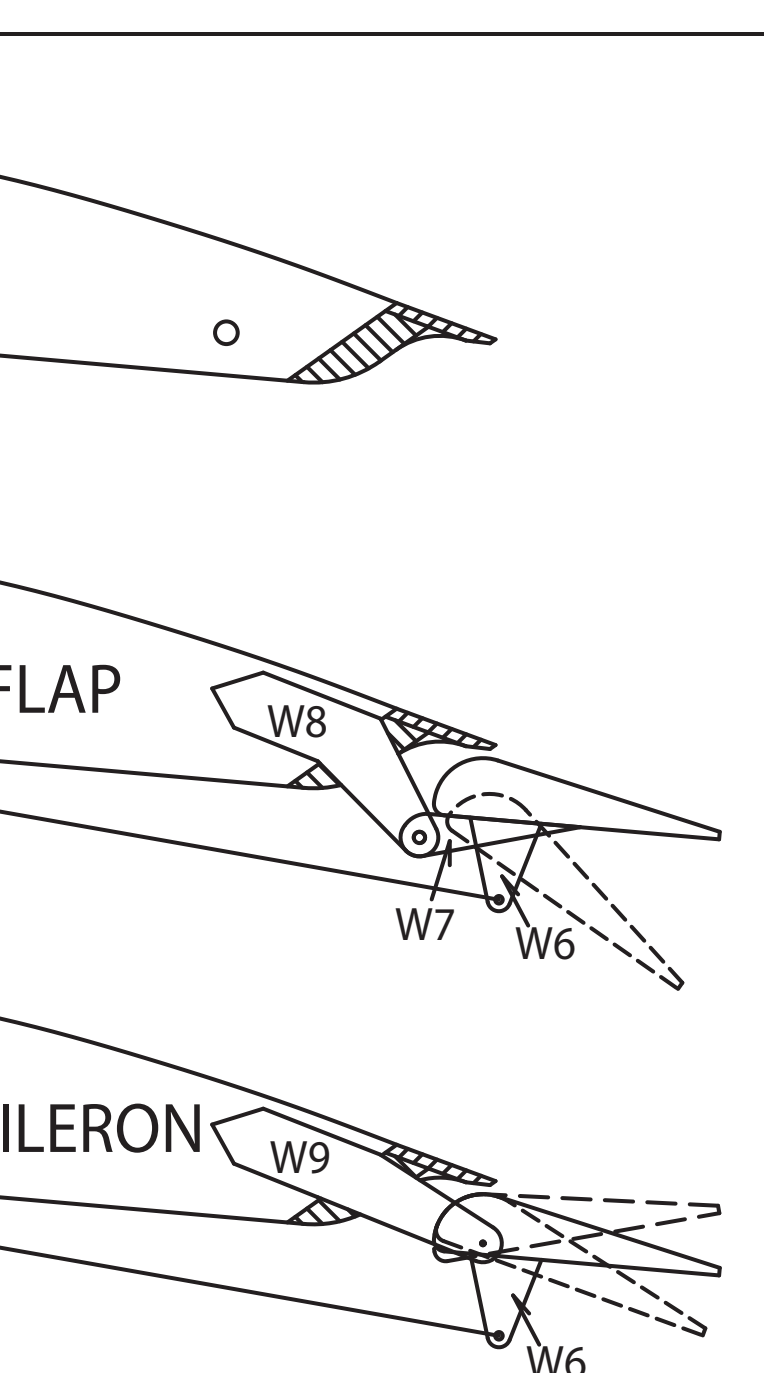
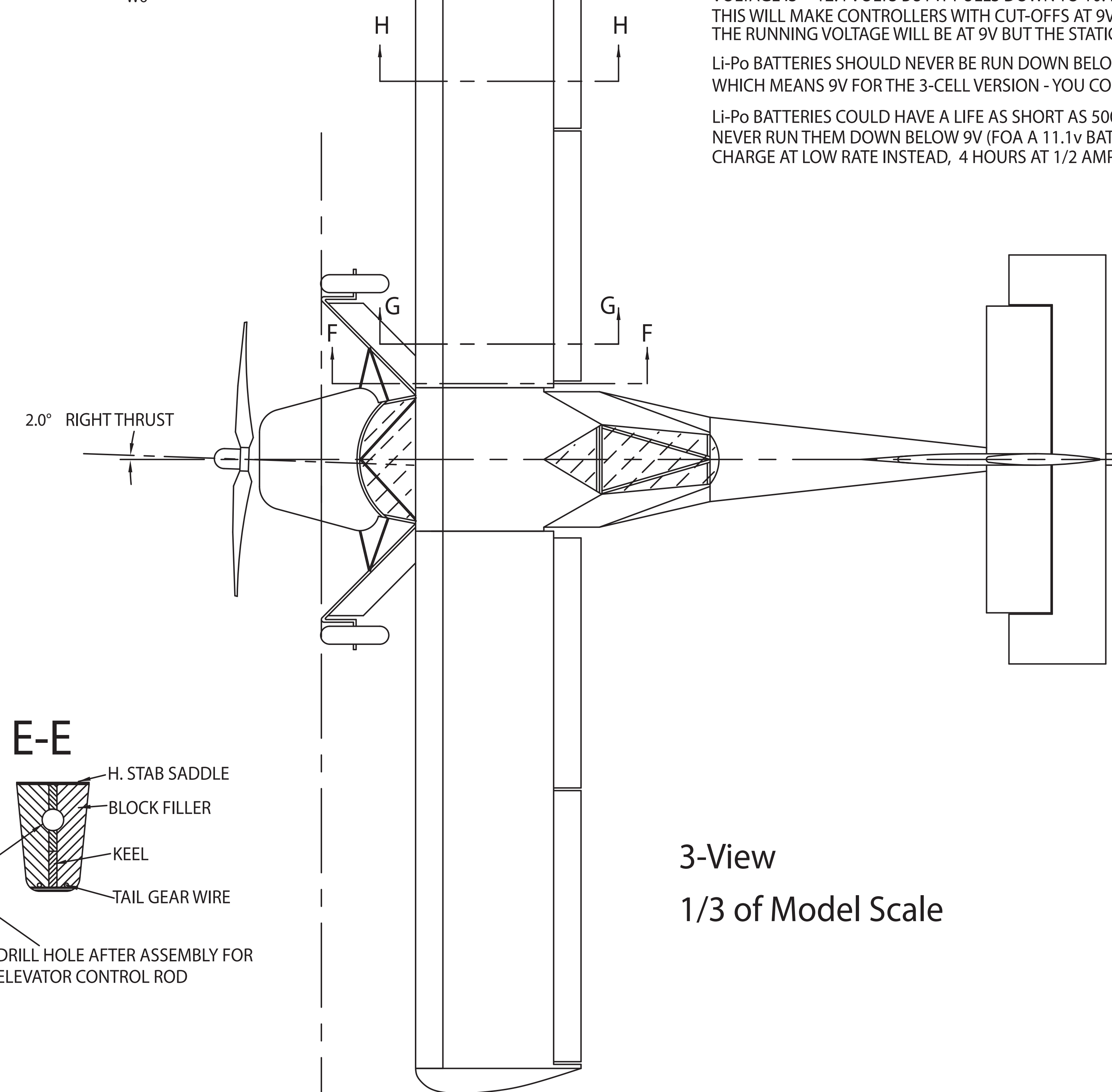


CROSS SECTIONS FULL MODEL SCALE



F-F
G-G
H-H



3-View
1/3 of Model Scale

SUPPLIER LIST

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

GEAR BOXES:
 MODELAIR-TECH H-100 MKII BELT DRIVE 3.6:1
 MODEL ELECTRONICS CORPORATION SUPERBOX 4:1 www.modelelectroniccorp.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

PZL-104 WILGA 80
 55.25" Electric Radio Controlled Scale Aircraft
 Designed and Drawn by Rodger Farley 1/7.9 scale
 FarleyFlight Aviation/Engineering
 Rev A 5-2005
 COLUMBIA, MARYLAND

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

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 FarleyFlight Aviation/Engineering

GENERAL ARRANGEMENT AND CROSS-SECTIONS

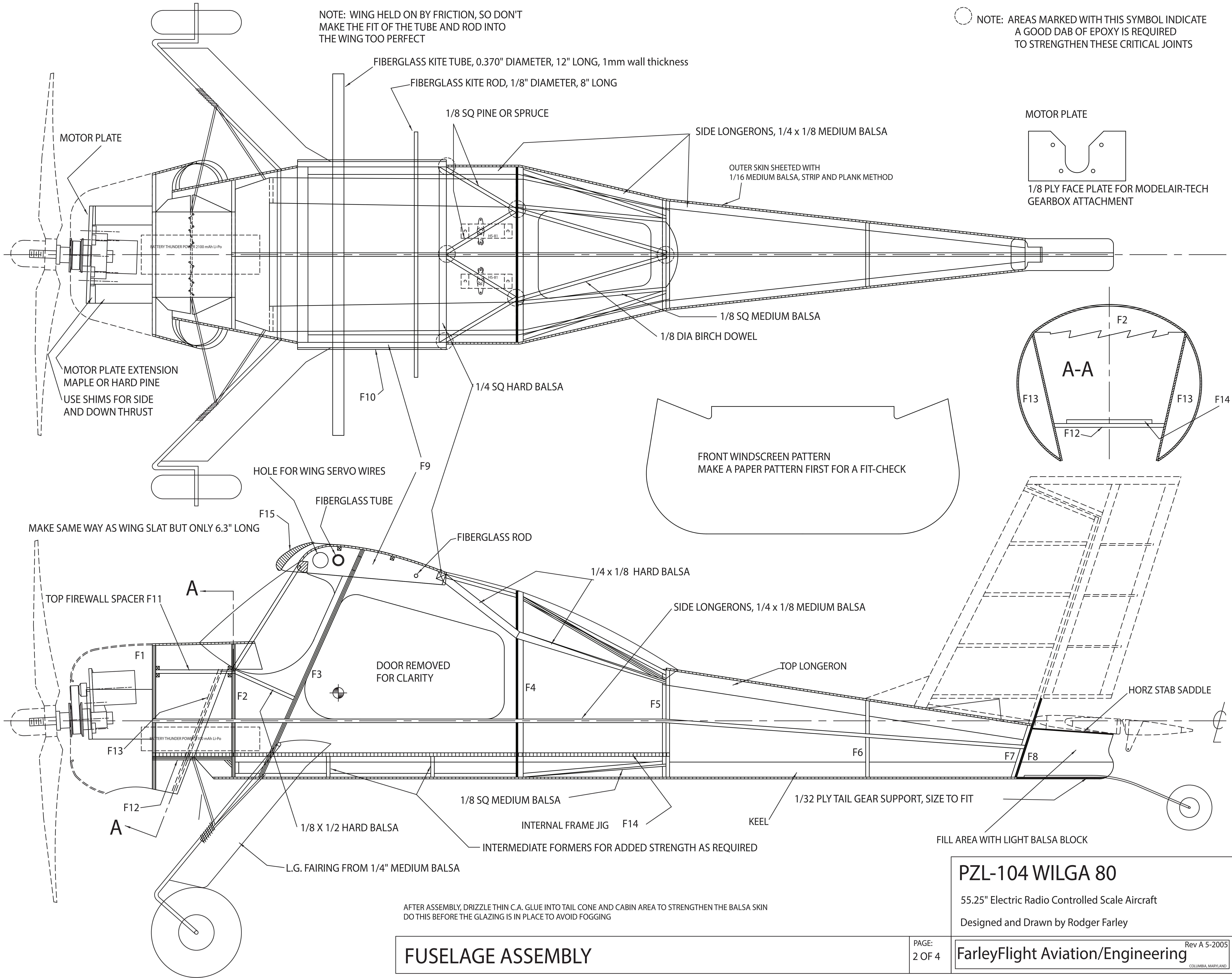
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PAGE:
1 OF 4

