

WEIGHT AND BALANCE

ITEM	WT. LBS	ARM, IN	MOMENT, IN-LBS
EMPTY WEIGHT	573		35302
PILOT	180	76	13680
OIL 3 QTS AT 2LBS/QT	6	20	120
FUEL 10 GAL AT 6LBS/GAL	60	42	2520
BAGGAGE	15	94	1410
DESIGN GROSS WEIGHT	834	63.6	53032

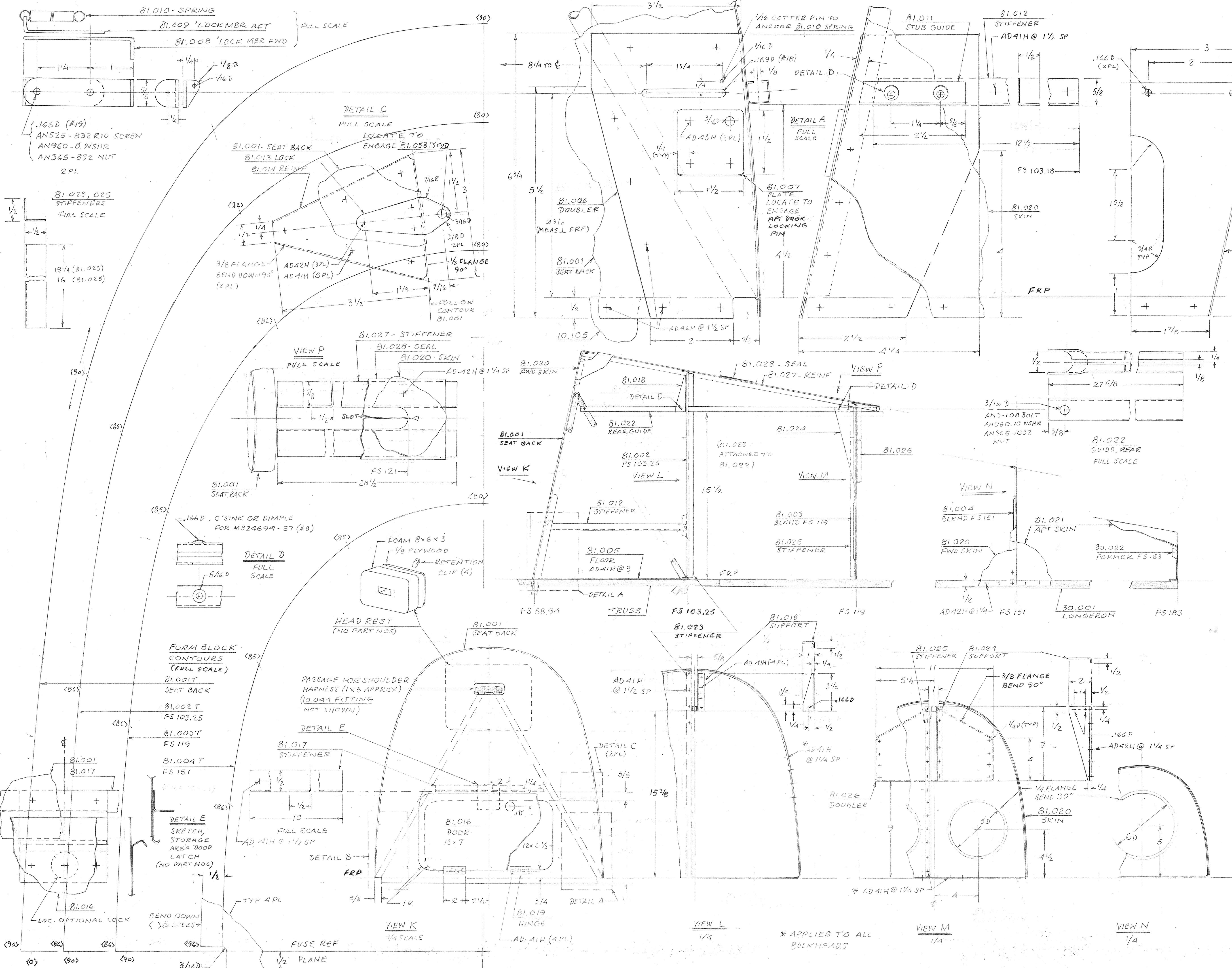
CG LIMITS ARE ARBITRARILY SET 62.0 IN (MOST FWD)  
AND 64.5 IN (MOST AFT)

SPECIFICATIONS

AT DESIGN GROSS WEIGHT	3.8 g's
LIMIT LOAD FACTOR	5.7 g's
ULTIMATE LOAD FACTOR	
WING SPAN	24 FT 6 IN
WING AREA	95 SQ FT
LENGTH OVERALL	18 FT 6 IN
1 SEAT	
ENGINE	VOLKSNAGEN TYPE 1 1915 CC DISPL
V <sub>STALL</sub>	45 MPH
V <sub>CRUISE</sub>	100 MPH
V <sub>MAX</sub>	125 MPH
V <sub>NE</sub> (NEVER EXCEED SPEED)	162 MPH
RATE OF CLIMB (S.L. STD DAY)	800 FT/MIN

THE S-22 IS A REFINED VERSION OF THE S-21.  
IT ADDS A SLIDING CANOPY, A COOLED ENGINE,  
FIBERGLASS LIFTING SURFACE TIPS, AND WHEEL  
AND STRUT FAIRINGS.  
THE 8 PAGES OF S-22 PLANS SUPPLEMENT  
THE 29 PAGES OF THE S-21 PLANS.

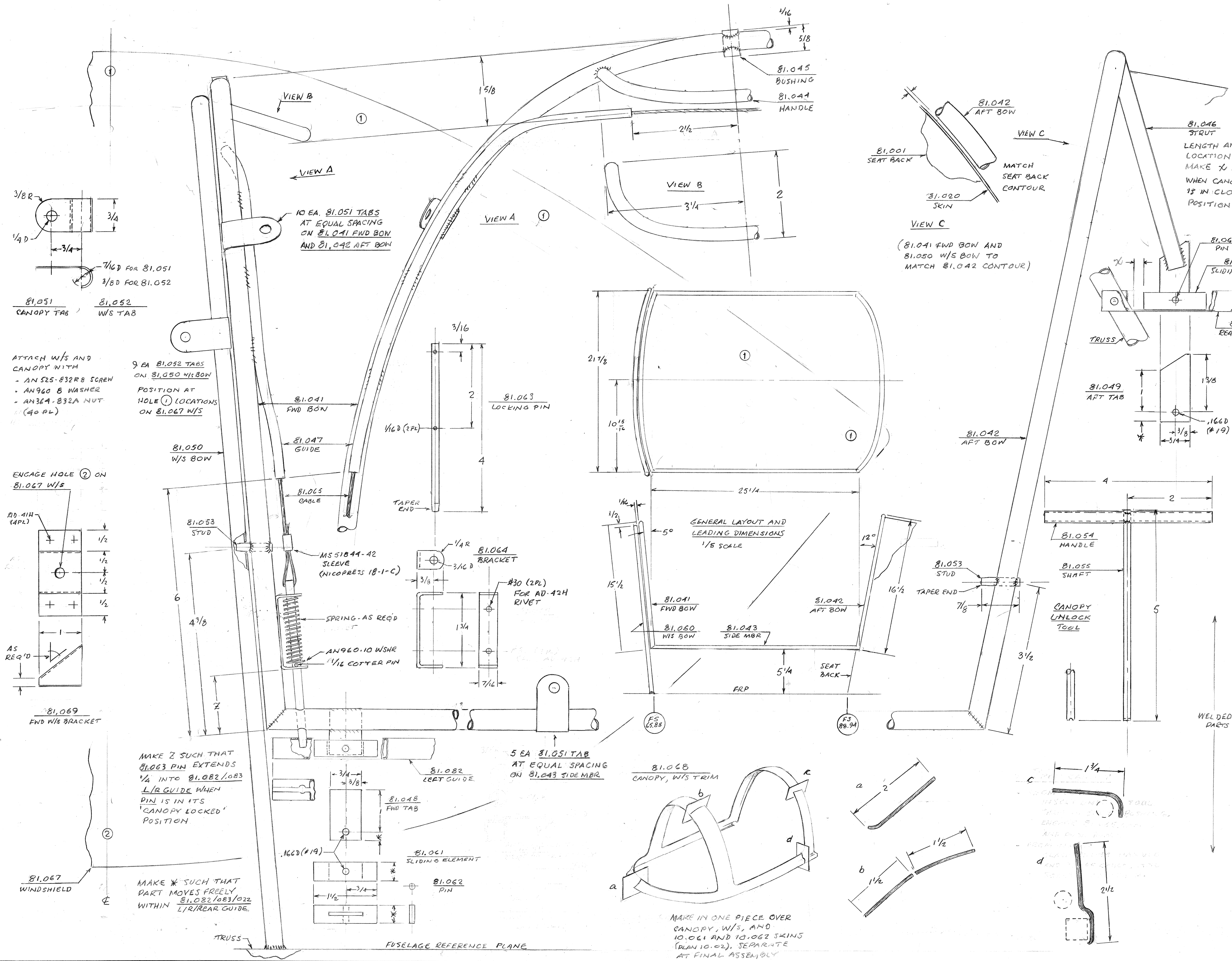
GENERAL ARRANGEMENT, SPECIFICATIONS			
SCALE: 1/20	APPROVED BY: R. MacDonald	DRAWN BY: RM	
DATE: 9/21		REVISED	
MACDONALD S-22			
			DRAWING NUMBER 80.01



PART NO	NO PER ACFT	PART NAME	MATERIAL
81.028	1	REAR GUIDE SLOT SEAL	2 LAYERS 60Z F/GLAS SILICONE SEALANT
81.027	2	REAR GUIDE SLOT STIFFENER	
81.026	1	DOUBLER, REAR GUIDE SUPPORT	
81.025	1	STIFFENER, FS 119	2024-T3 .020 THK
81.024	1	REAR GUIDE SUPPORT FS 119	2024-T3 .040 THK
81.023	1	STIFFENER, FS 103.25	2024-T3 .020 THK
81.022	1	CANOPY GUIDE, REAR	4130 SQ TUBING 1/2x1/2x.035
81.021	1	AFT DORSAL SKIN	2024-T3 .016 THK
81.020	1	FWD DORSAL SKIN	2024-T3 .020 THK
81.019	2	HINGE, STORAGE AREA DOOR	1520257 OR SIMILAR
81.018	1	REAR GUIDE SUPPORT, FS 103.25	2024-T3 .040 THK
81.017	1	STIFFENER, STOR AREA DOOR	
81.016	1	STORAGE AREA DOOR	2024-T3 .020 THK
81.015	1	SEAT BACK DOUBLER, RIGHT	2024-T3 .040 THK
81.014	2	REIN, PLATE REAR LOCKING	2024-T3 .020 THK
81.013	2	PLATE, REAR LOCKING	2024-T3 .063 THK
81.012	1	STIFFENER, CANOPY GUIDE LEFT (STUB)	2024-T3 .040 THK SHEET
81.011	1	CANOPY GUIDE, LEFT (STUB)	4130 SQ TUBING 1/2x1/2x.035
81.010	1	CANOPY INTERLOCK SPRING	LENGTH 1.144, SPRING RATE 11N/LB
81.009	1	CANOPY INTERLOCK MEMBER, AFT	
81.008	1	CANOPY INTERLOCK MEMBER, FWD	2024-T3 .016 THK
81.007	1	COCKPIT DOOR STRIKER PLATE	2024-T3 .125 THK
81.006	1	SEAT BACK DOUBLER, LEFT	2024-T3 .040 THK
81.005	1	STORAGE AREA FLOOR	2024-T3 .016 THK
81.004	1	BULKHEAD, FS 151	
81.003	1	BULKHEAD, FS 119	
81.002	1	BULKHEAD, FS 103.25	
81.001	1	UPPER SEAT BACK BULKHEAD	2024-T3 .020 THK

AFT FUSELAGE PROVISIONS FOR CANOPY			
SCALE: NOTED	APPROVED BY: RAMo Donald	DRAWN BY: RM	REVISED
DATE: 8/2016			
MACDONALD S-22			
			DRAWING NUMBER
			81.01

