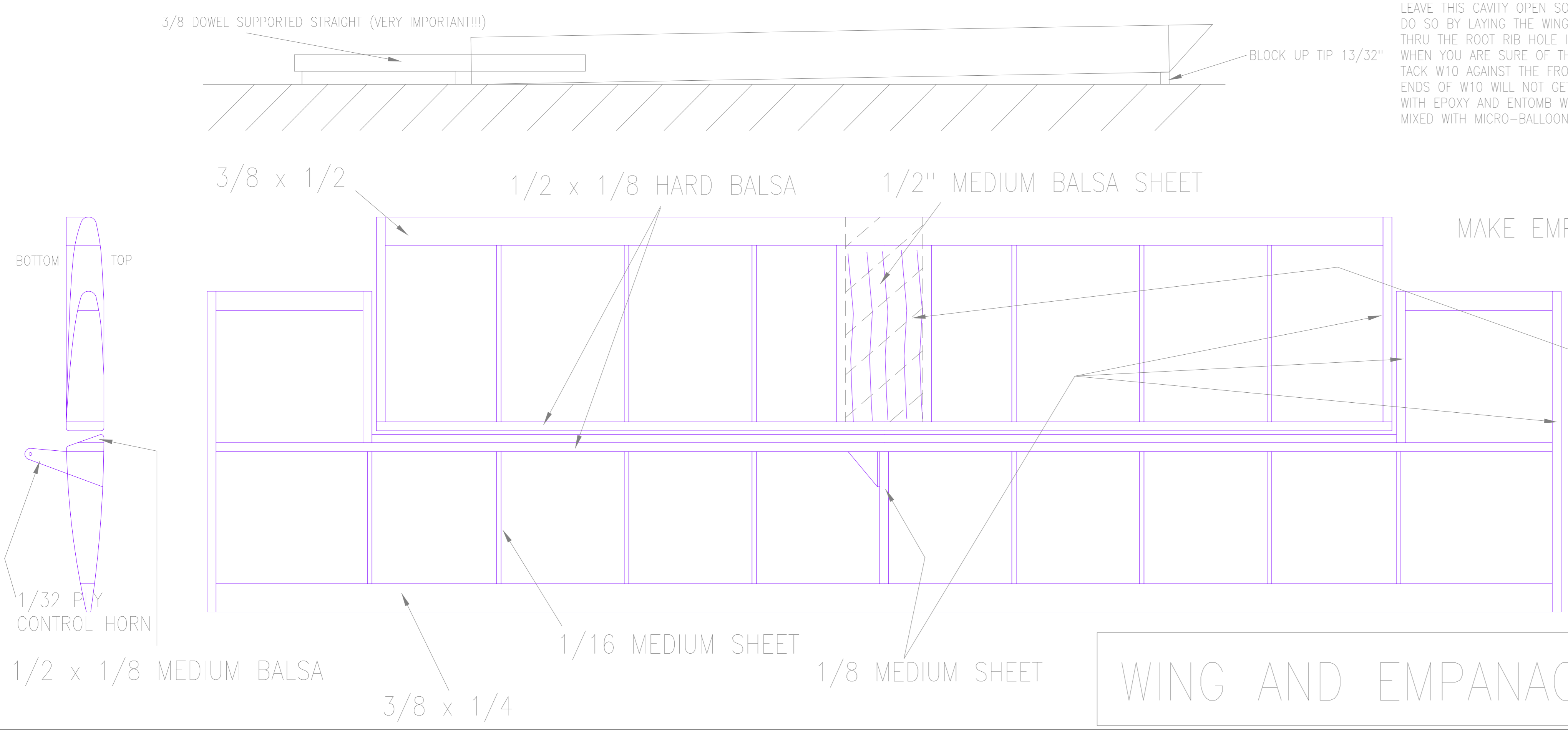
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- W1 Root Cover-Rib (2)  
3/16 med balsa
- W2 Tip Cover-Rib (2)  
3/16 med balsa
- W3 1/16 med balsa Nose Ribs (12)
- W3a 1/16 med balsa Sub Nose Rib (2)
- W4 1/16 med balsa Wing ribs (12)
- W4a 1/16 med balsa Root rib (2)
- W5 SLAT INTERMEDIATE SUPPORT 1/32 PLY (4)
- W6 ALERON AND FLAP CONTROL-HORNS 1/32 PLY (4)
- W7 FLAP HINGE EXTENSION 1/32 PLY (4)
- W8 FLAP HINGE 1/32 PLY (4)
- W9 ALERON HINGE 1/32 PLY (4)
- W10 ATTACHMENT BLOCK (2) HARD PINE



NOTES ON DIHEDRAL: CONSTRUCT WINGS, BUT DO NOT ATTACH W10 OR THE BACK ROOT SHEAR WEB. LEAVE THIS CAVITY OPEN SO AS TO HAVE ACCESS TO ALIGN AND GLUE W10 AT THE PROPER ANGLE. DO SO BY LAYING THE WING ON A VERY FLAT SURFACE AND INSERT A 3/8 DOWEL THRU THE ROOT RIB HOLE INTO A LOOSE W10 BLOCK. BLOCK UP THE TIP 13/32". WHEN YOU ARE SURE OF THE ALIGNMENT (VERIFY A VERY LEVEL DOWEL FIRST) TACK W10 AGAINST THE FRONT SHEAR WEB WITH C.A. GLUE. MAKE SURE THE ENDS OF W10 WILL NOT GET LEAKS OF GLUE INTO THEM, THEN FILL-UP THE GAPS WITH EPOXY AND EXTEND WITH THE BACK SHEAR WEB. THE EPOXY SHOULD BE MIXED WITH MICRO-BALLOON THICKNER TO PREVENT RUNS INTO THE 3/8 HOLE.



WING AND EMPANAGE ASSEMBLY

PZL-104 WILGA 80

55.25" Electric Radio Controlled Scale Aircraft

Designed and Drawn by Rodger Farley

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