Rev A 5-2005
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NOTE: WING HELD ON BY FRICTION, SO DON'T MAKE THE FIT OF THE TUBE AND ROD INTO THE WING TOO PERFECT

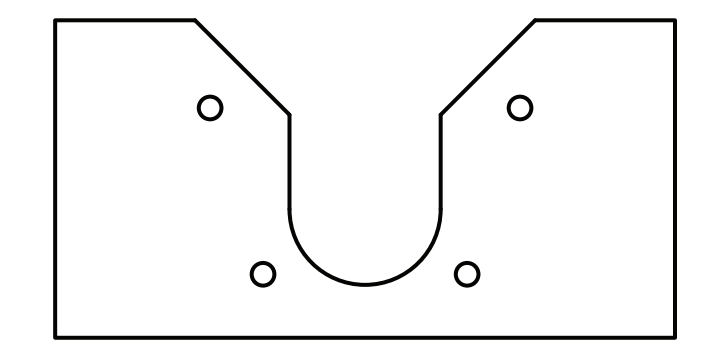
NOTE: AREAS MARKED WITH THIS SYMBOL INDICATE A GOOD DAB OF EPOXY IS REQUIRED TO STRENGTHEN THESE CRITICAL JOINTS



FIBERGLASS KITE TUBE, 0.370" DIAMETER, 12" LONG, 1mm wall thickness
 FIBERGLASS KITE ROD, 1/8" DIAMETER, 8" LONG

MOTOR PLATE

MOTOR PLATE



1/8 PLY FACE PLATE FOR MODELAIR-TECH GEARBOX ATTACHMENT

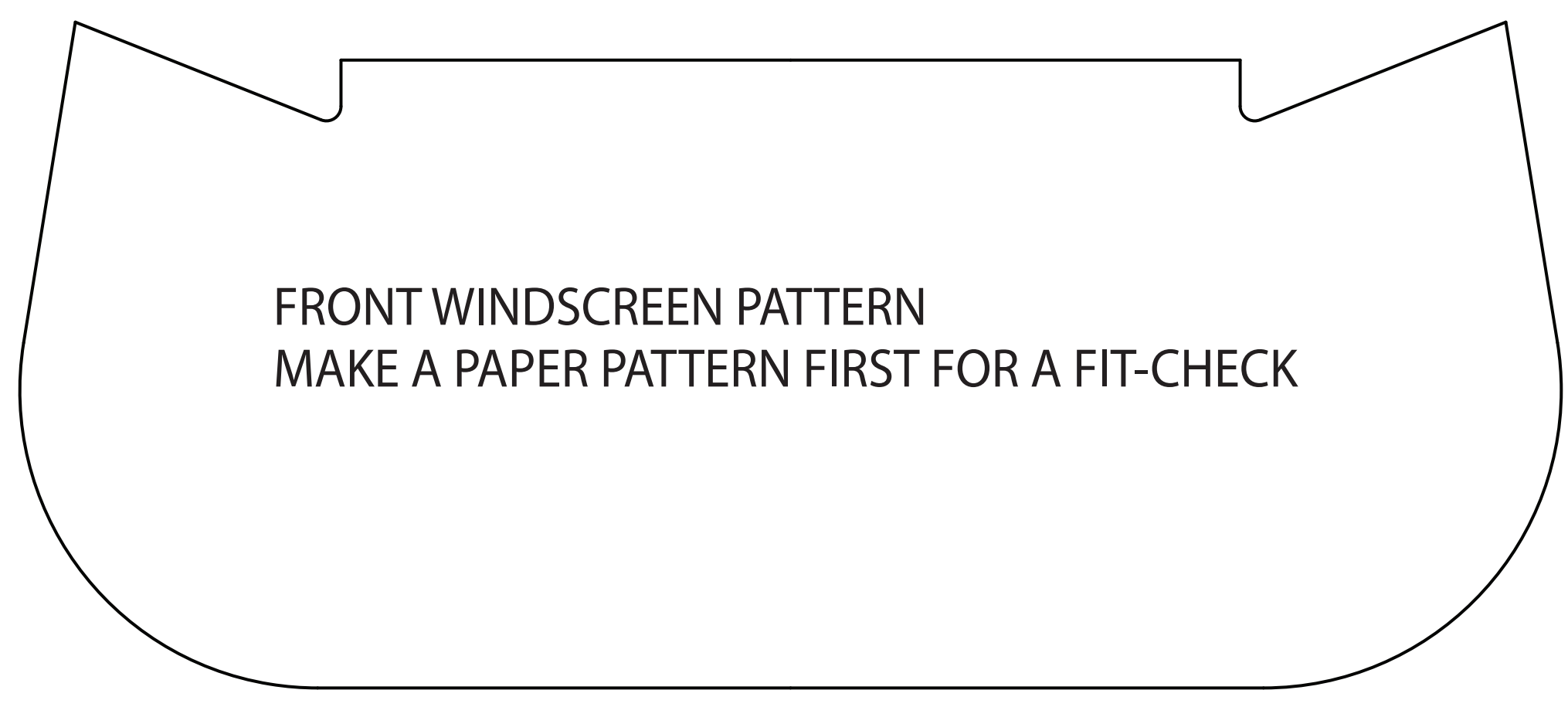
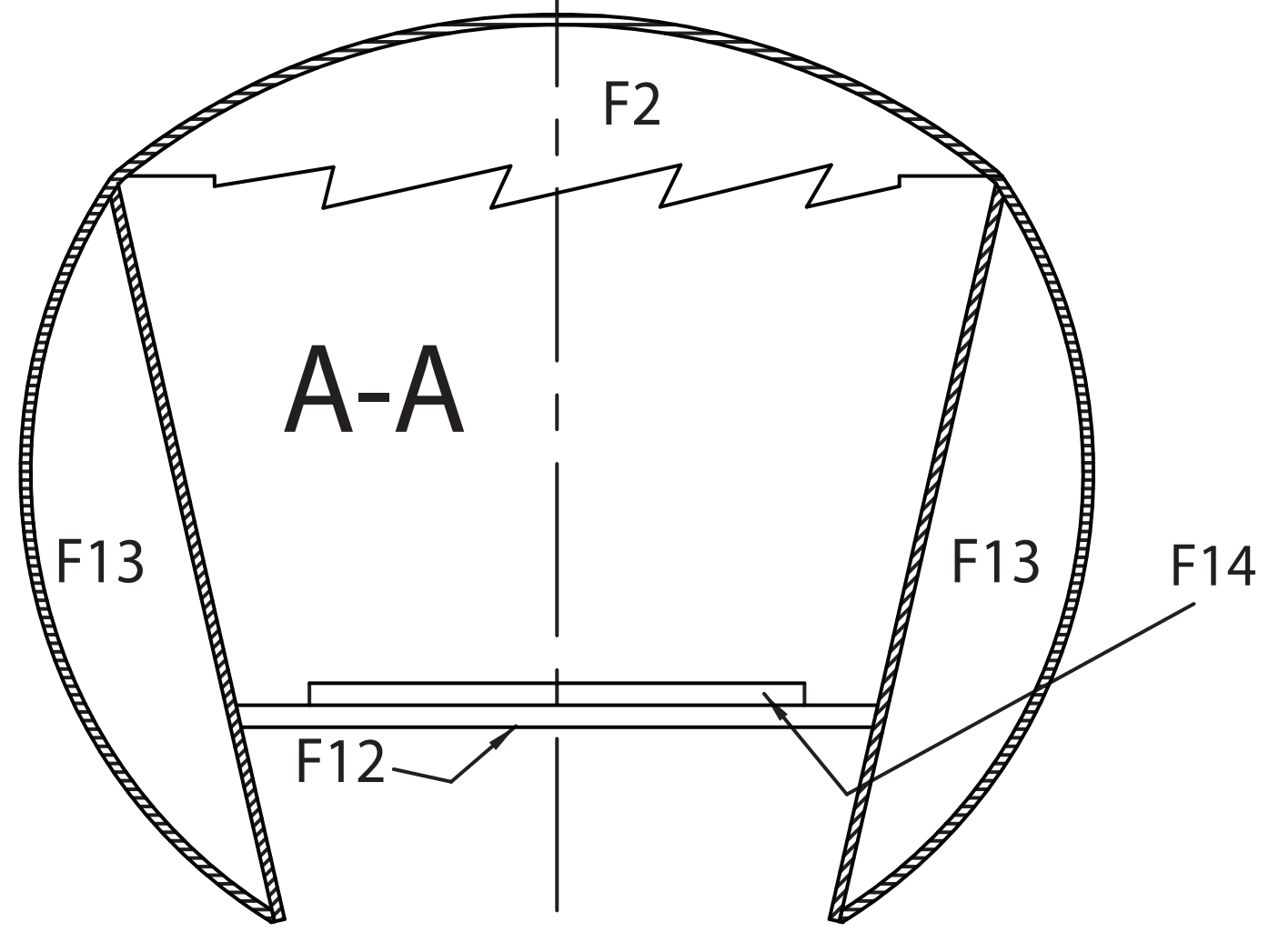
SIDE LONGERONS, 1/4 x 1/8 MEDIUM BALSA