\* APPLIES TO ALL BULKHEADS



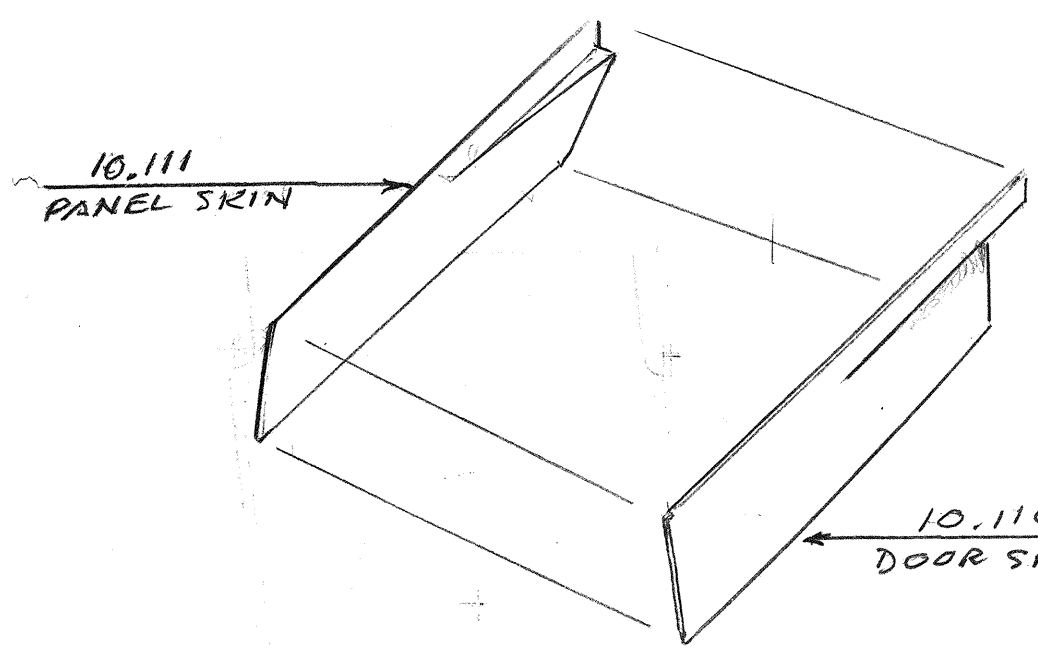
PART NO	NO PER ASFT	PART NAME	MATERIAL
81.069	1	FWD WINDSHIELD ATTACH BRACKET	2024 T3 SHEET .040 THK
81.068	1	CANOPY WINDSHIELD TRIM	2 LAYERS 6 OR 7 OZ FIBERGLASS
81.067	1	WINDSHIELD	ACRYLIC 3/32 THK
81.066	1	CANOPY ENCLOSURE	NOTE 1 ABOVE
81.065	1	CANOPY LOCKING CABLE	7x7 GALVANIZED CONTROL CABLE
81.064	2	CANOPY LOCKING PIN BRACKET	2024 T3 SHEET .063 THK
81.063	2	CANOPY LOCKING PIN	AN3 BOLT OR 4130 ROD 3/16 D
81.062	3	CANOPY SLIDING ELEMENT PIN	#8 BOLT
81.061	3	CANOPY SLIDING ELEMENT	NYLON
81.055	1	CANOPY UNLOCK TOOL SHAFT	AN3 BOLT OR 4130 ROD 3/16 D
81.054	1	CANOPY UNLOCK TOOL HANDLE	4130 STEEL TUBING 5/16x.035
81.053	4	CANOPY LOCKING STUD	AN3 BOLT OR 4130 ROD 3/16 D
81.052	9	WINDSHIELD ATTACH TAB	MILD STEEL SHEET .035 THK
81.051	30	CANOPY ATTACH TAB	MILD STEEL SHEET .035 THK
81.050	1	WINDSHIELD BOW	4130 STEEL TUBING 3/8x.035
81.049	1	CANOPY AFT SUPPORT TAB	MILD STEEL SHEET .035 THK
81.048	2	CANOPY FORWARD SUPPORT TAB	4130 STEEL SHEET .035 THK
81.047	2	CANOPY CABLE GUIDE	4130 STEEL TUBING 1/4x.035
81.046	1	CANOPY REAR STRUT	4130 STEEL TUBING 7/16x.035
81.045	1	CANOPY UNLOCK BUSHING	4130 STEEL TUBING 3/8x.035
81.044	1	CANOPY HANDLE	4130 STEEL TUBING 5/16x.035
81.043	2	CANOPY SIDE MBR	4130 STEEL TUBING 7/16x.035
81.042	1	CANOPY AFT BOW	4130 STEEL TUBING 7/16x.035
81.041	1	CANOPY FWD BOW	4130 STEEL TUBING 7/16x.035

**CANOPY AND WINDSHIELD**

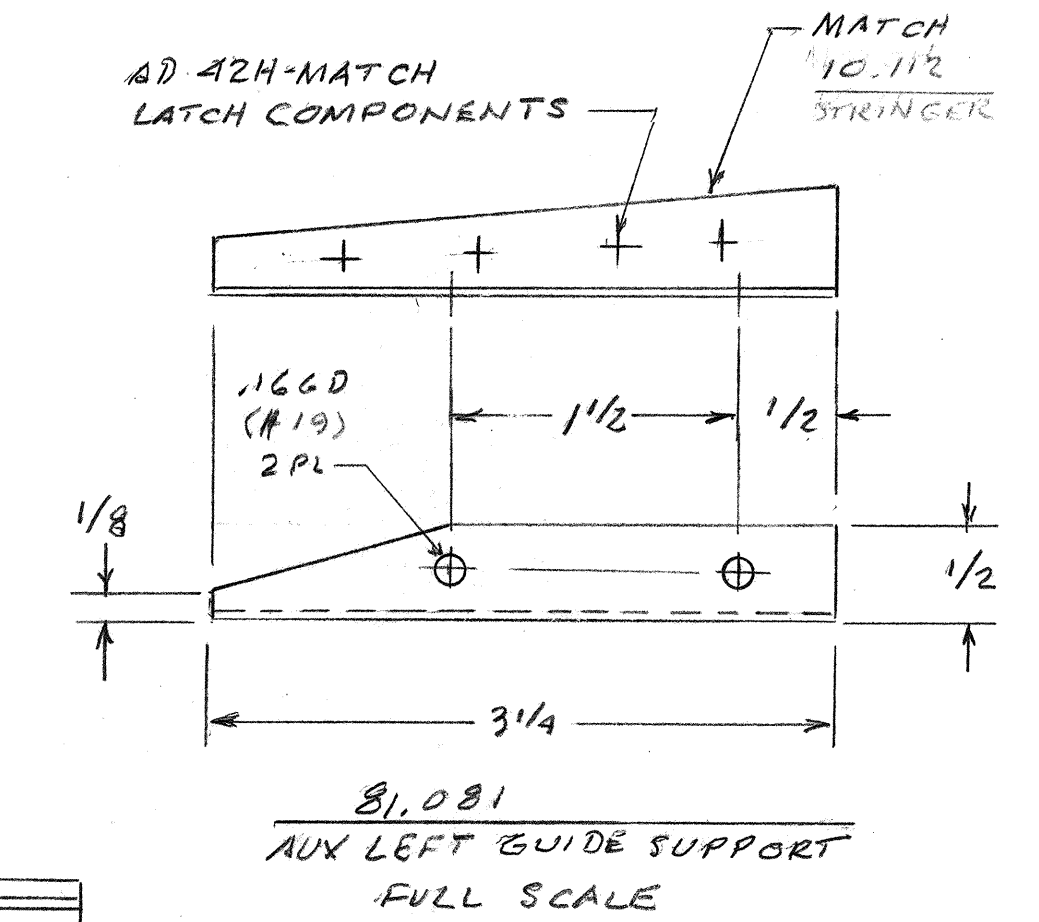
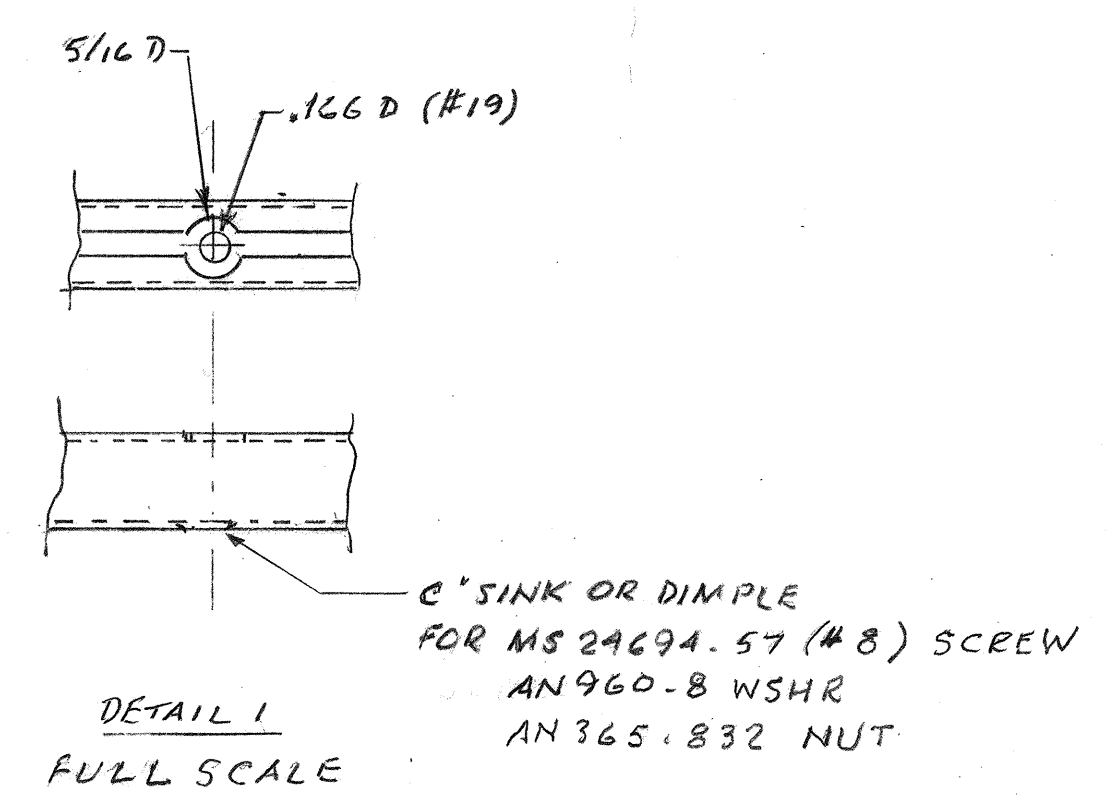
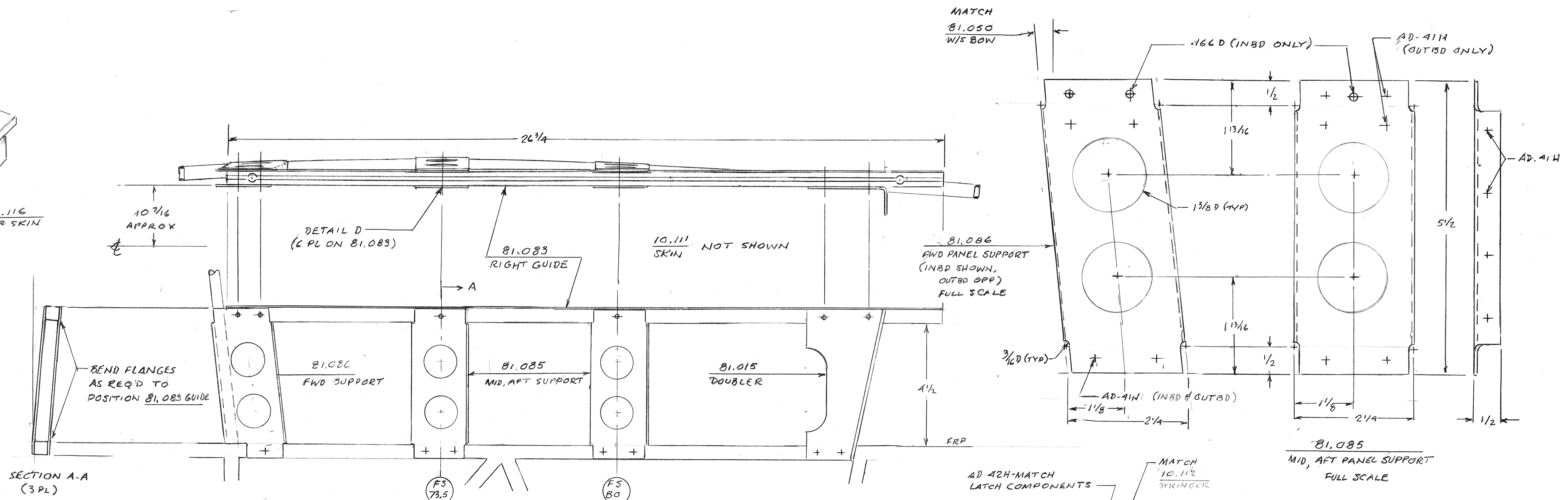
SCALE: FULL (NOTED) APPROVED BY: RANMcDonnell  
 DATE: 7/2021 DRAWN BY: R24  
 REVISED: \_\_\_\_\_

MAC DONALD S-22

DRAWING NUMBER: 81.02

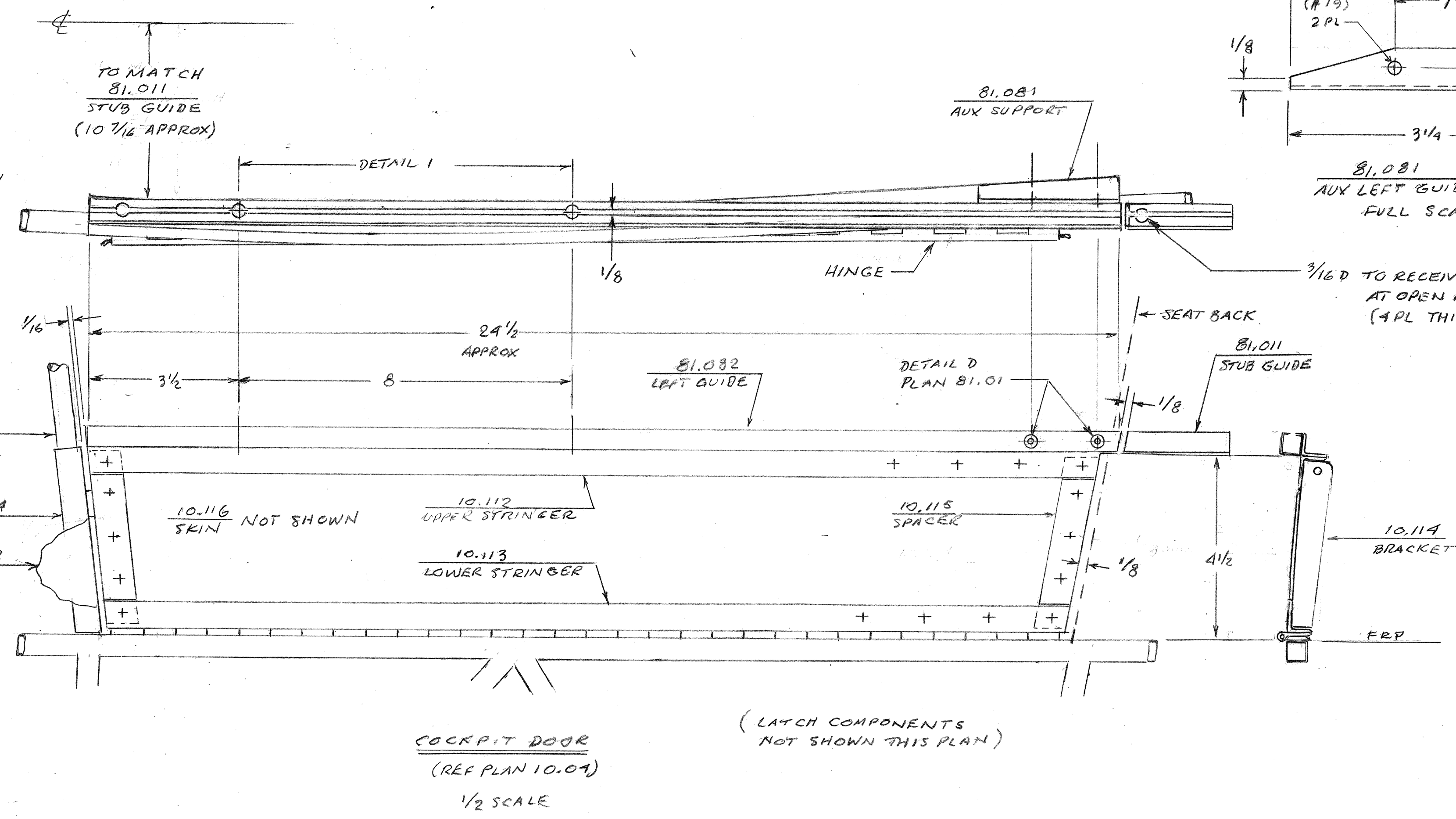
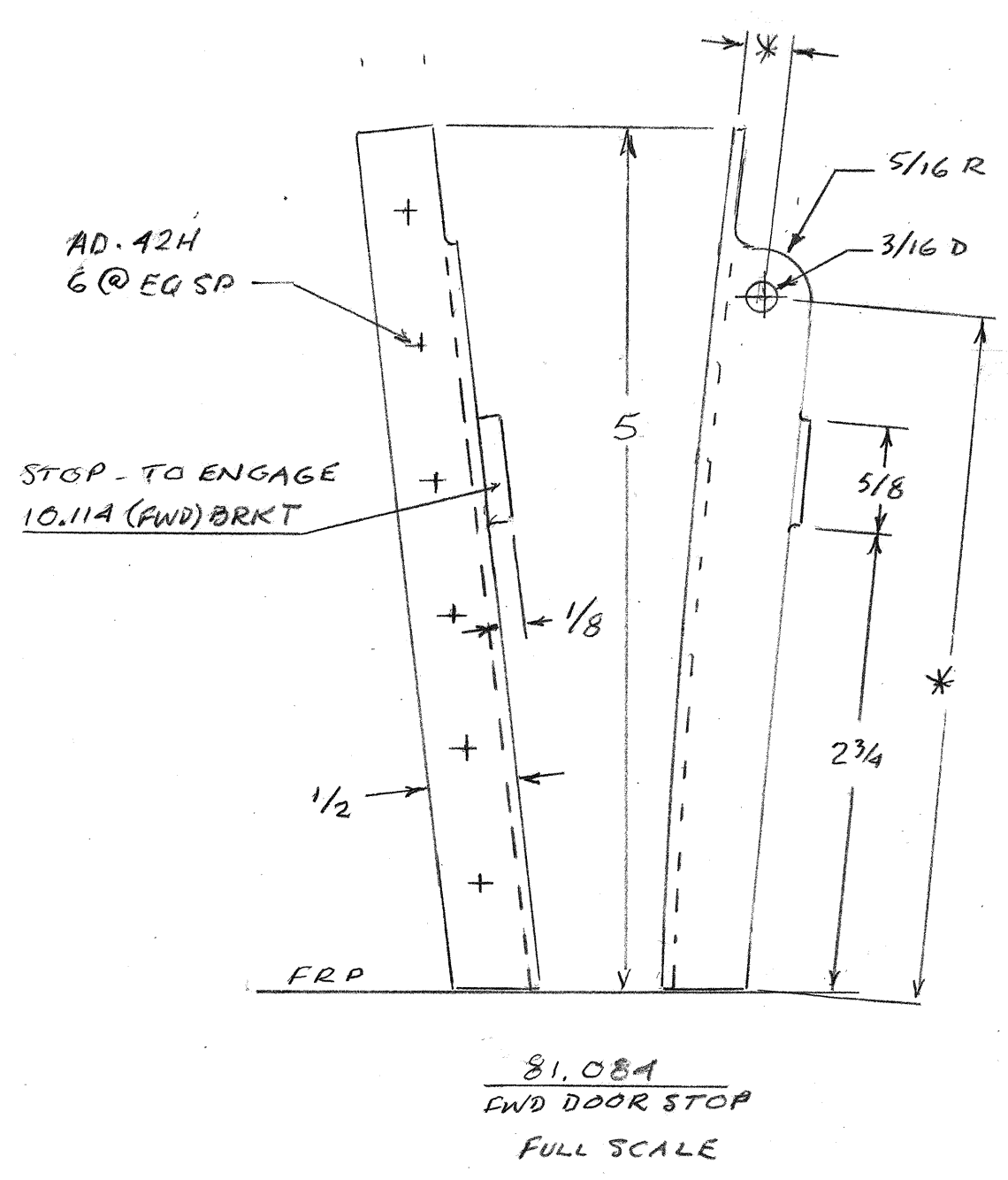


FORM SKINS AS REQ'D TO ACCOMMODATE GUIDES



\* CANOPY TO SLIDE FREELY FOR ENTIRE TRAVEL

\* INSTALL PLACARD "DO NOT OPEN CANOPY ABOVE 100 MPH" (OR 85 KNOTS)



81.086	2	FWD PANEL SUPPORT	
81.085	4	MID AND AFT PANEL SUPPORT	2024-T3 SHEET .090 THK
81.084	1	FWD DOOR STOP	2024-T3 SHEET .063 THK
81.083	1	RIGHT GUIDE	
81.082	1	LEFT GUIDE	4130 50 STEEL TUBE 1/2" x 1/4" x .035"
81.081	1	AUX LEFT GUIDE SUPPORT	2024-T3 SHEET .040 THK

10.116	1	DOOR SKIN	PLAN 10.04
10.115	2	DOOR SPACER	
10.114	2	DOOR END BRACKET	
10.113	1	LOWER DOOR STRINGER	
10.112	1	UPPER DOOR STRINGER	
10.111	1	RHS COCKPIT PANEL SKIN	
PART NO PER ACFT		PART NAME	MATERIAL