OUTER SKIN SHEETED WITH 1/16 MEDIUM BALSA, STRIP AND PLANK METHOD

1/8 SQ MEDIUM BALSA

1/8 DIA BIRCH DOWEL

MOTOR PLATE EXTENSION
 MAPLE OR HARD PINE
 USE SHIMS FOR SIDE AND DOWN THRUST



FRONT WINDSCREEN PATTERN
 MAKE A PAPER PATTERN FIRST FOR A FIT-CHECK

HOLE FOR WING SERVO WIRES

FIBERGLASS TUBE

FIBERGLASS ROD

MAKE SAME WAY AS WING SLAT BUT ONLY 6.3" LONG

1/4 x 1/8 HARD BALSA

SIDE LONGERONS, 1/4 x 1/8 MEDIUM BALSA

TOP LONGERON

HORZ STAB SADDLE

DOOR REMOVED FOR CLARITY

1/8 SQ MEDIUM BALSA

1/32 PLY TAIL GEAR SUPPORT, SIZE TO FIT

FILL AREA WITH LIGHT BALSA BLOCK

A

1/8 X 1/2 HARD BALSA

INTERNAL FRAME JIG F14

KEEL

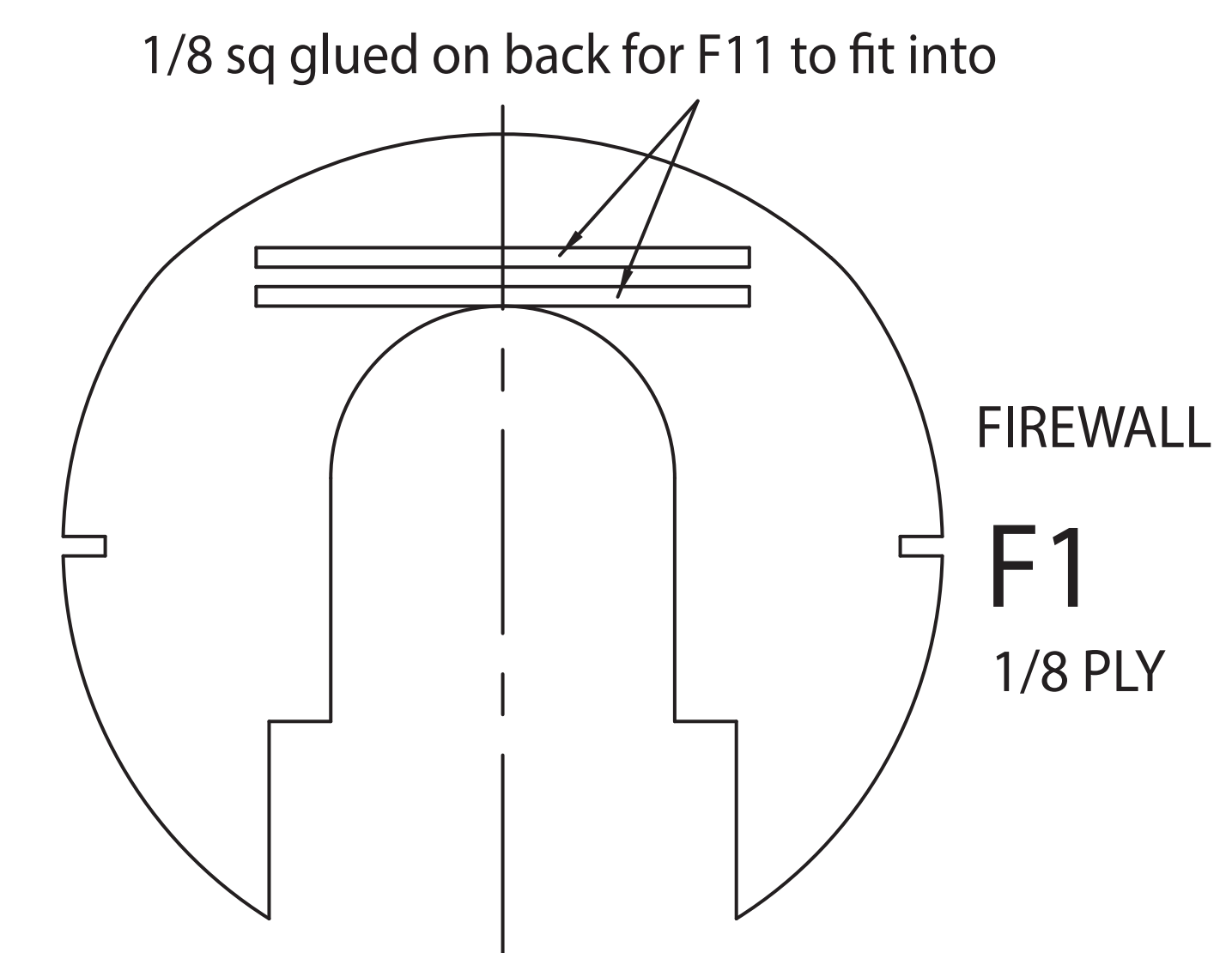
L.G. FAIRING FROM 1/4" MEDIUM BALSA

INTERMEDIATE FORMERS FOR ADDED STRENGTH AS REQUIRED

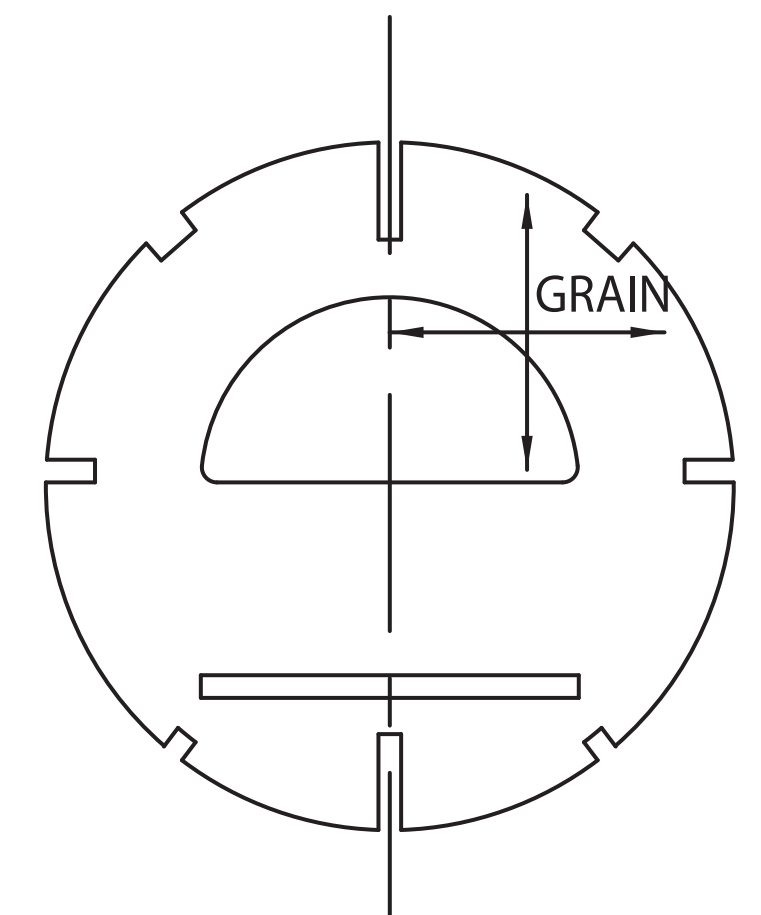
AFTER ASSEMBLY, DRIZZLE THIN C.A. GLUE INTO TAIL CONE AND CABIN AREA TO STRENGTHEN THE BALSA SKIN DO THIS BEFORE THE GLAZING IS IN PLACE TO AVOID FOGGING

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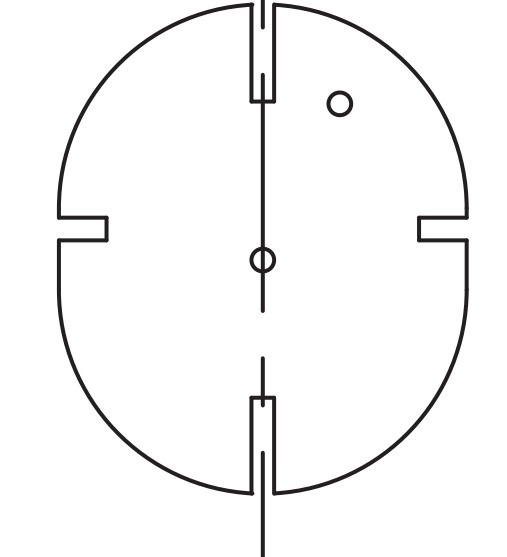
FUSELAGE ASSEMBLY



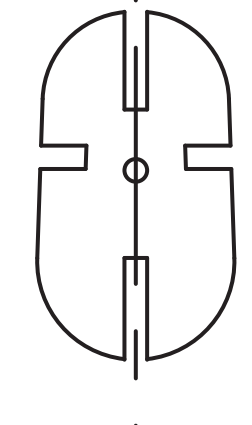
F1
1/8 PLY
FIREWALL



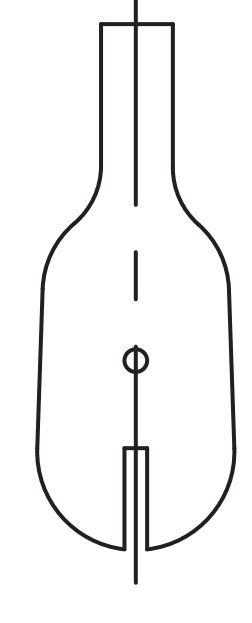
F5
1/8 MEDIUM Balsa LAMINATED TO 1/8 Balsa
CROSSED 90 DEGREES LIKE PLYWOOD