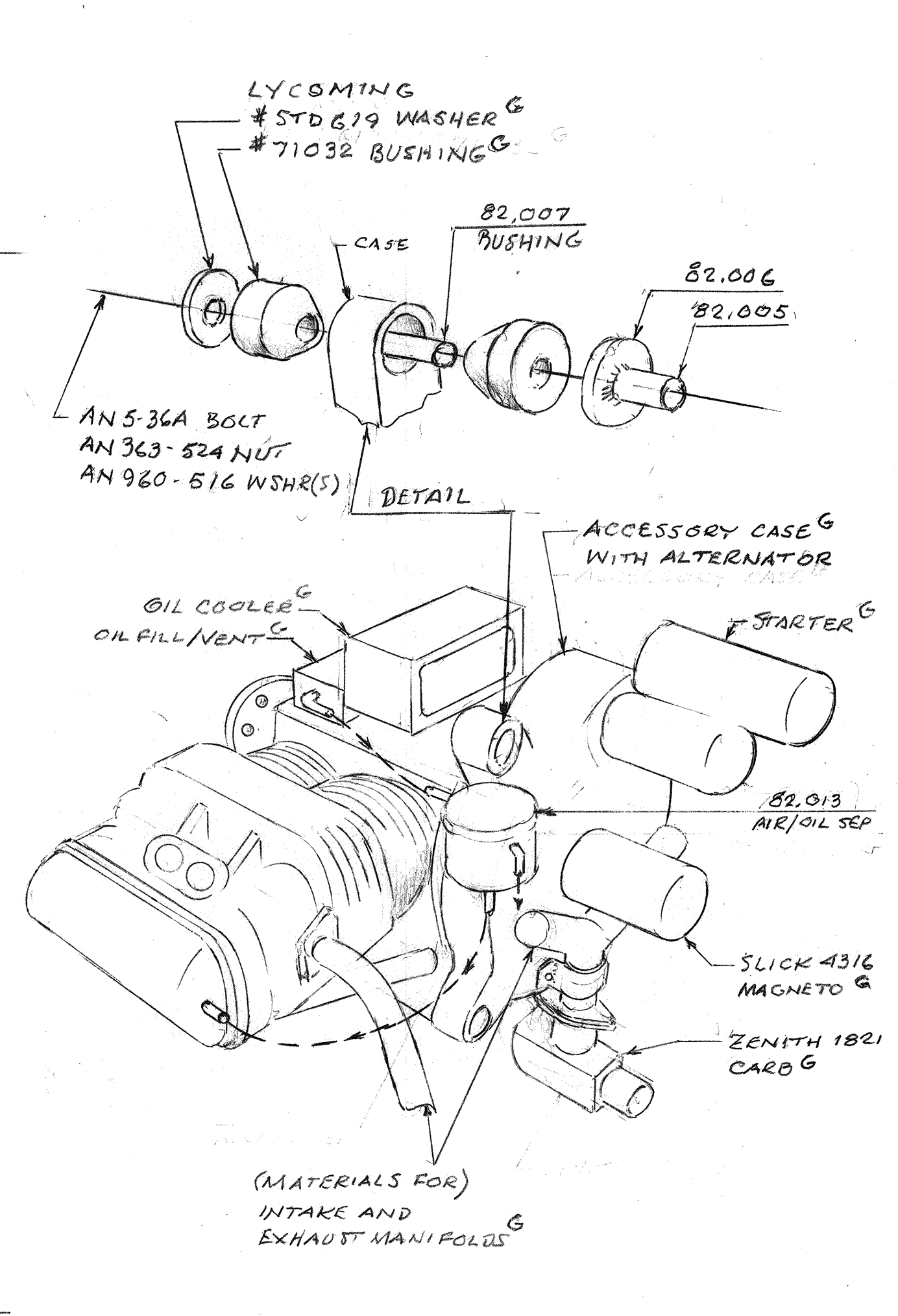
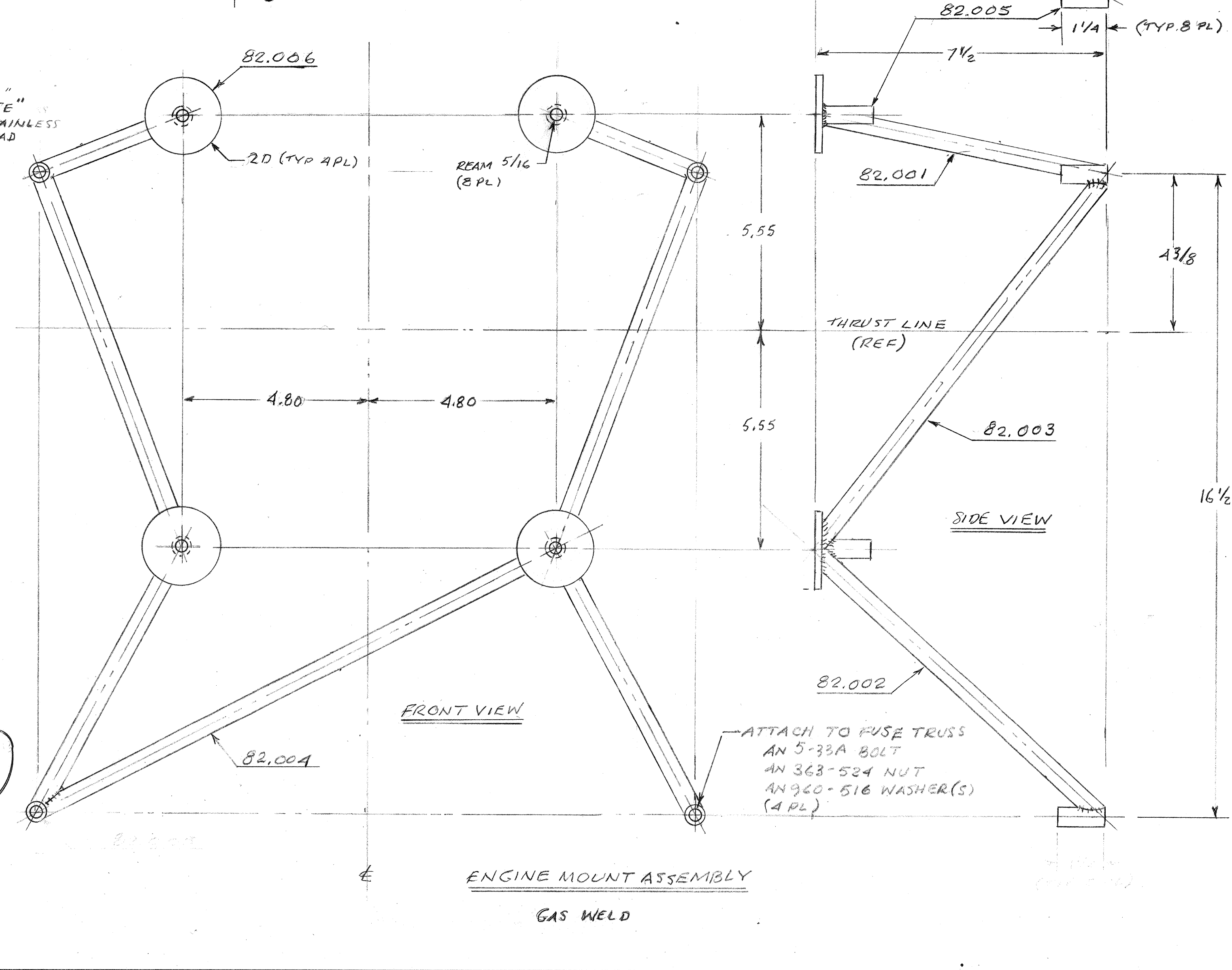
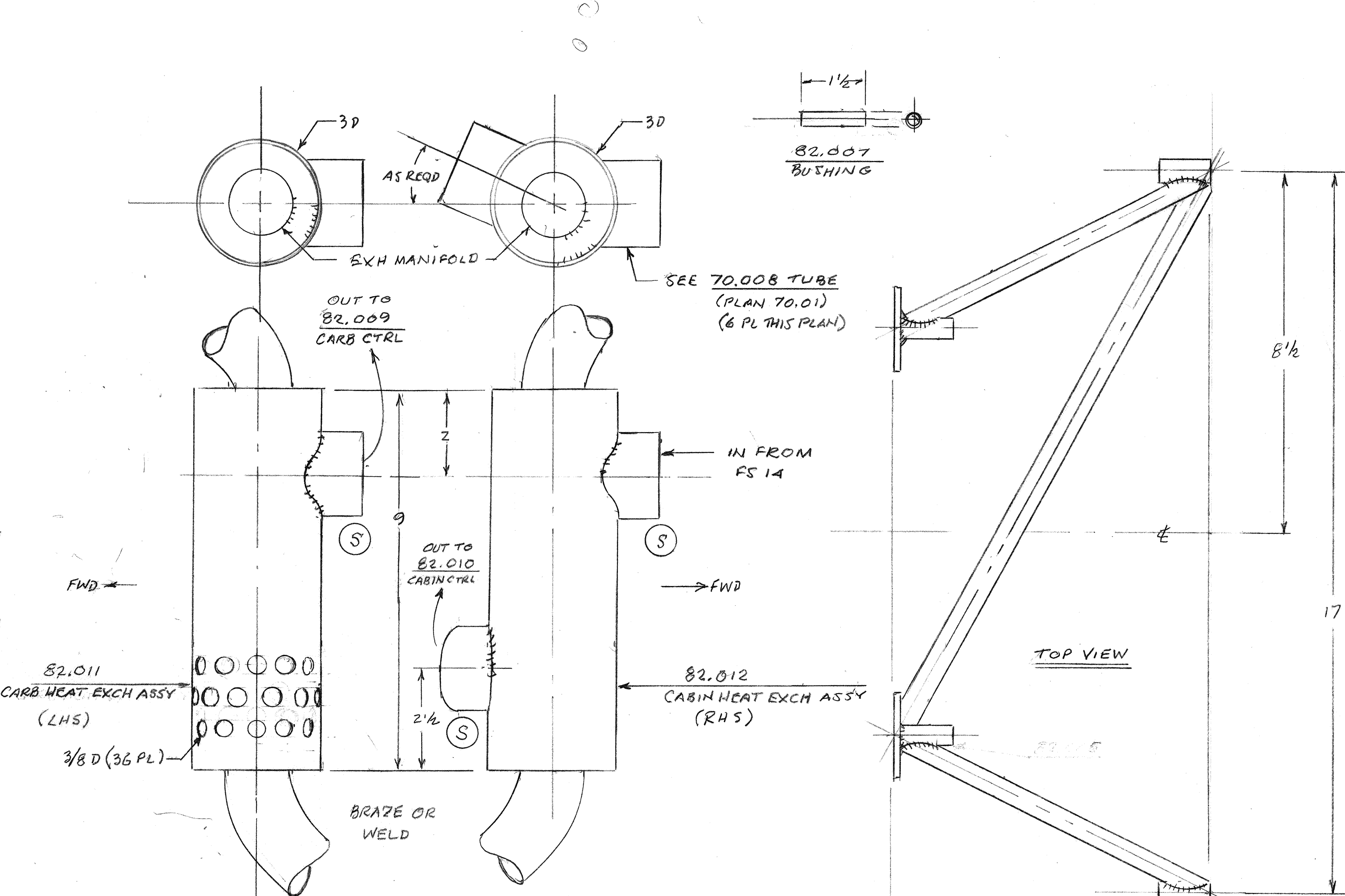
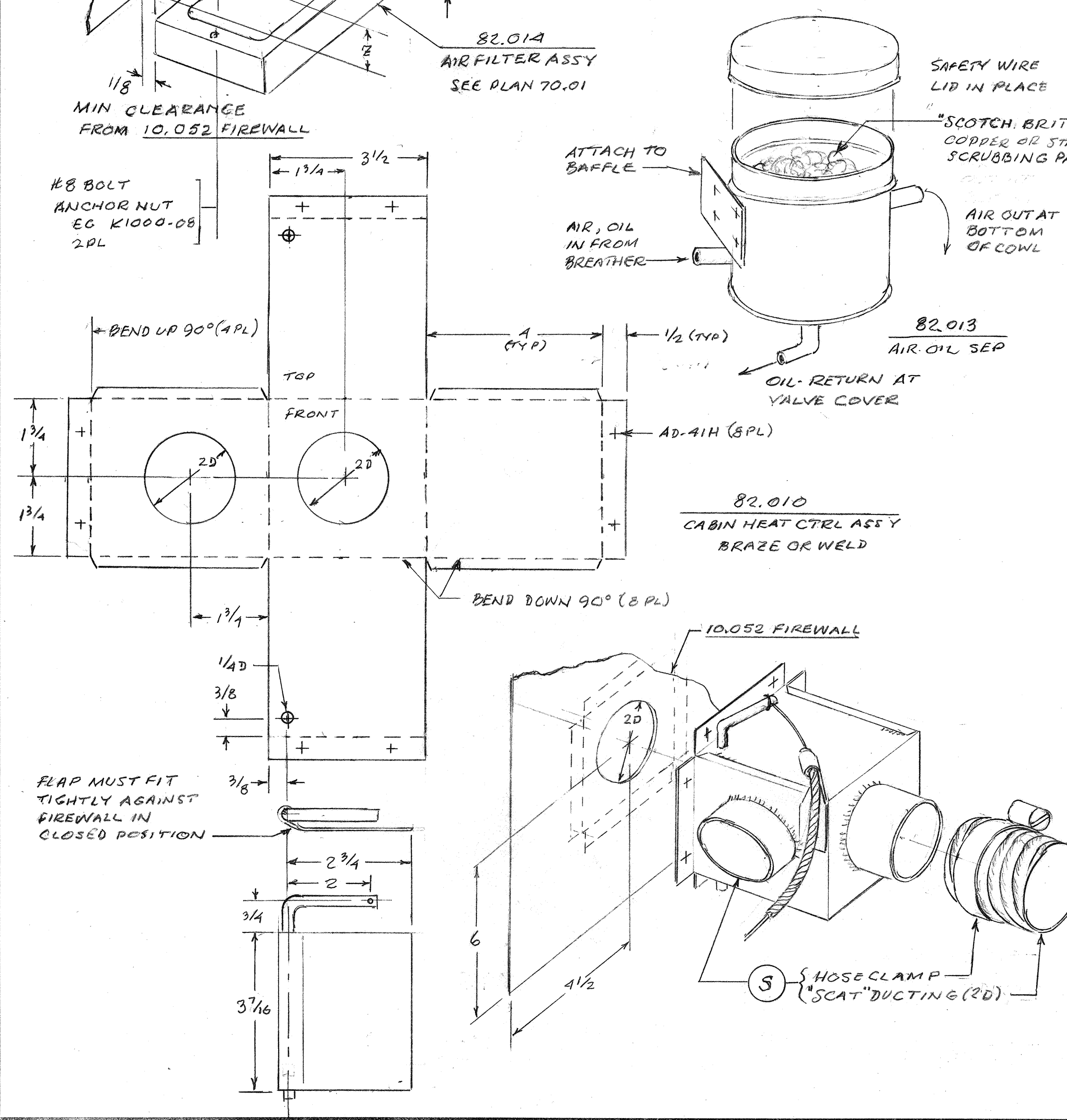
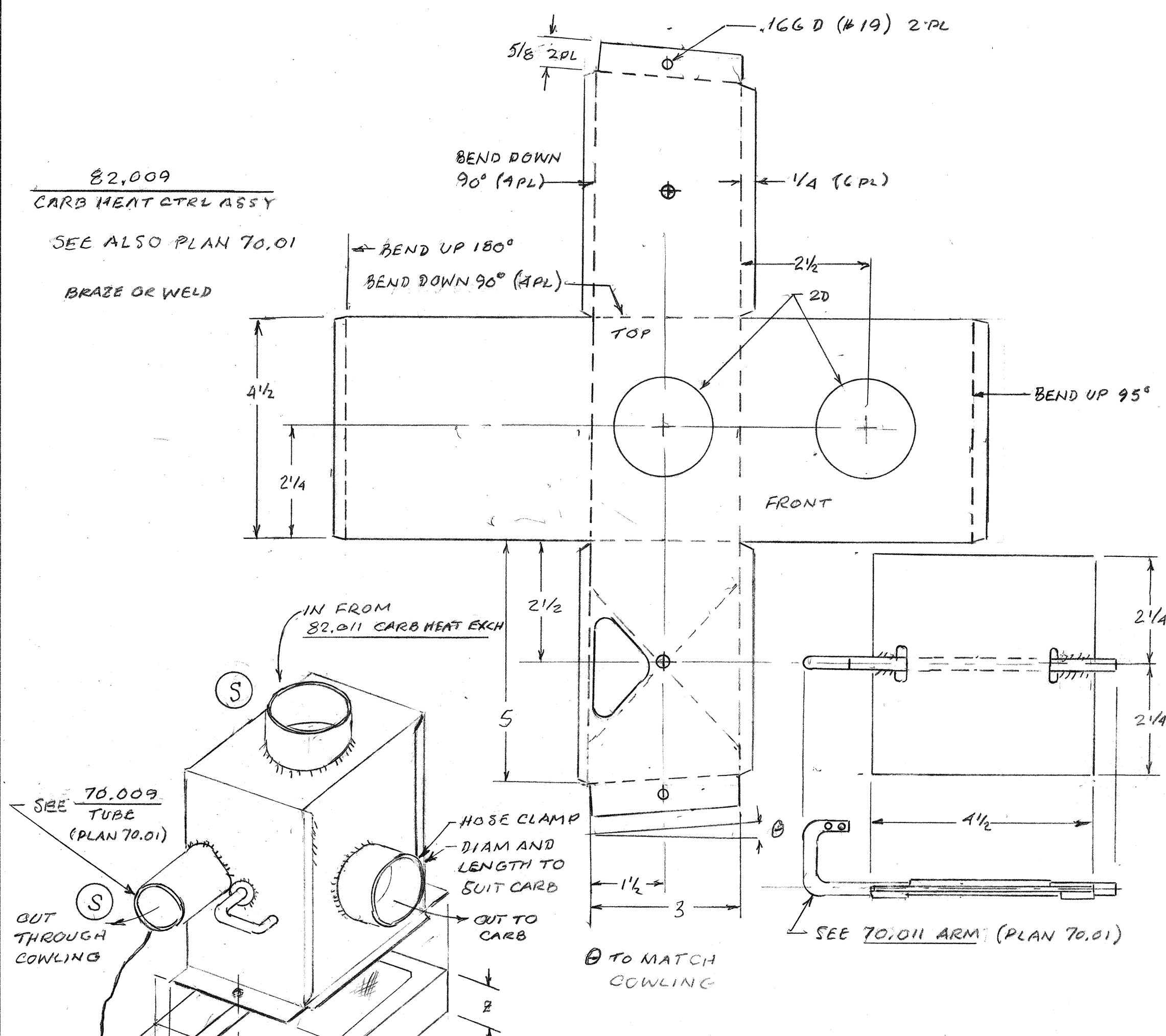
SLIDING CANOPY SUPPORT STRUCTURE

SCALE: NOTED APPROVED BY: RAN MacDonald DRAWN BY: RAN MacDonald

DATE: 8/21 REVISIONS:

MACDONALD S-22

DRAWING NUMBER 81.03



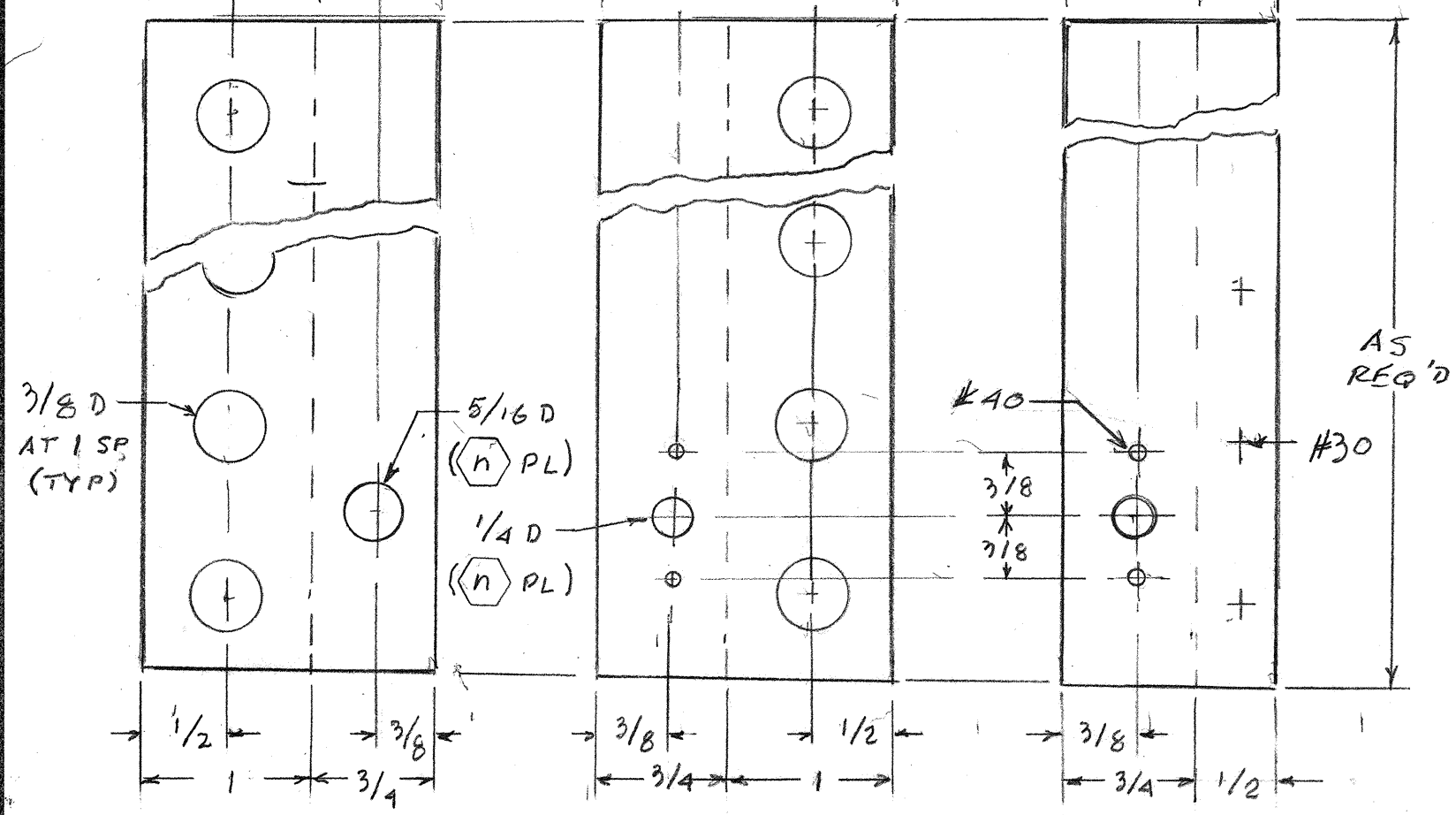
- PROTOTYPE USES A TYPE I VW ENGINE WITH DIRECT DRIVE AND 1915 CC DISPL.  
 - ENGINE (AND OTHER COMPONENTS MARKED 'G' IN SKETCHES ABOVE) OBTAINED FROM GREAT PLAINS AIRCRAFT