F6 1/8 MEDIUM Balsa



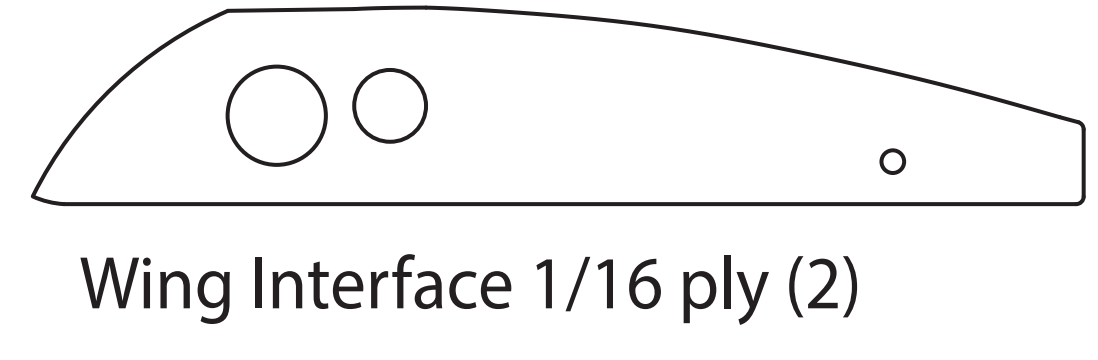
F7 1/8 MEDIUM Balsa



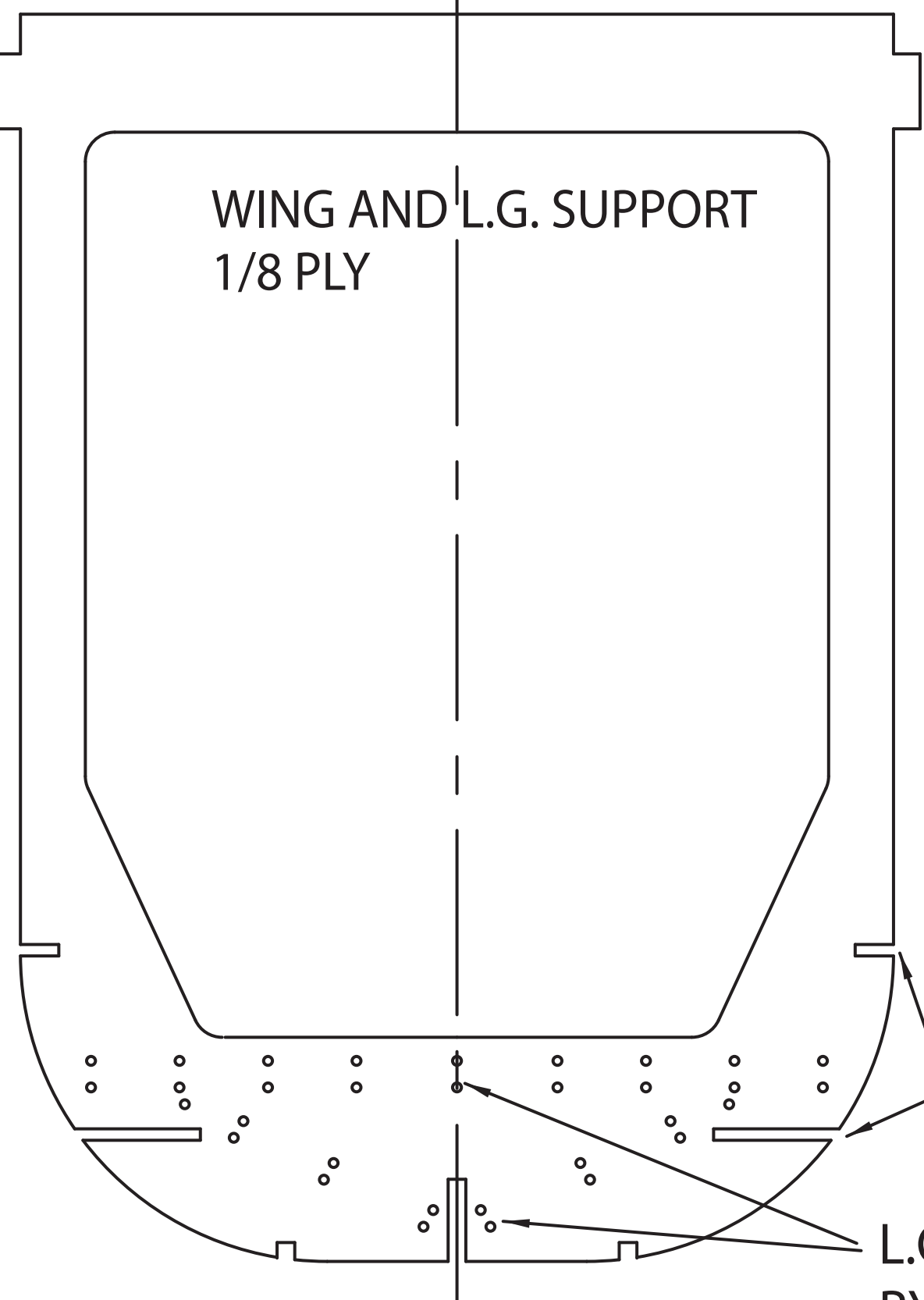
F8
VERT STAB ANCHOR 1/16 ply



F9
Fuse Rib 3/16 med balsa (2)

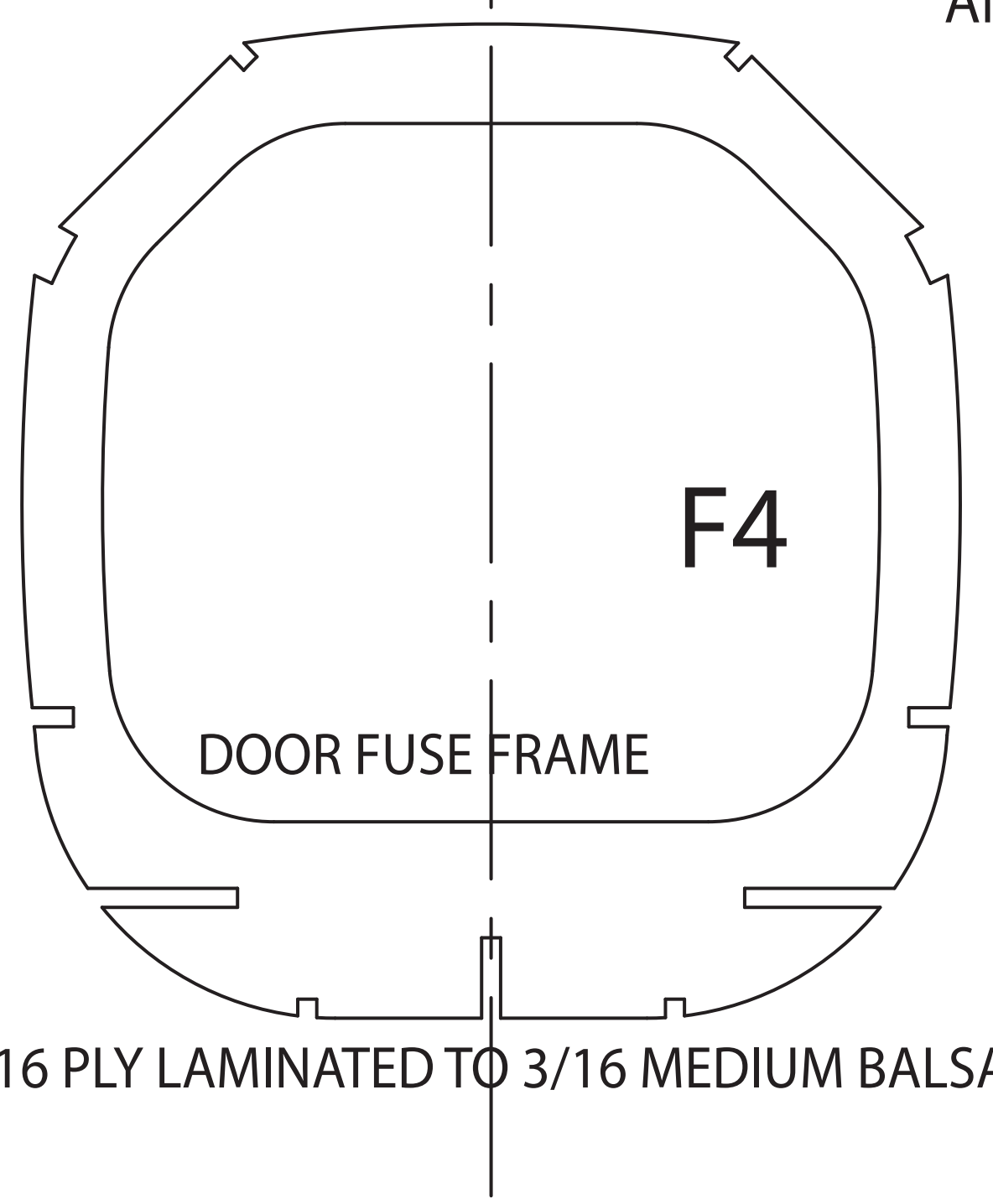


F10
Wing Interface 1/16 ply (2)

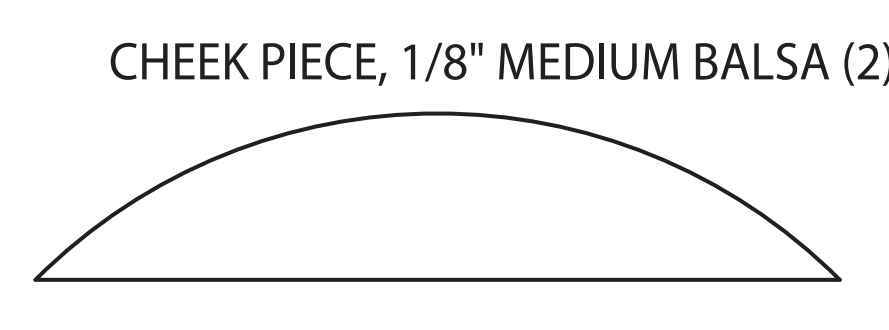


F3
WING AND L.G. SUPPORT
1/8 PLY

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



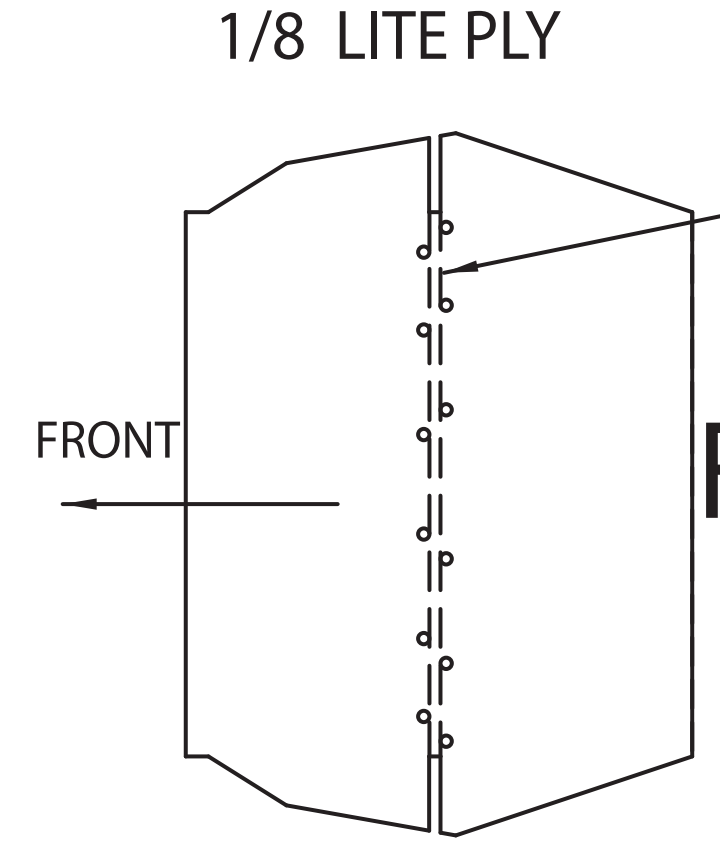
F4
DOOR FUSE FRAME



CHEEK PIECE, 1/8" MEDIUM Balsa (2)