PART NO	NO PER ACFT	PART NAME	MATERIAL
82.014	1	AIR FILTER ASSY	(PLAN 70.01)
82.013	1	AIR-OIL SEPARATOR	"NEVR DUL" CAN
82.012	1	CABIN HEAT EXCHANGER ASSY	
82.011	1	CARB HEAT EXCHANGER ASSY	STEEL 1/4 D ROD
82.010	1	CABIN HEAT CONTROL ASSY	
82.009	1	CARB HEAT CONTROL ASSY	STEEL .025 OR .032 SHEET THK
82.007	4	ACCESSORY CASE BUSHING	STEEL TUBE 3/8 x .035
82.006	4	ENGINE MOUNT WASHER	4130 SHEET 1/8 THK
82.005	8	ENGINE MOUNT BUSHING	4130 STEEL TUBE 1/2 OD x 5/16 ID
82.004	1	ENGINE MOUNT TENSION MEMBER	
82.003	2	ENGINE MOUNT DIAGONAL MEMBER	4130 STEEL 1/2 x .035 TUBE
82.002	2	ENGINE MOUNT COMPRESSION MBR	4130 STEEL 1/2 x .049 TUBE
82.001	2	ENGINE MOUNT TENSION MEMBER	4130 STEEL 1/2 x .055 TUBE

ENGINE MOUNT INSTALLATION DETAILS			
SCALE: 1/2	APPROVED BY: RAM MacDonald	DRAWN BY RAM	
DATE: 8/21		REVISED	
MACDONALD S-22			
			DRAWING NUMBER
			82.01

AT ASSEMBLY

COWLING  
1 FIBERGLASS PLY

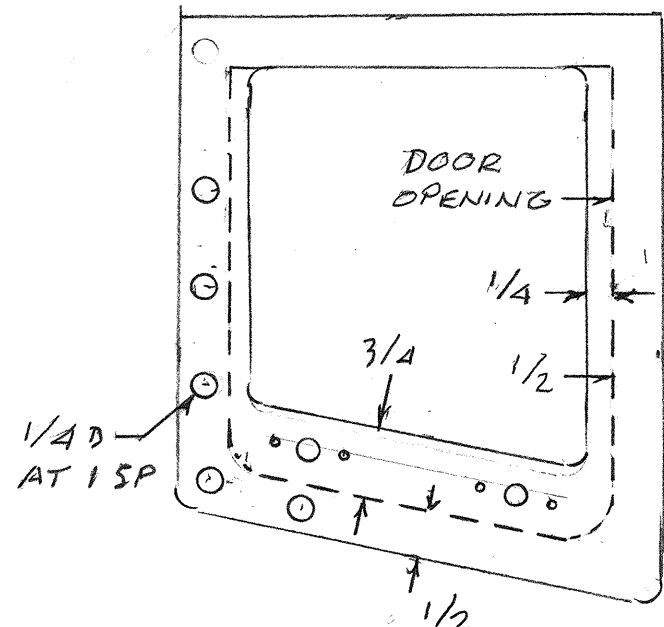


82.031 STUD SIDE  
82.032 - AT SPLIT  
82.033 - AT FIREWALL

DZUS FASTENER REINFORCING STRIPS - FULL SCALE

SPINNER  
12 D x 10.5 (APPROX)

PANEL FOR ACCESS TO OIL FILL AND DIPSTICK (PIANO HINGE AND DZUS)

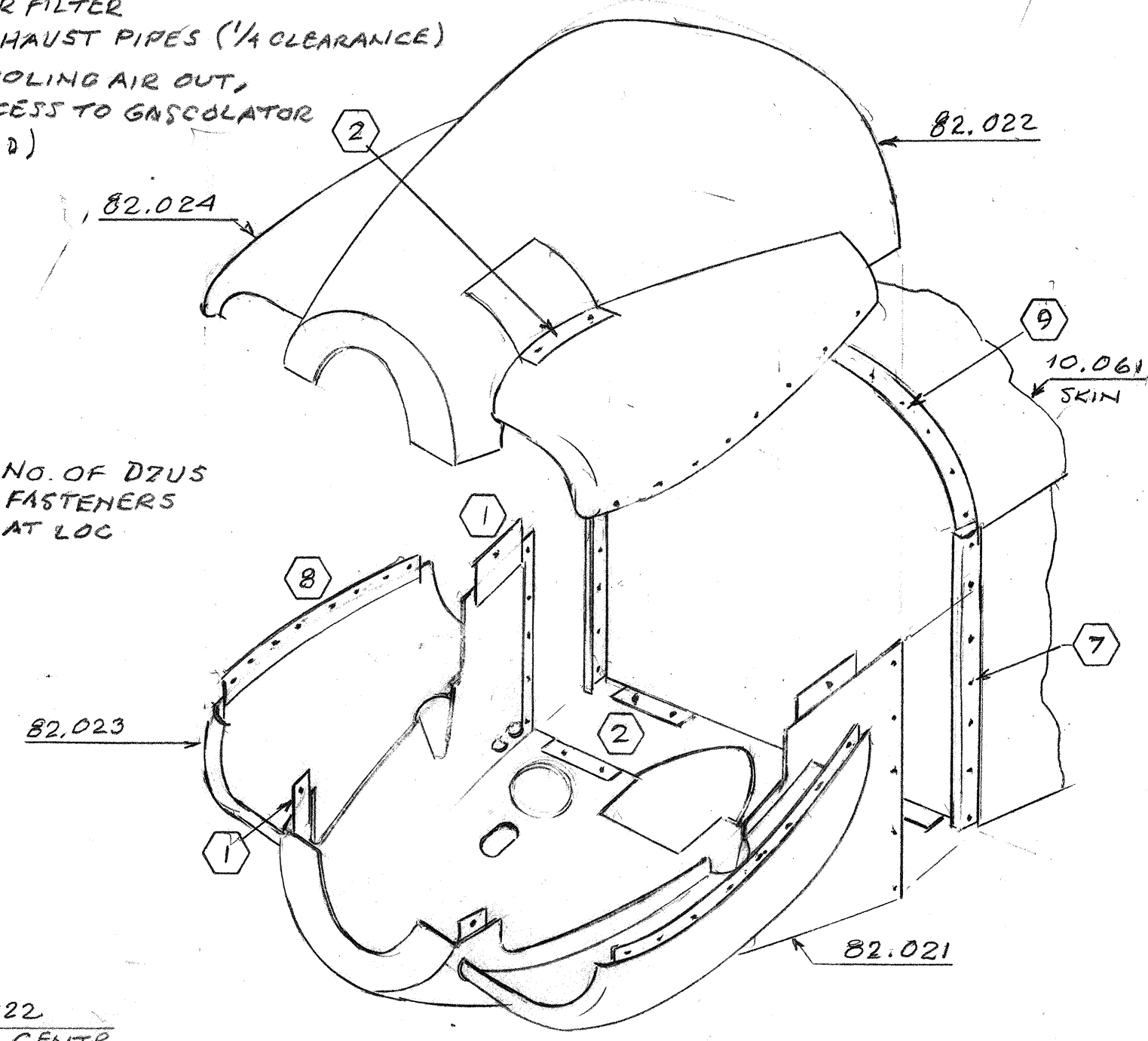


82.034 - SPRING SIDE AT DOOR

- DZUS FASTENERS - 49 THIS PLAN  
- AJA-30SS, -35SS, -40SS 1/4 D OVAL HEAD STUD  
- GA4-250 GROMMET  
- 54-200, -225 SPRING

HOLES FOR:  
AIR FILTER  
EXHAUST PIPES (1/4 CLEARANCE)  
COOLING AIR OUT, ACCESS TO GASCOLATOR (4)

(n) = NO. OF DZUS FASTENERS AT LOC

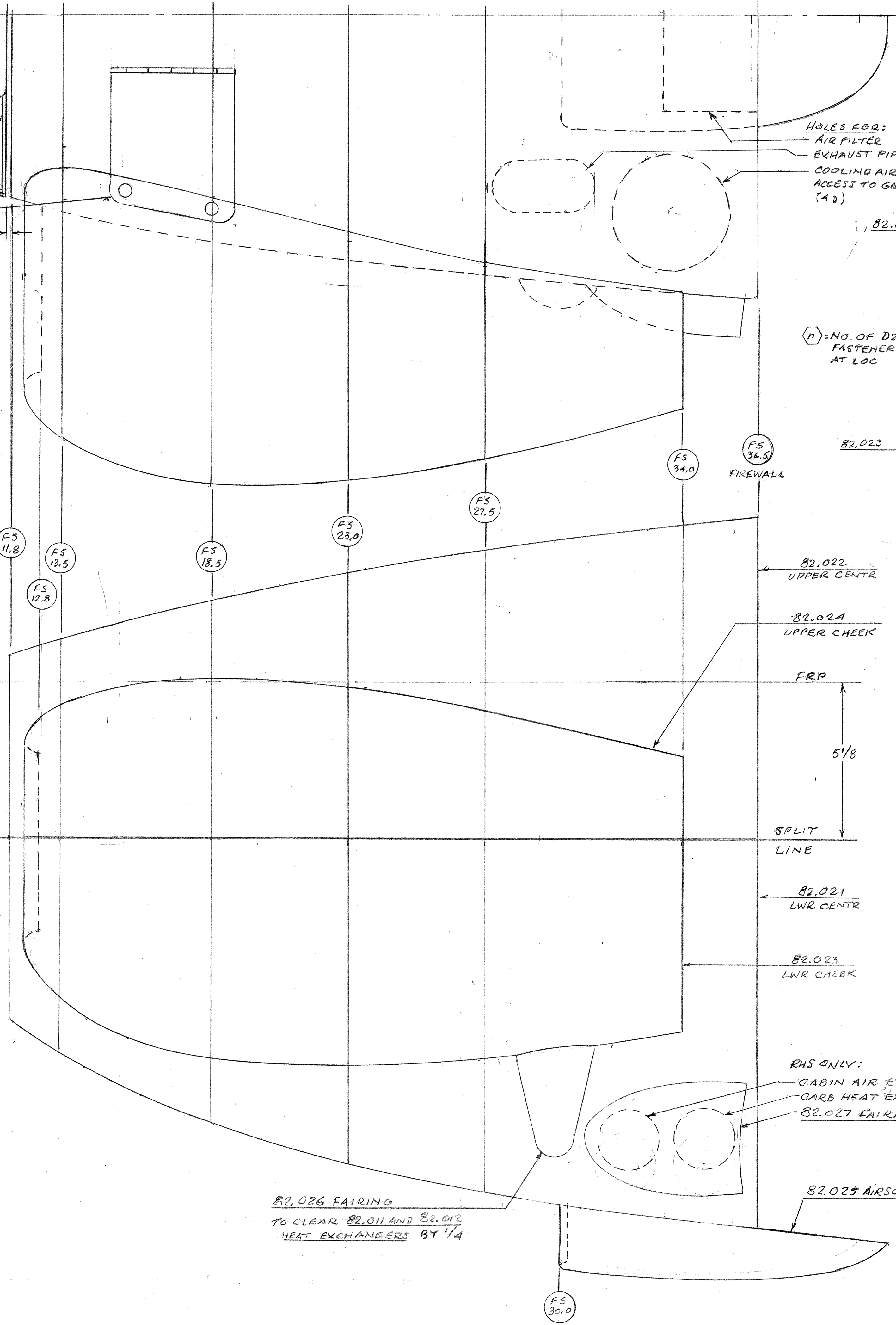
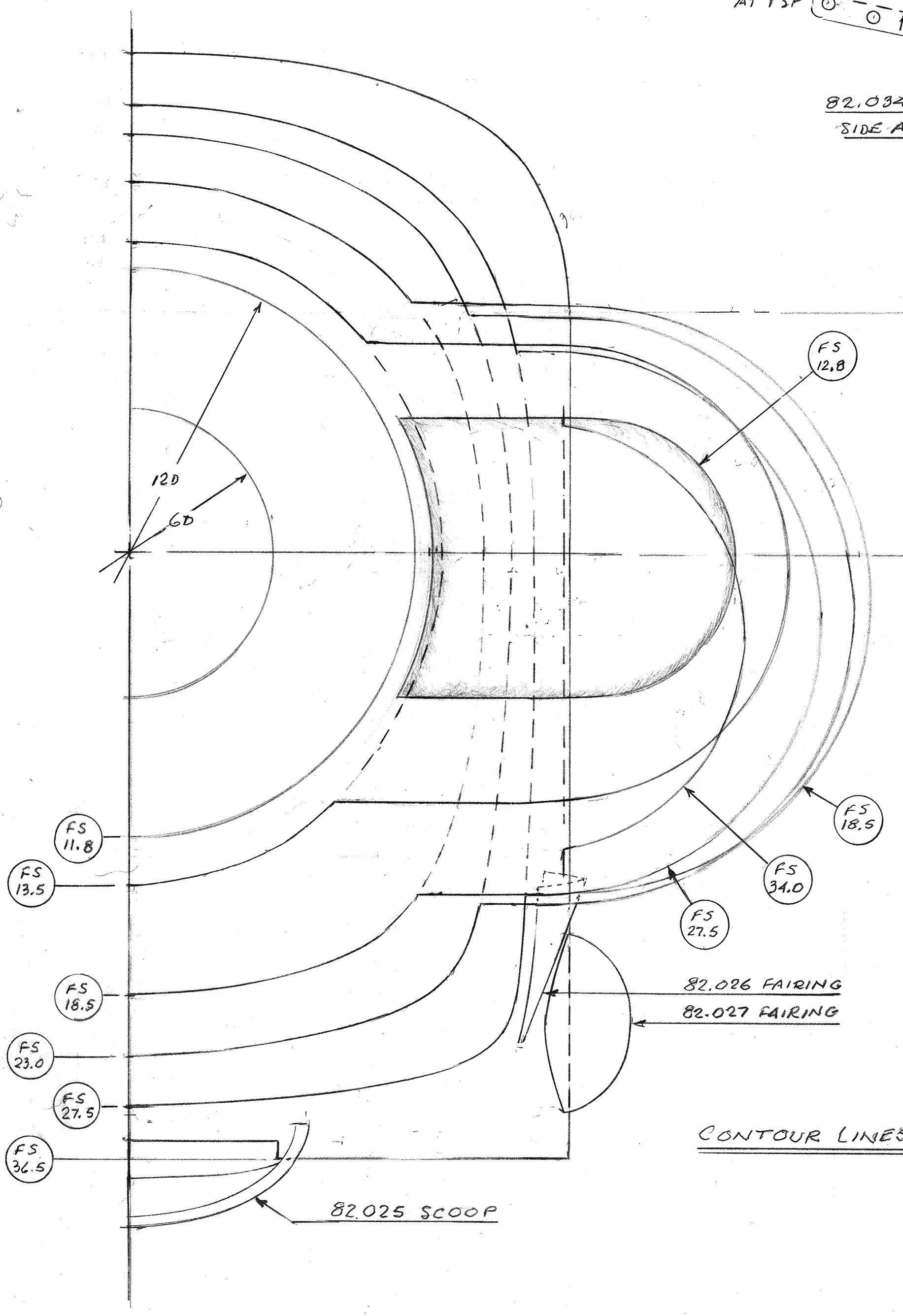