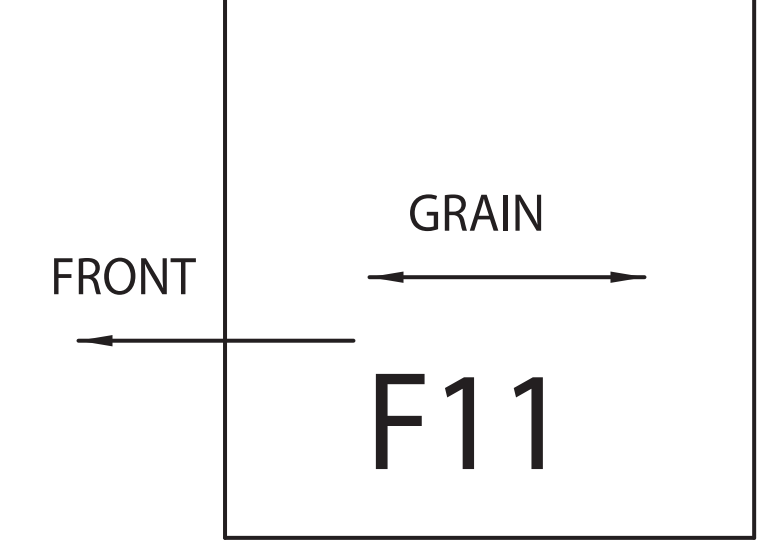
F13

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

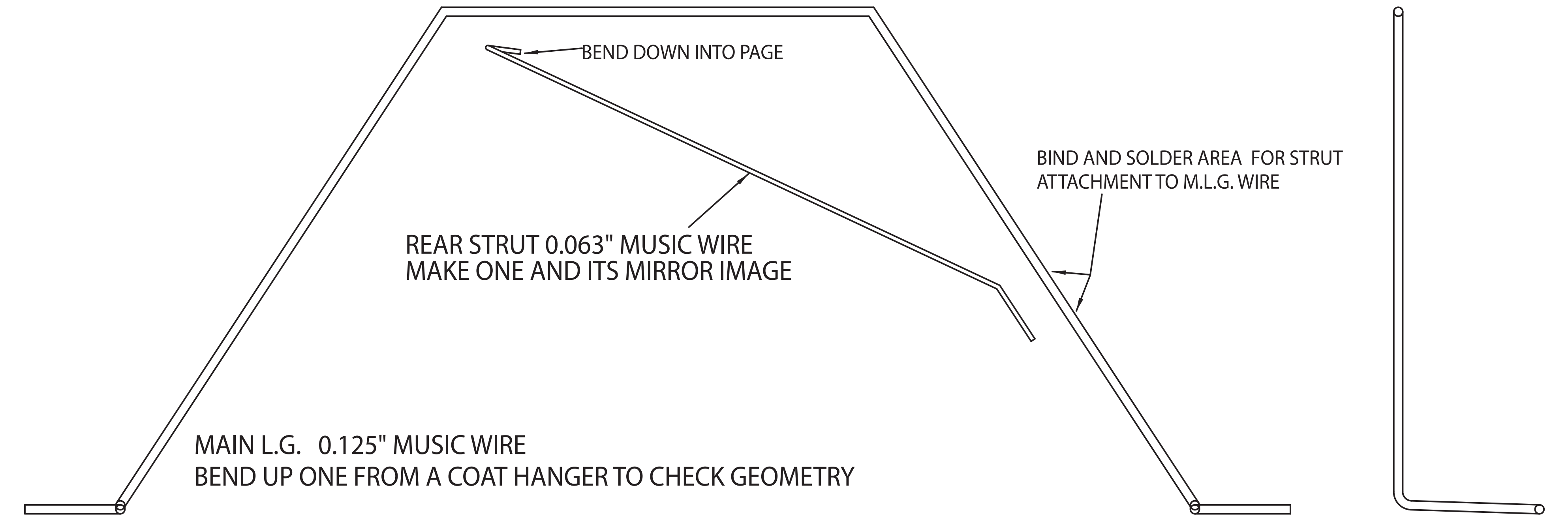


F12

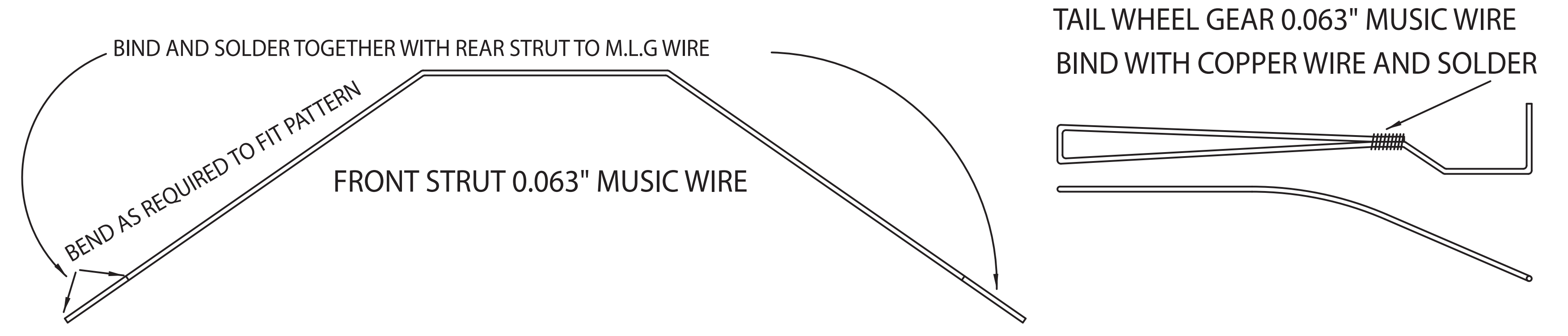
TOP FIREWALL SPACER
1/8 HARD Balsa



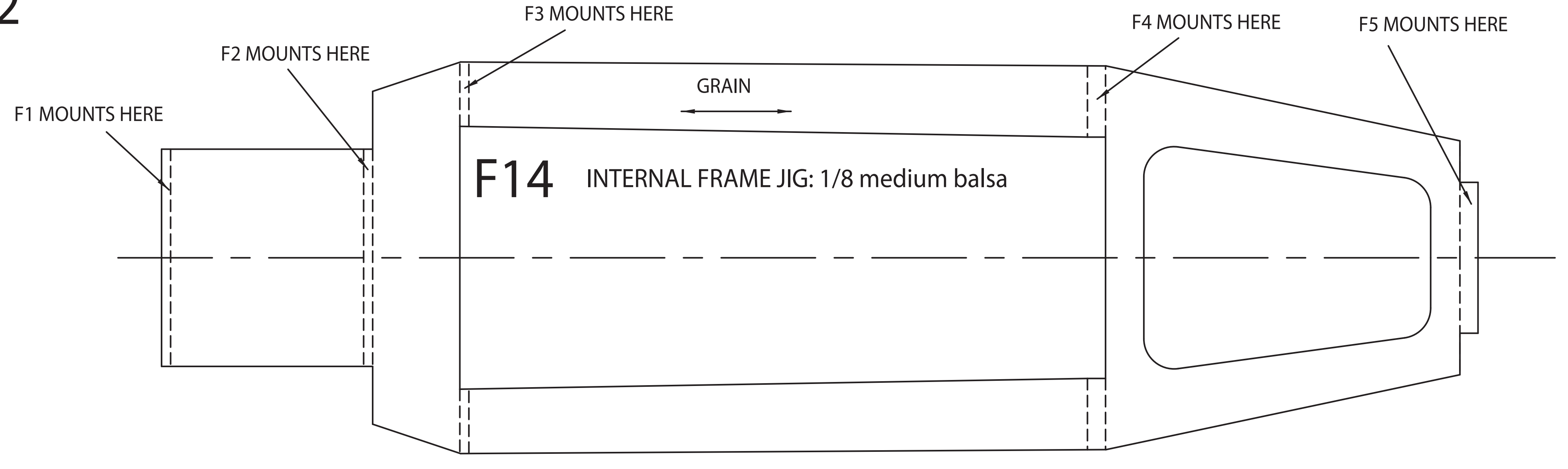
F11



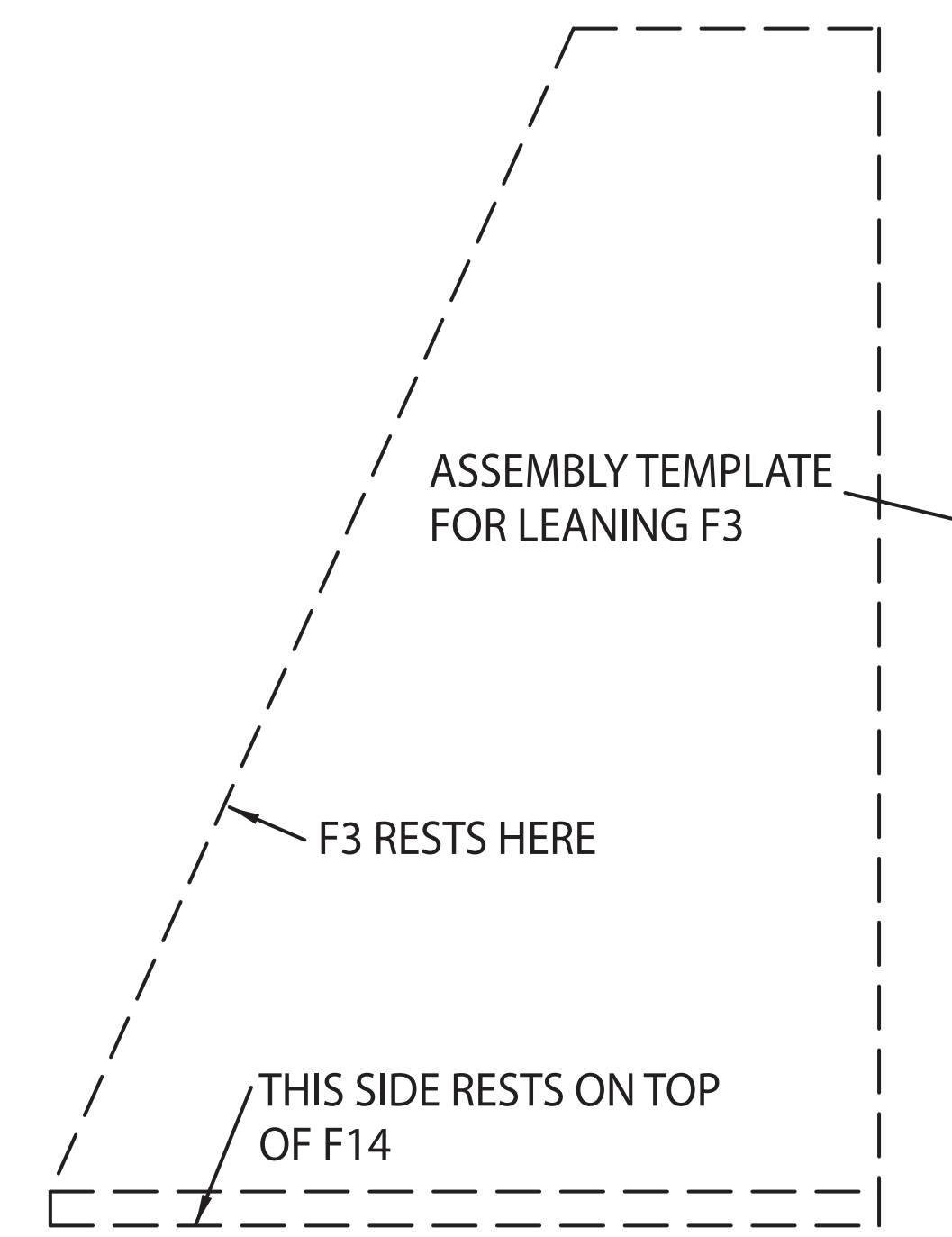
MAIN L.G. 0.125" MUSIC WIRE
BEND UP ONE FROM A COAT HANGER TO CHECK GEOMETRY