- NOTES  
- CONTOUR LINES SHOW FINISHED (OUTER) SURFACE OF COWLING.  
- SCALE DRAWING TO OBTAIN DIMENSIONS NOT GIVEN.  
- MAKE 82.023 AND 82.024 CHEEKS AS ONE PIECE.  
- MAKE 82.021 AND 82.022 CENTRAL MEMBERS AS ONE PIECE. FIT TO FIREWALL AND ATTACH CHEEKS BEFORE SPLITTING.

82.034	1	↑	AT OIL FILL DOOR	
82.033	5		AT FIREWALL	
82.032	6		DZUS REIN AT SPRING SIDE SPLIT	
82.031	12		DZUS REIN STRIP, STUD SIDE	2024 T3 .000 SHEET THK

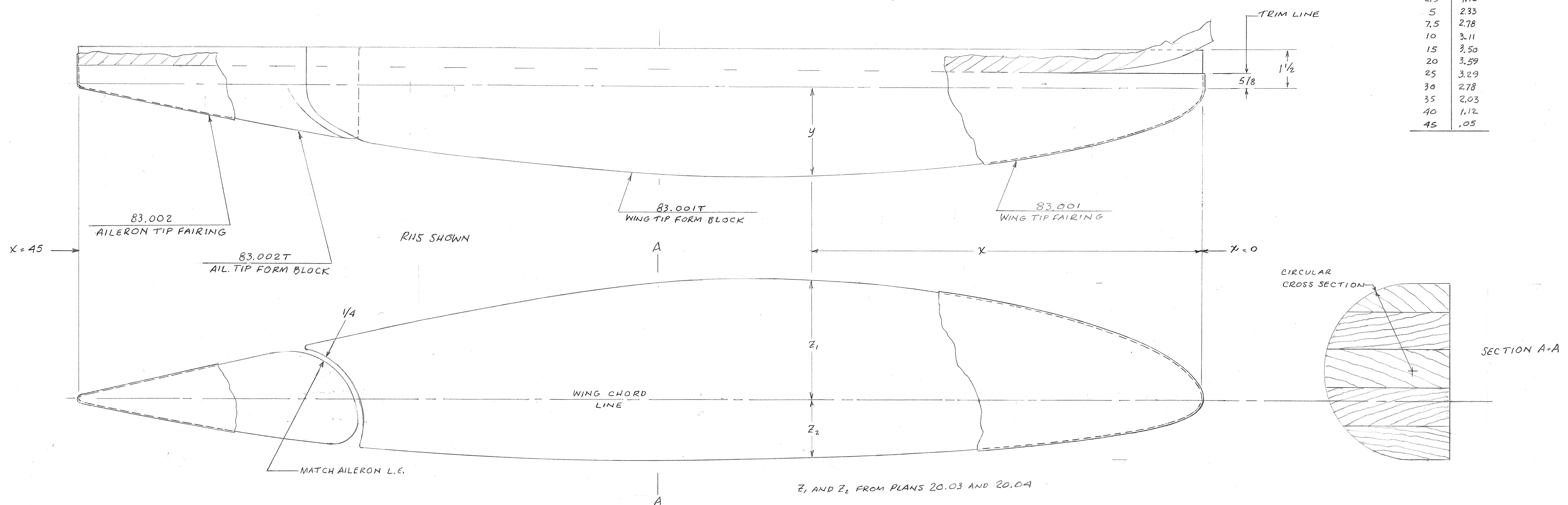
82.027	1		FAIRING AT HEAT DISCHARGER	2 OR 3 LAYERS FIBERGLASS (6 OR 702)
82.026	2		FAIRING AT HEAT EXCHANGERS	
82.025	1		AIRSCOOP	
82.024	2		UPPER HALF CHEEK	
82.023	2		LOWER HALF CHEEK	
82.022	1		UPPER HALF CENTRAL MEMBER	
82.021	1		LOWER HALF CENTRAL MEMBER	
PART NO.	NO PER ACFT	PART NAME	MATERIAL	

COWLING			
SCALE: 1/2 IN NOTED	APPROVED BY: R A MacDonald	DRAWN BY RAM	
DATE: 8/21		REVISED	
MACDONALD S-22			
			DRAWING NUMBER 82.02

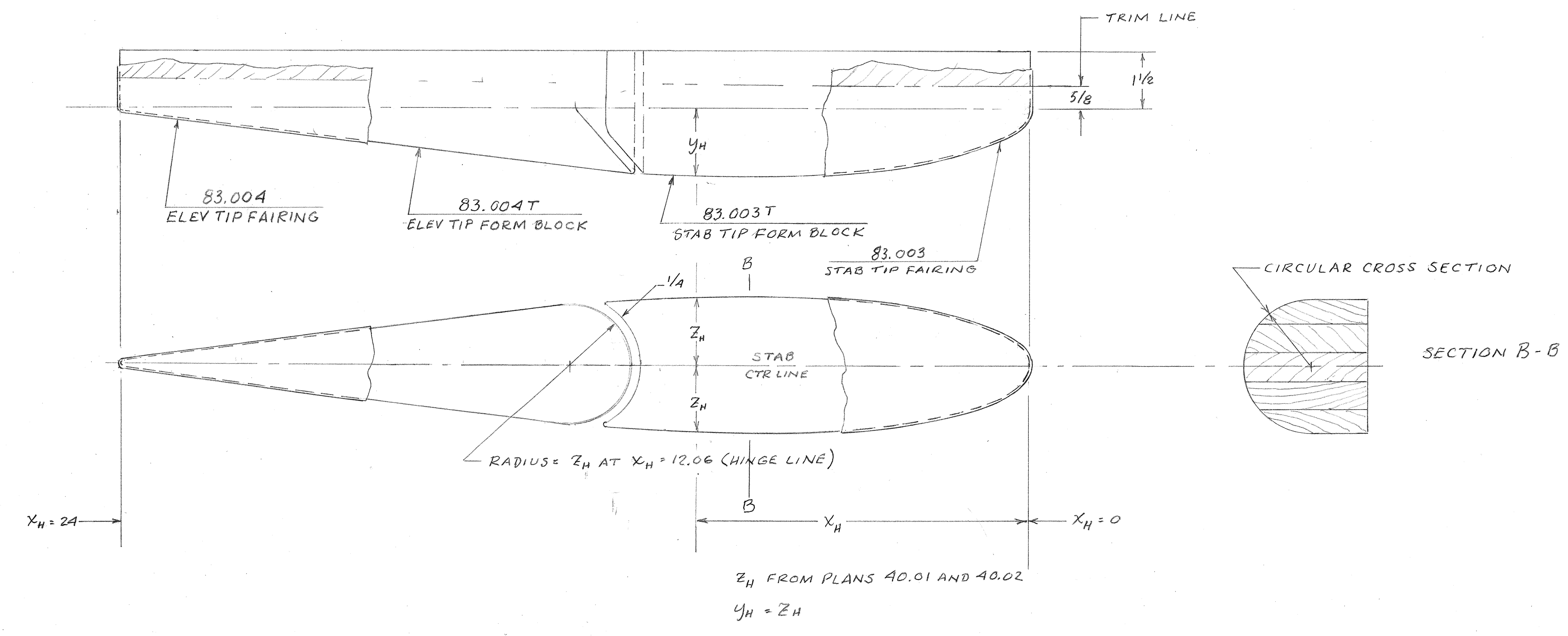
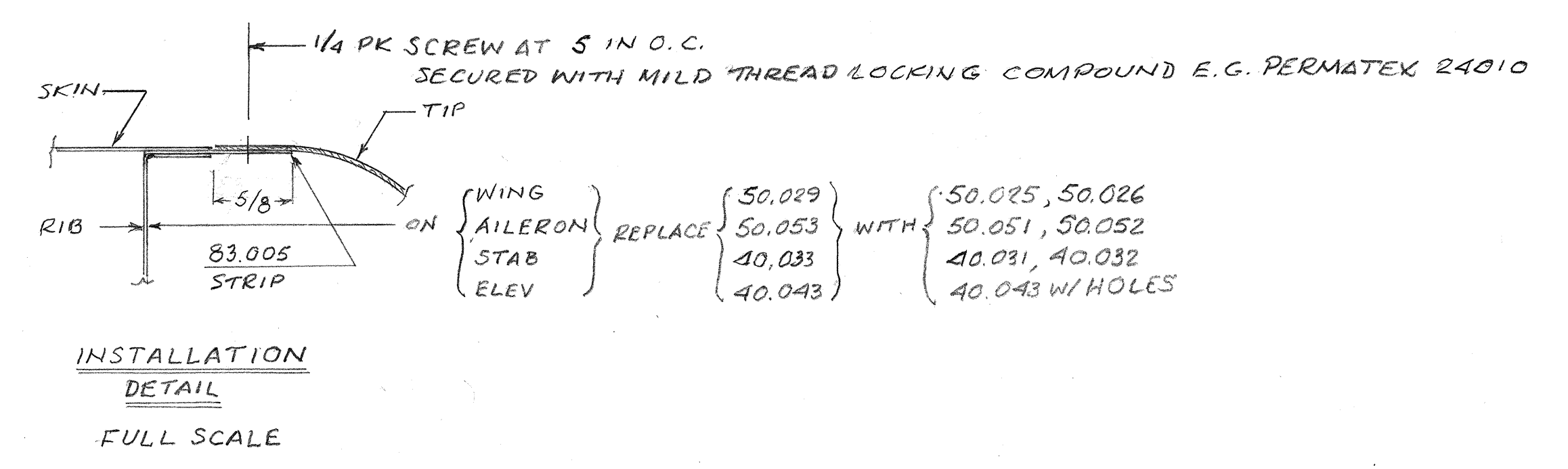


RHS ONLY:  
CABIN AIR EXIT 2D  
CARB HEAT EXIT 2D  
82.027 FAIRING

X, IN	Y, IN
0	0
1.25	1.25
2.5	1.70
5	2.33
7.5	2.78
10	3.11
15	3.50
20	3.59
25	3.29
30	2.78
35	2.03
40	1.12
45	.05



Z<sub>1</sub> AND Z<sub>2</sub> FROM PLANS 20.03 AND 20.04

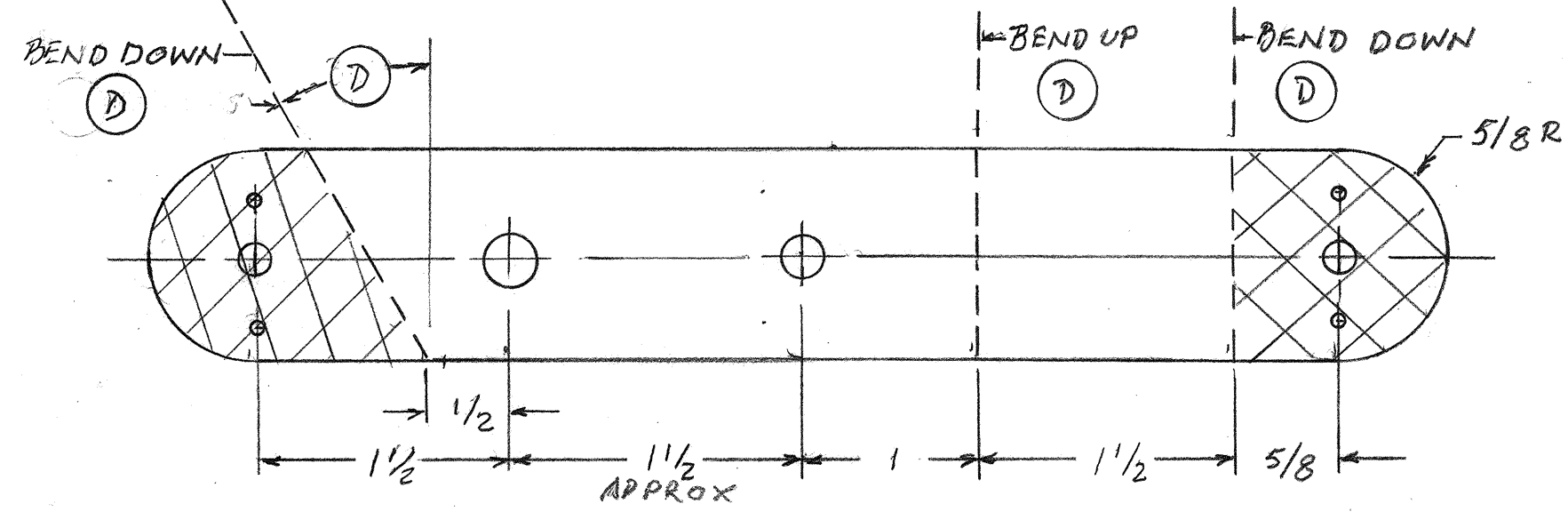


PART NO	NO PER ACFT	PART NAME	MATERIAL
83.005	-23 FT	TIP MOUNTING STRIP	2024-T3 .020 x 1 1/8
83.004	2	ELEV TIP FAIRING	6 OZ FIBERGLASS 2 LAYERS
83.004T	1	ELEV TIP FORM BLOCK	PINE OR FIR
83.003	2	STAB TIP FAIRING	6 OZ FIBERGLASS 2 LAYERS
83.003T	1	STAB TIP FORM BLOCK	PINE OR FIR
83.002	1L 1R	AILERON TIP FAIRING	6 OZ FIBERGLASS 2 LAYERS
83.002T	1L 1R	AILERON TIP FORM BLOCK	PINE OR FIR
83.001	1L 1R	WING TIP FAIRING	7 OZ FIBERGLASS 2 LAYERS
83.001T	1L 1R	WING TIP FORM BLOCK	PINE / FIR

T: TOOL

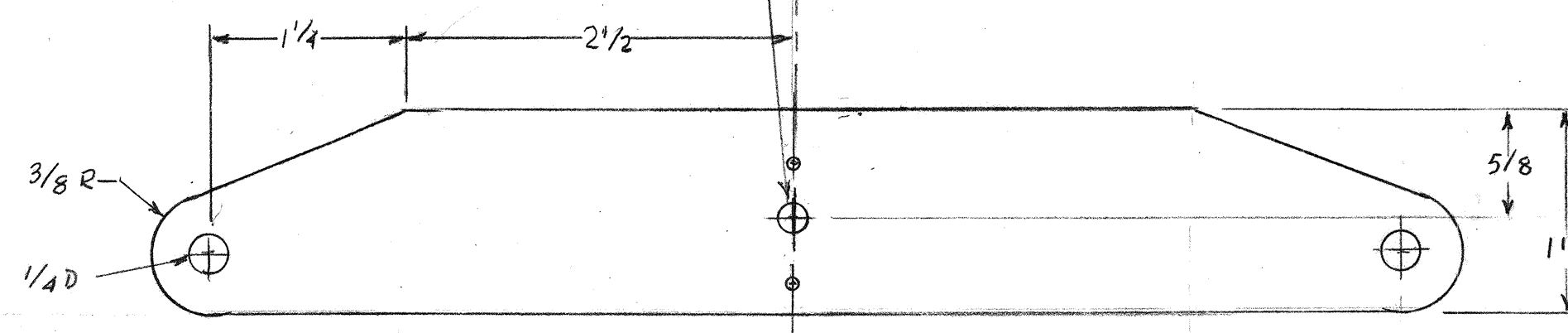
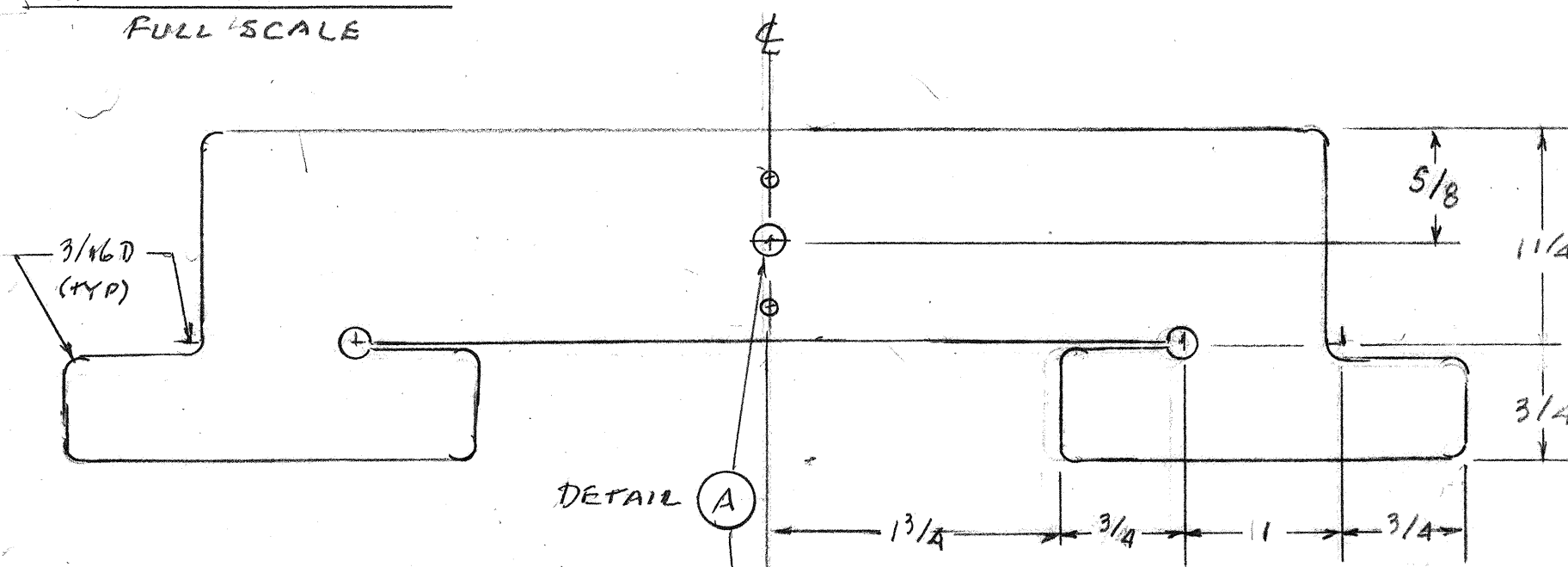
LIFTING SURFACE TIP FAIRINGS		
SCALE: 1/2" NOTED	APPROVED BY: RAMacDonald	DRAWN BY: RAM
DATE: 8/2016	REVISOR:	REVISION:
MAC DONALD S-22		
DRAWING NUMBER		83-01

83.016 INBD SUPPORT  
FULL SCALE

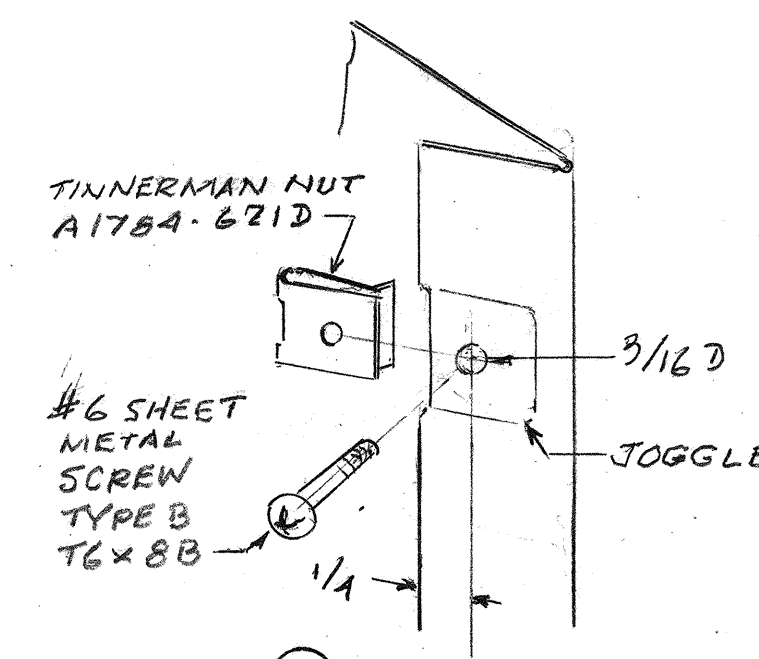


① AS REQ'D TO MAKE CROSS-HATCHED SURFACES MATCH INSIDE CONTOUR OF 83.012 INBD MBR

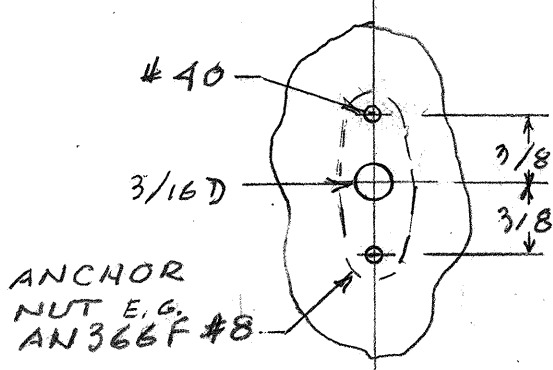
83.018 UPPER SUPPORT  
FULL SCALE



83.019 LOWER SUPPORT  
FULL SCALE

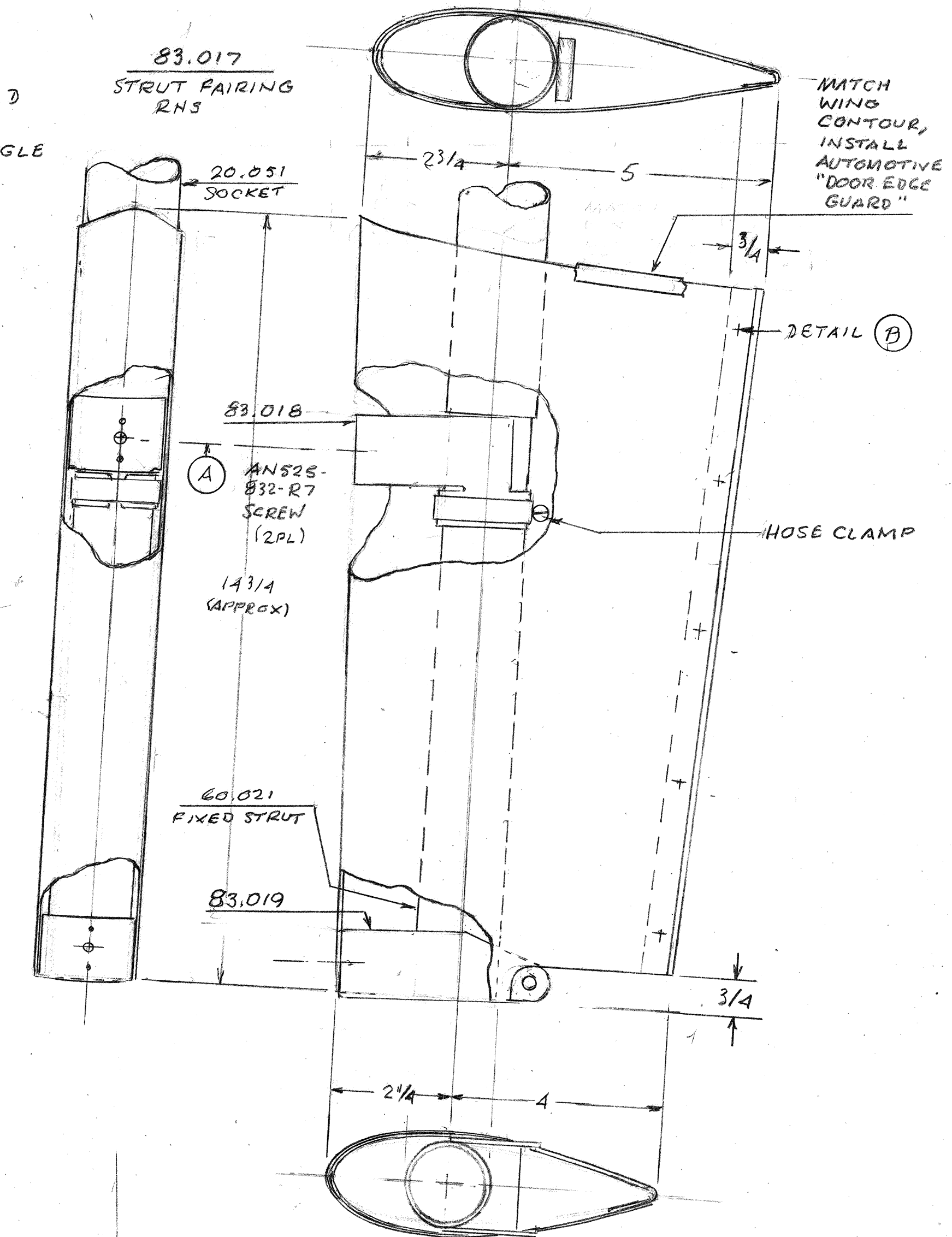


DETAIL B  
2x5 PL AT EQ SP



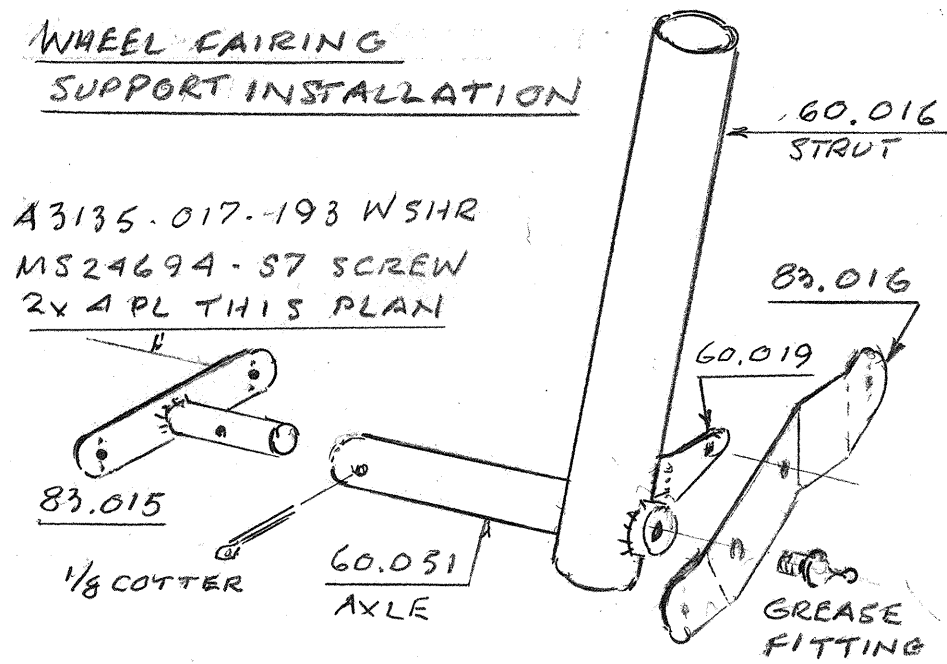
DETAIL A  
ANCHOR NUT INST  
2x15 PL THIS PLAN