FRONT STRUT 0.063" MUSIC WIRE

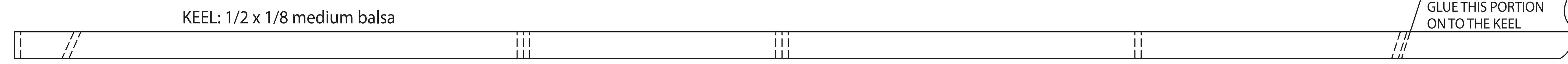


F14 INTERNAL FRAME JIG: 1/8 medium balsa



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



KEEL: 1/2 x 1/8 medium balsa

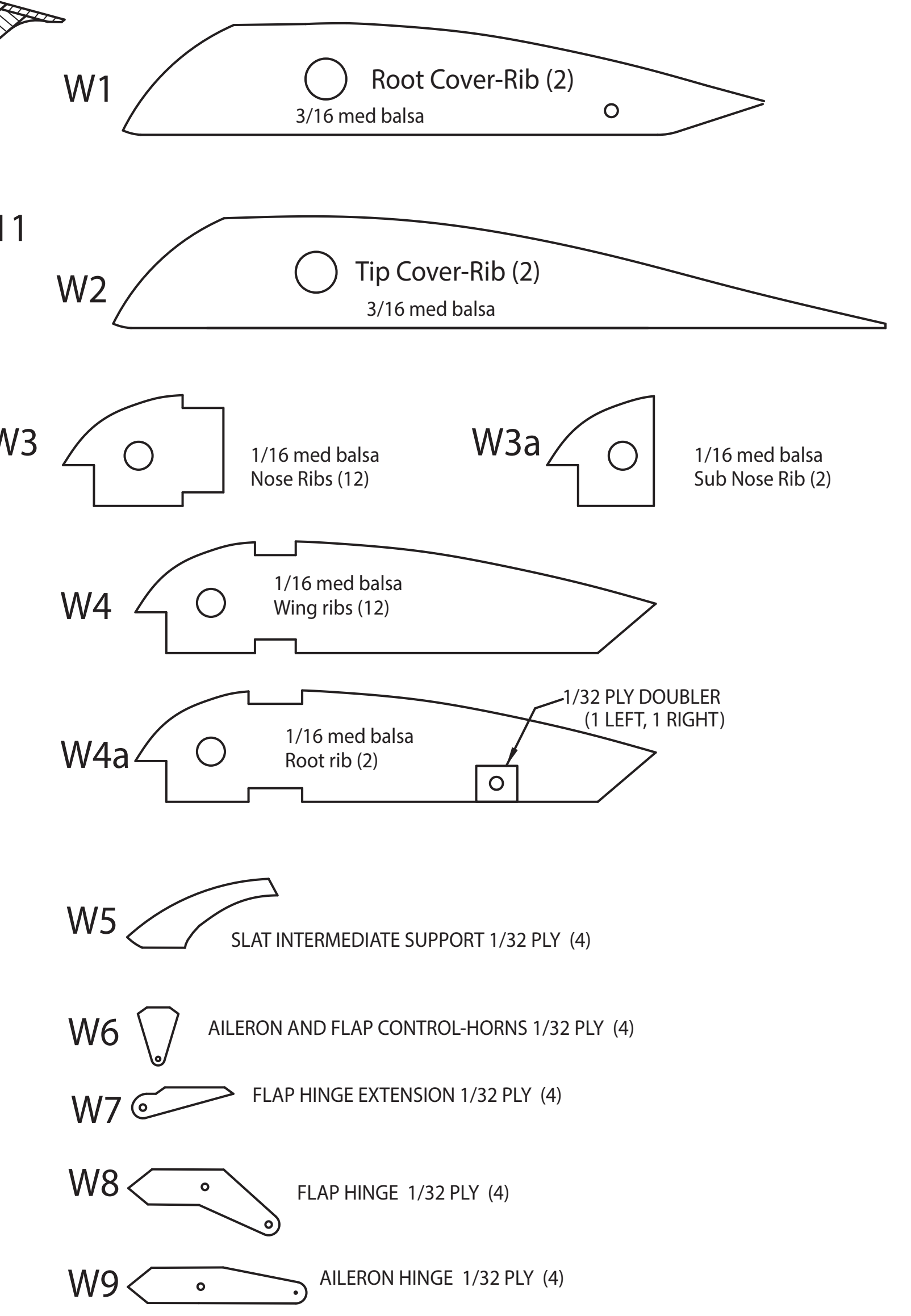
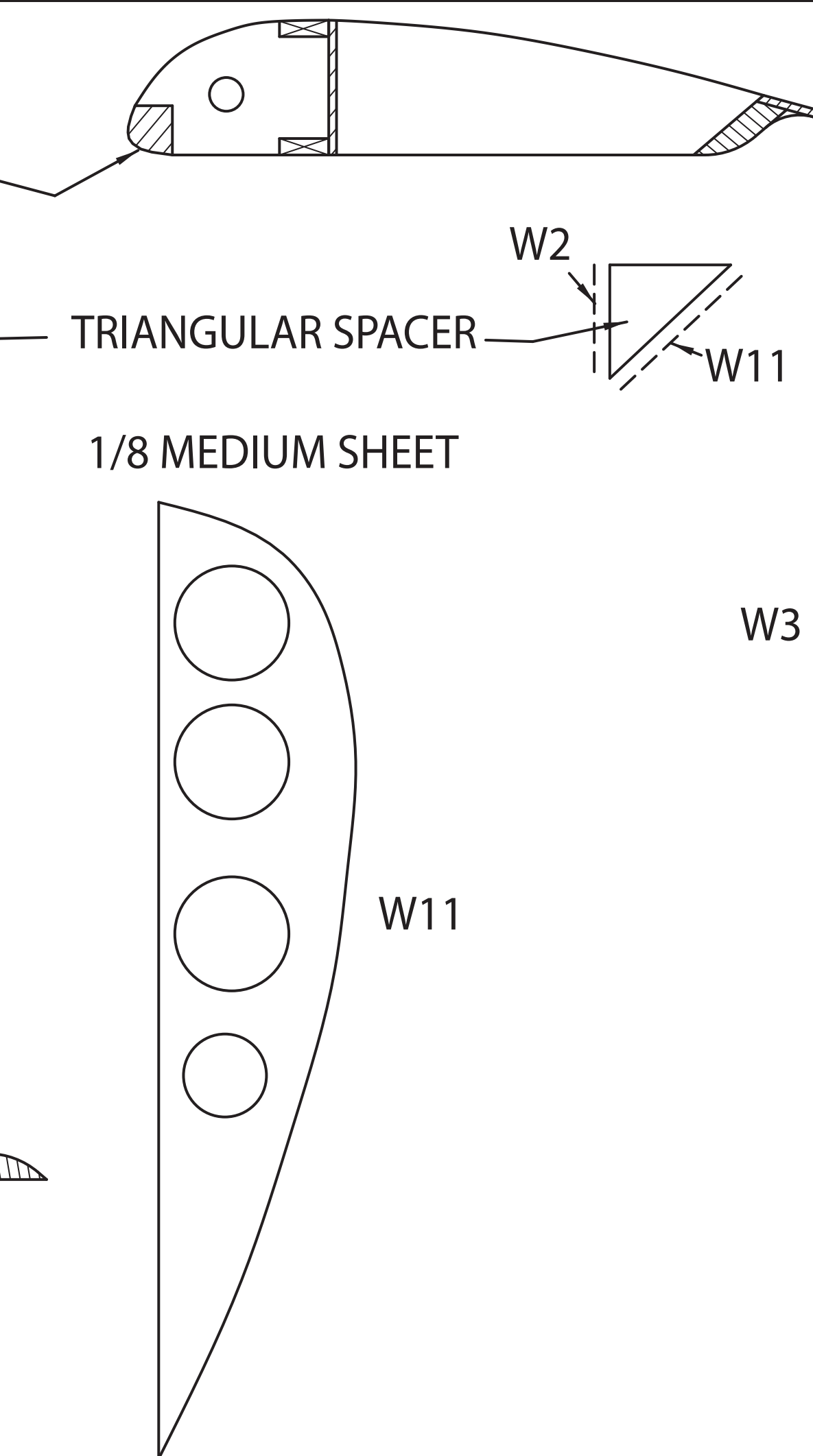
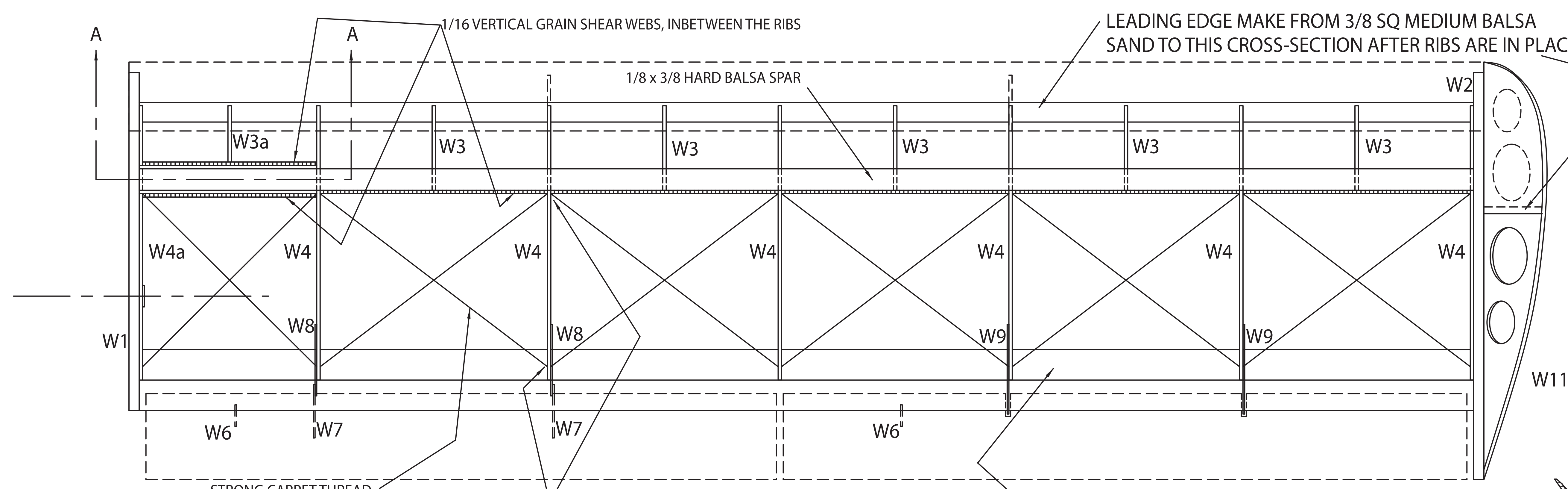
TOP LONGERON: 1/2 x 1/8 medium balsa

HORZ STAB SADDLE 1/32 ply

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

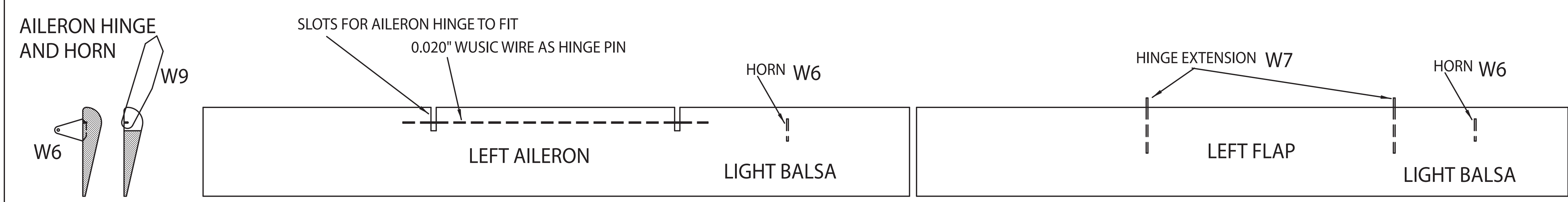
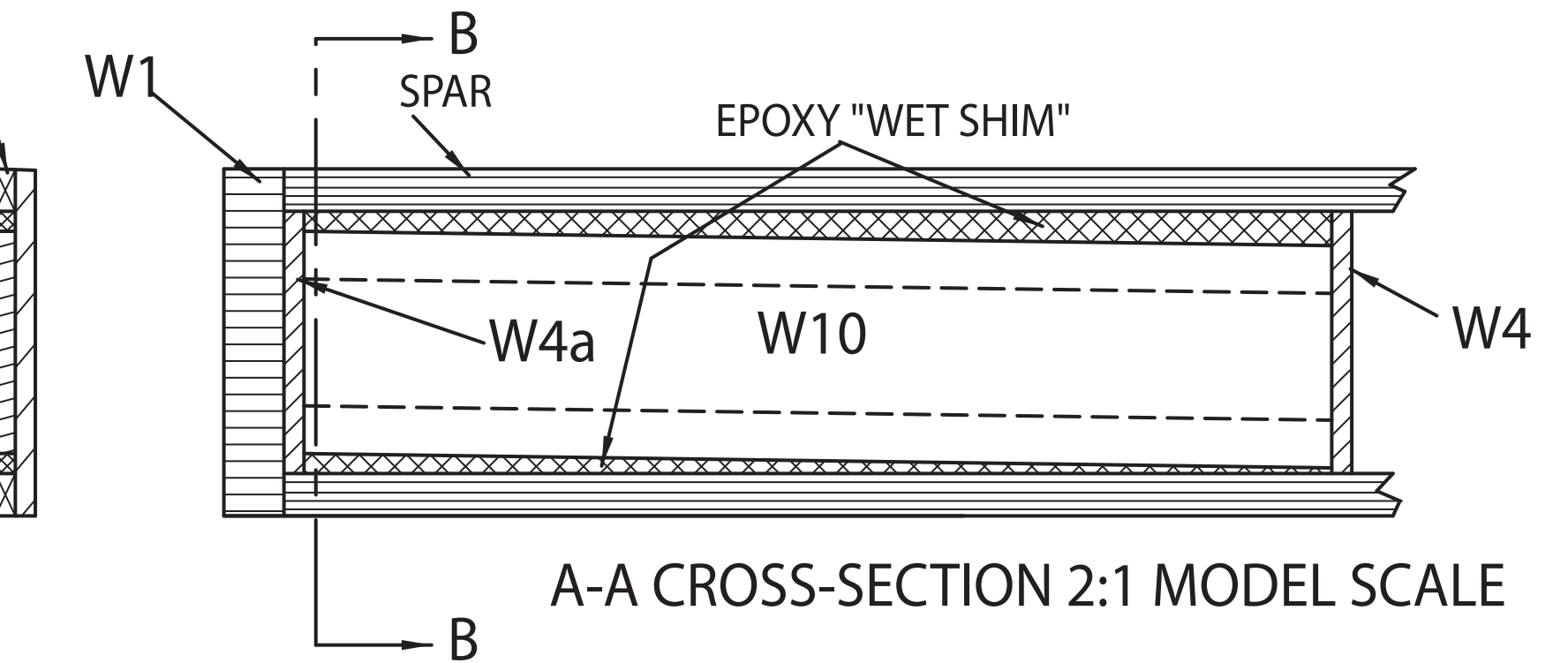
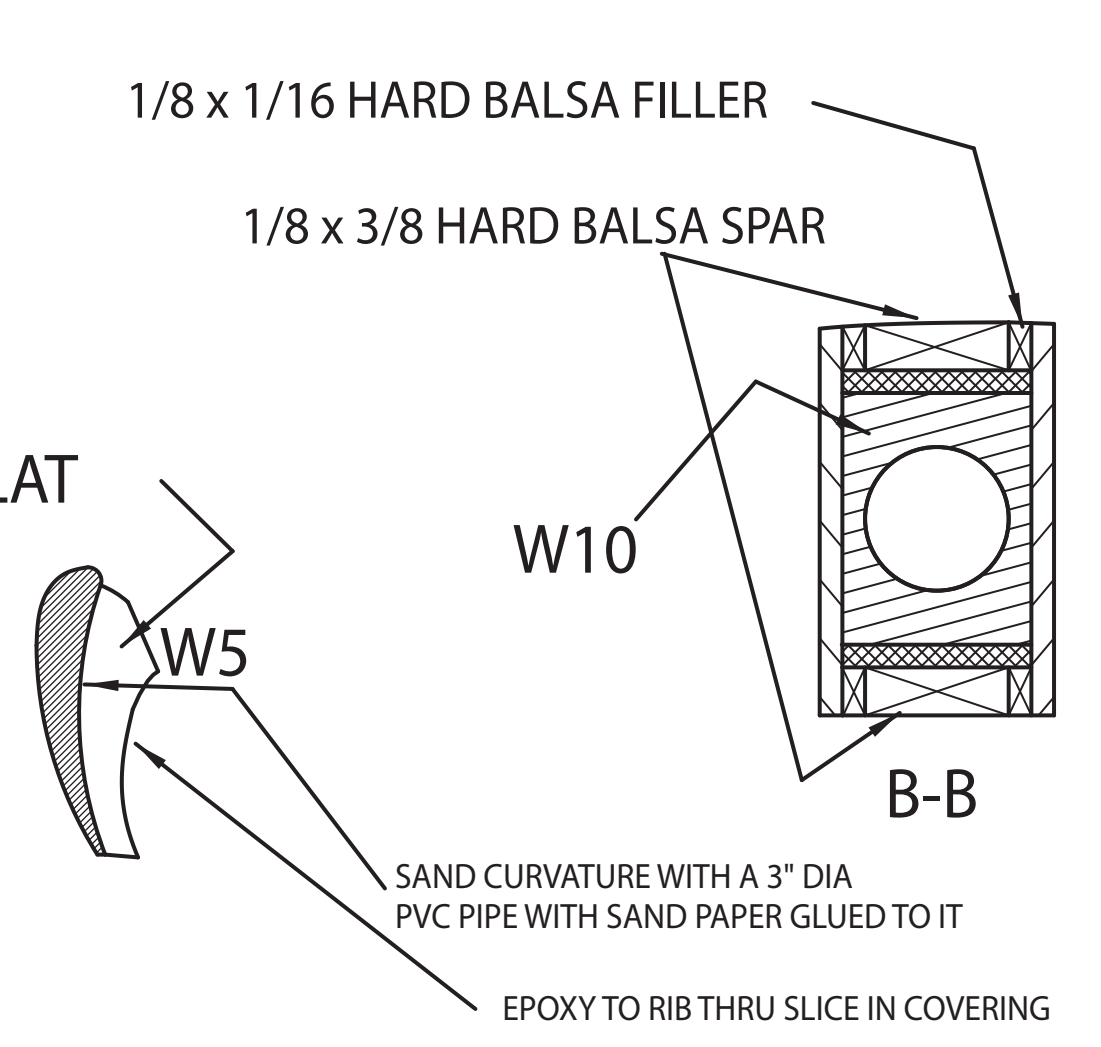
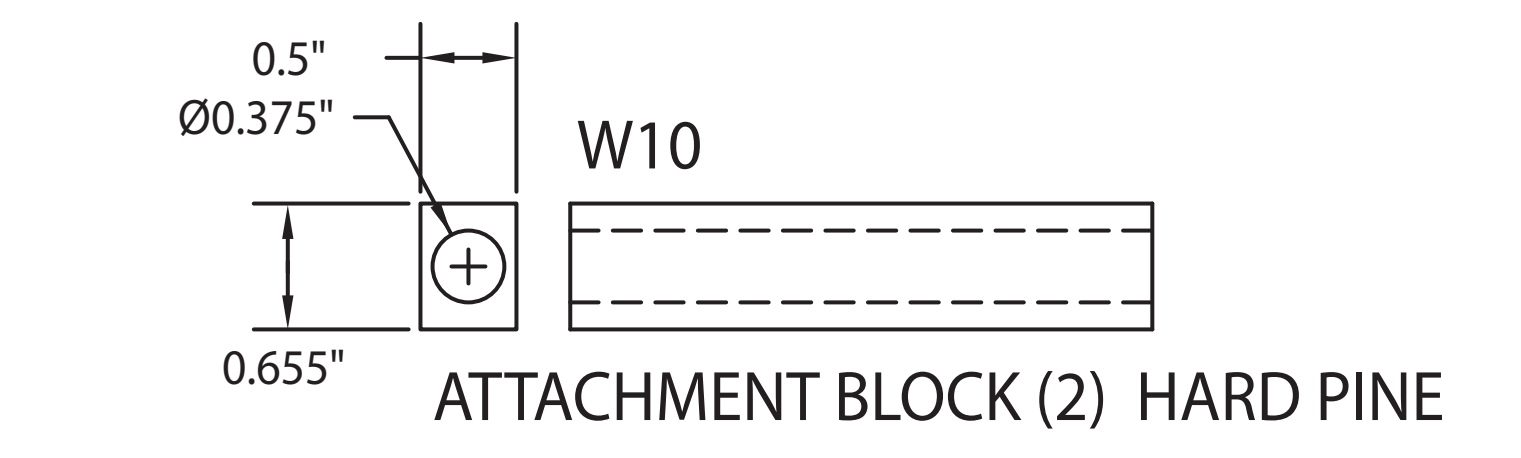
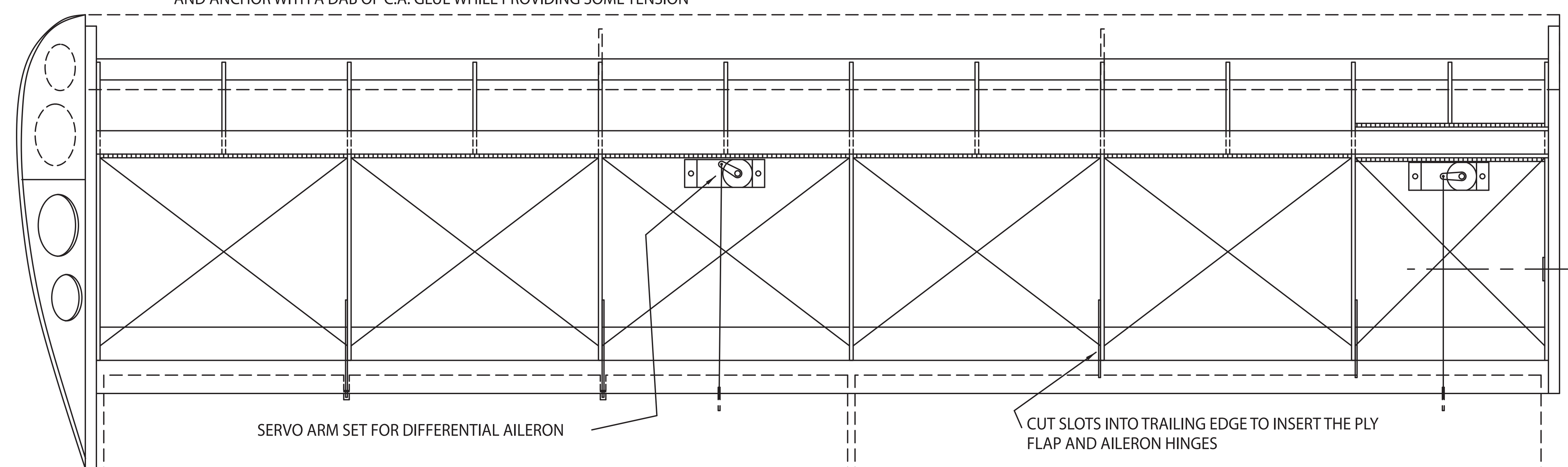
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FUSELAGE AND LANDING GEAR COMPONENTS

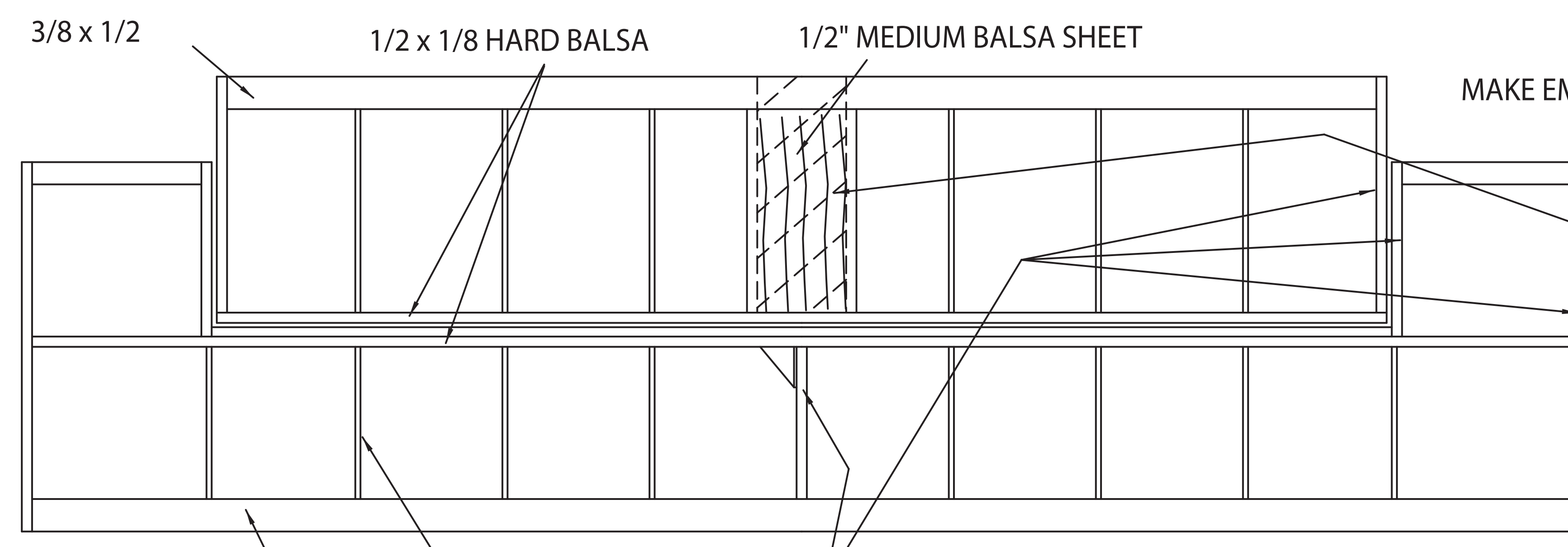
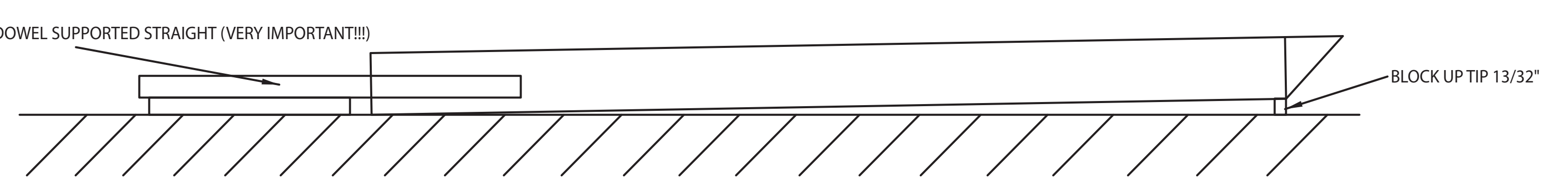


STRONG CARPET THREAD
THREAD WITH NEEDLE THRU RIBS WHERE SHOWN
AND ANCHOR WITH A DAB OF C.A. GLUE WHILE PROVIDING SOME TENSION

MAKE TRAILING EDGE FROM 3/4 x 1/8 AND 5/8 x 1/16 MEDIUM Balsa
PRE-ASSEMBLE THE TRAILING EDGE BEFORE WING ASSEMBLY WITH SHAPE AS SHOWN

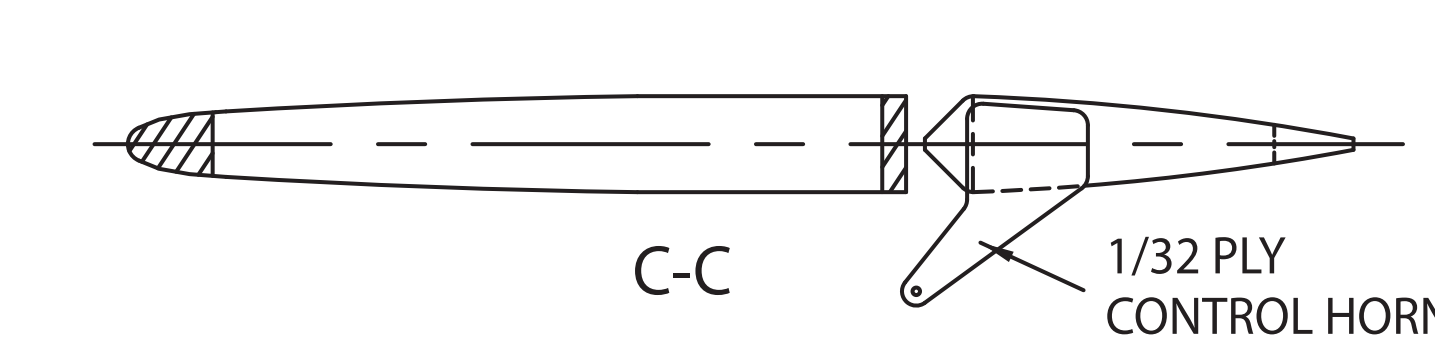
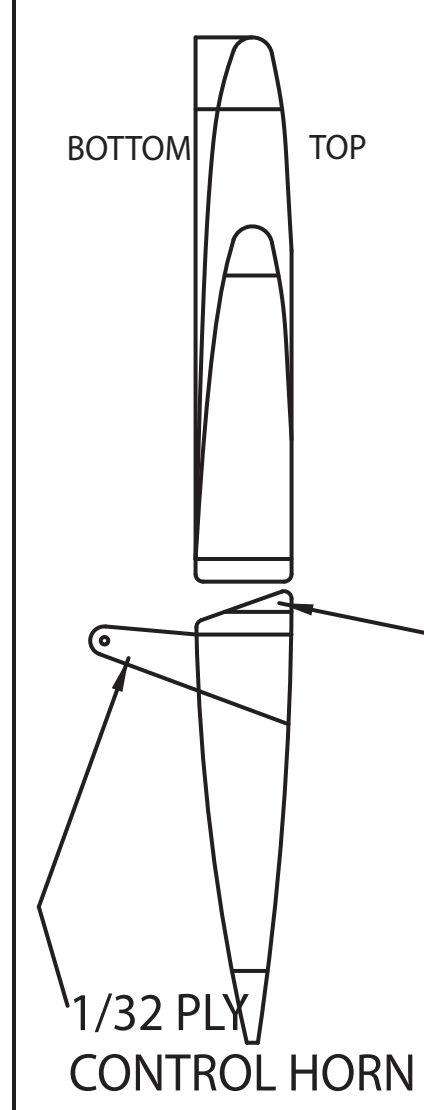
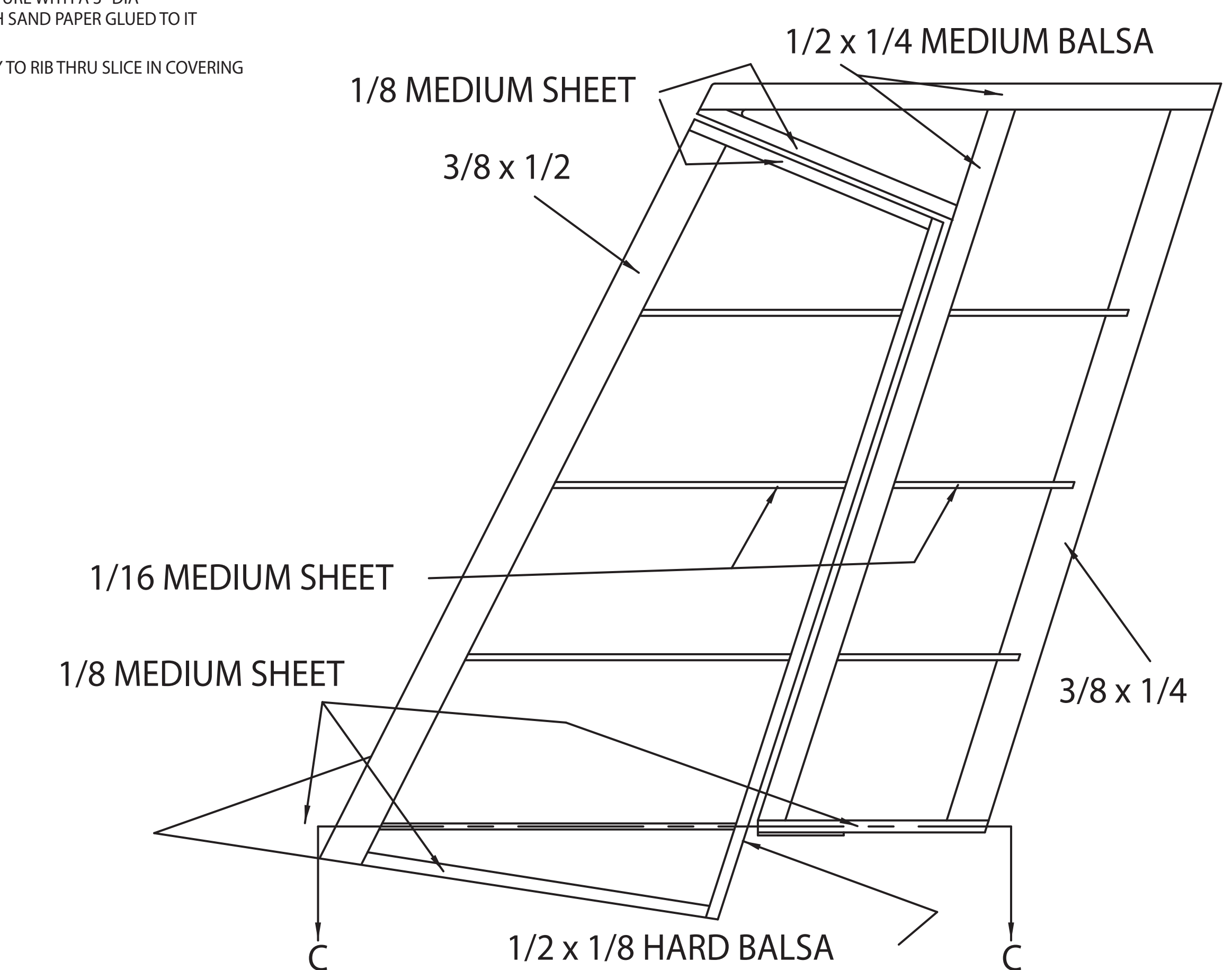


NOTES ON DIHEDRAL: CONSTRUCT WING, BUT DO NOT ATTACH W10 OR THE BACK ROOT SHEAR WEB. LEAVE THIS CAVITY OPEN SO AS TO HAVE ACCESS TO ALIGN AND GLUE W10 AT THE PROPER ANGLE. DO SO BY LAYING THE WING ON A VERY FLAT SURFACE AND INSERT A 3/8 DOWEL THRU THE ROOT RIB HOLE INTO A LOOSE W10 BLOCK. BLOCK UP THE 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 ENTOMB WITH THE BACK SHEAR WEB. THE EPOXY SHOULD BE MIXED WITH MICRO-BALLOON THICKNER TO PREVENT RUNS INTO THE 3/8 HOLE.



MAKE EMPANAGE FROM RECTANGULAR PIECES THEN SAND AIRFOIL SHAPE

FLAT AREA WITH TRANSITION FROM AIRFOIL AT EDGES FOR ATTACHMENT SURFACE TO H. STAB SADDLE



WING AND EMPANAGE ASSEMBLY

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