83.017 STRUT FAIRING  
RHS

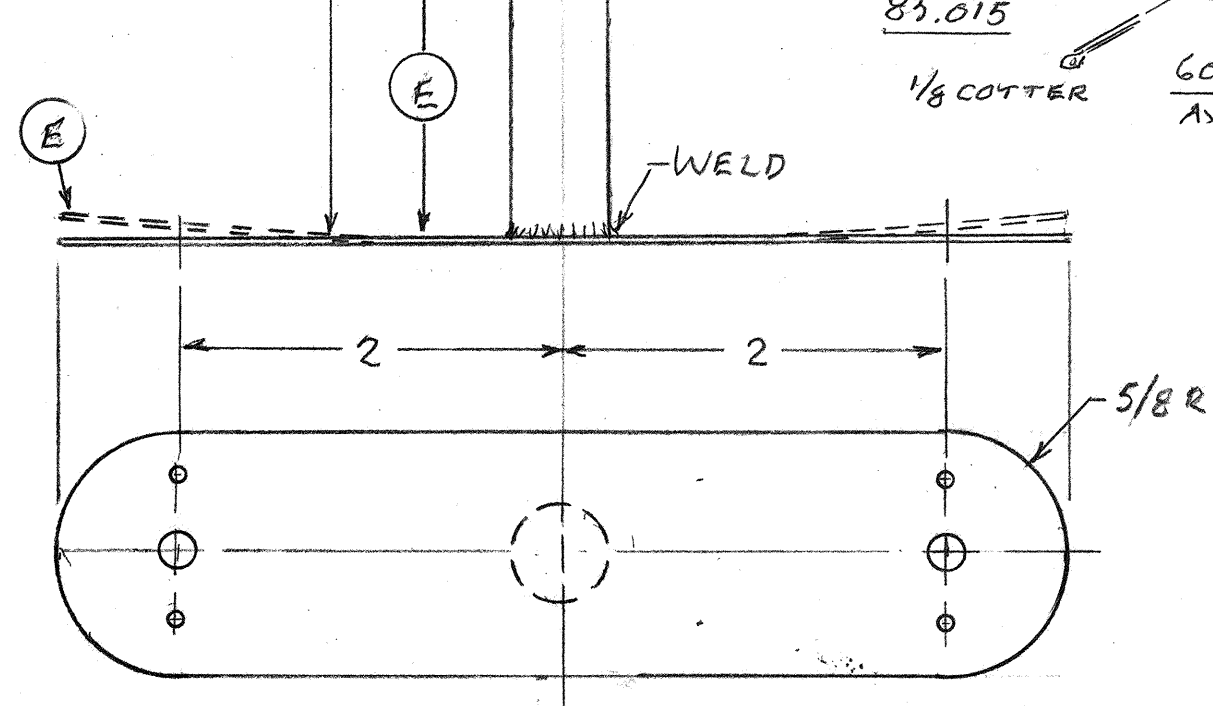


WHEEL FAIRING  
SUPPORT INSTALLATION

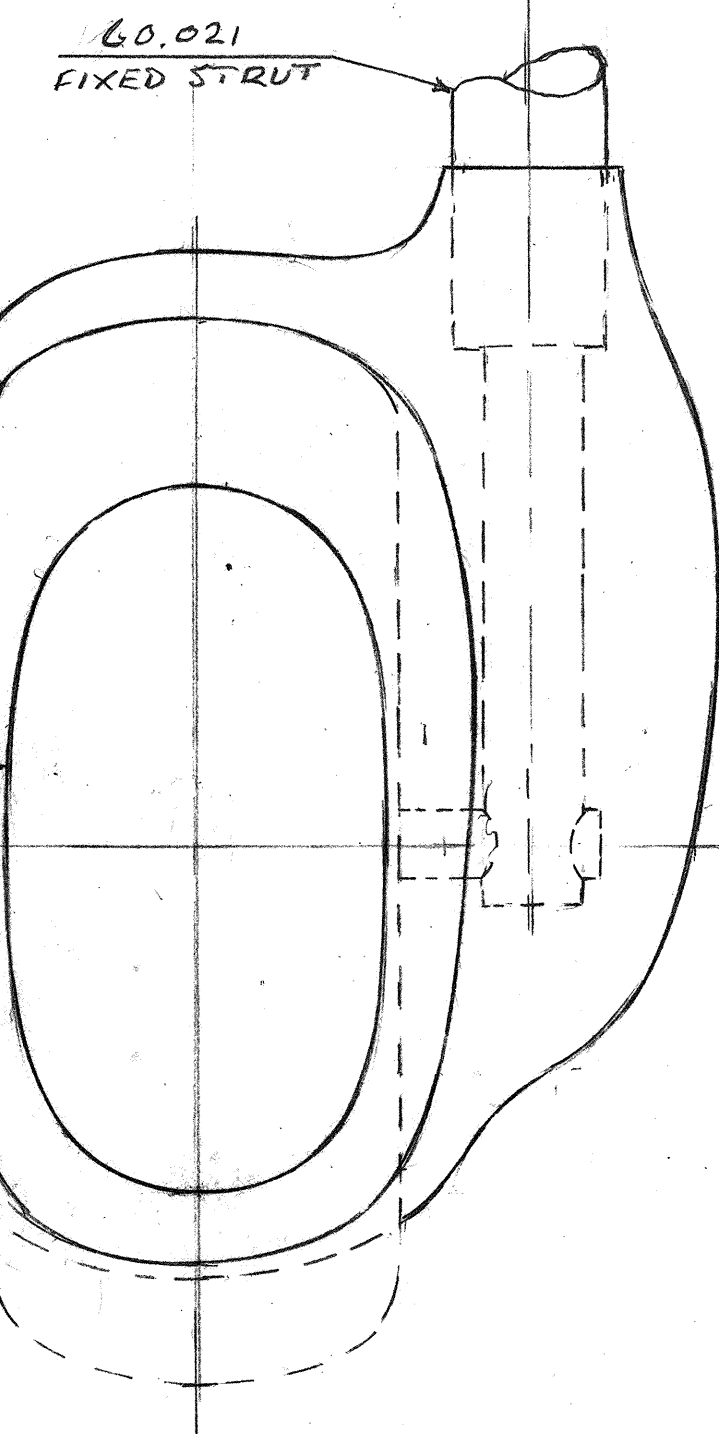
A3135-017-193 WSHR  
MS24694-S7 SCREW  
2x PL THIS PLAN



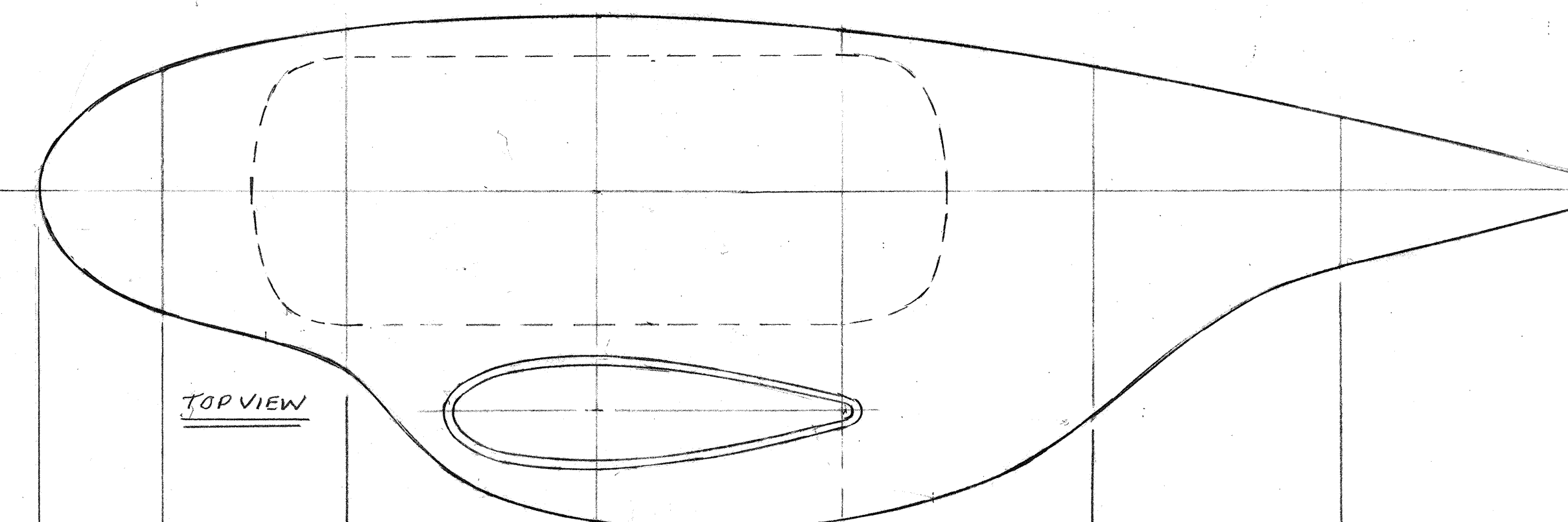
⑤ AS REQ'D TO MATCH INSIDE CONTOUR OF 83.011 OUTBD MBR



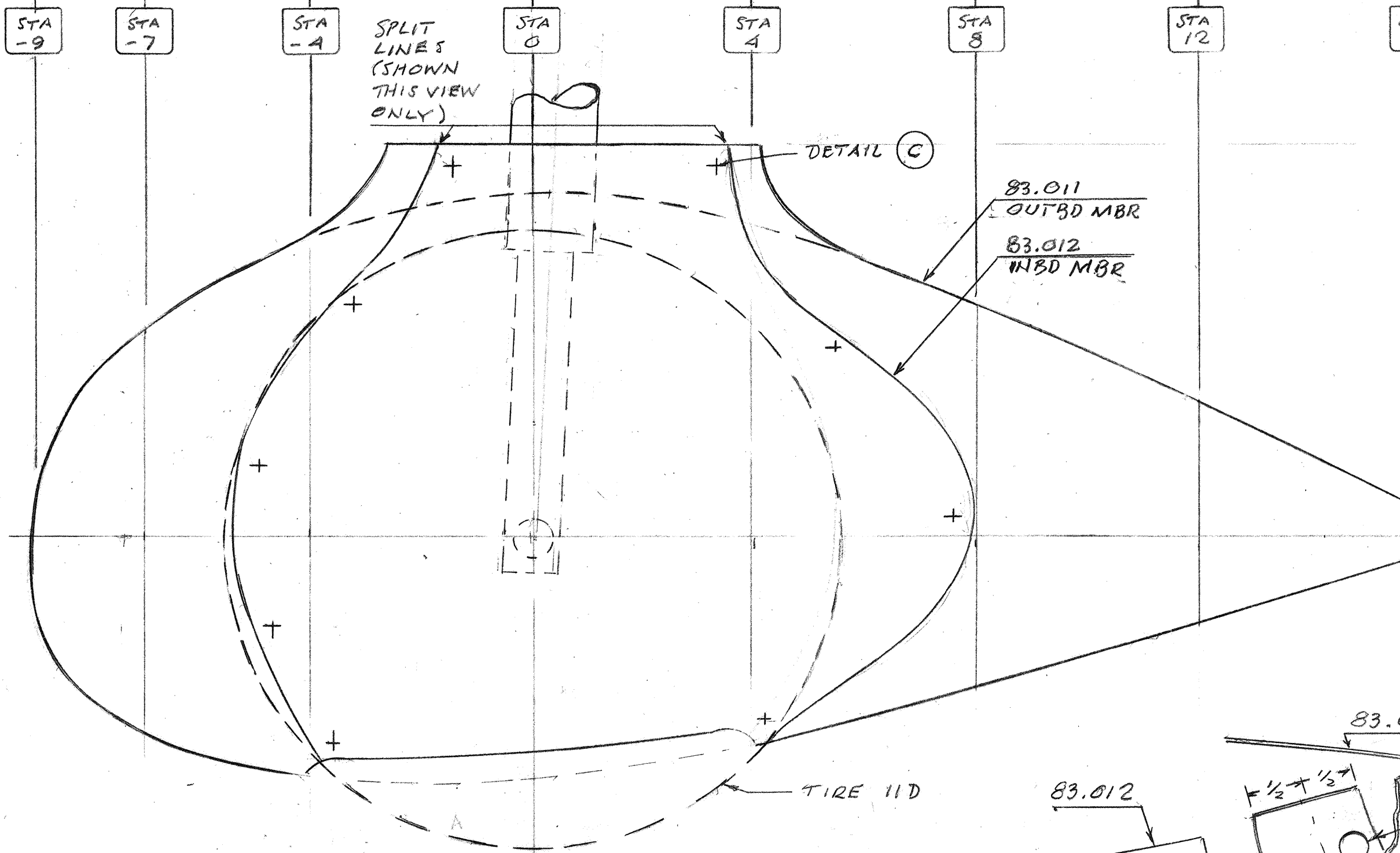
83.015 OUTBD SUPPORT  
FULL SCALE



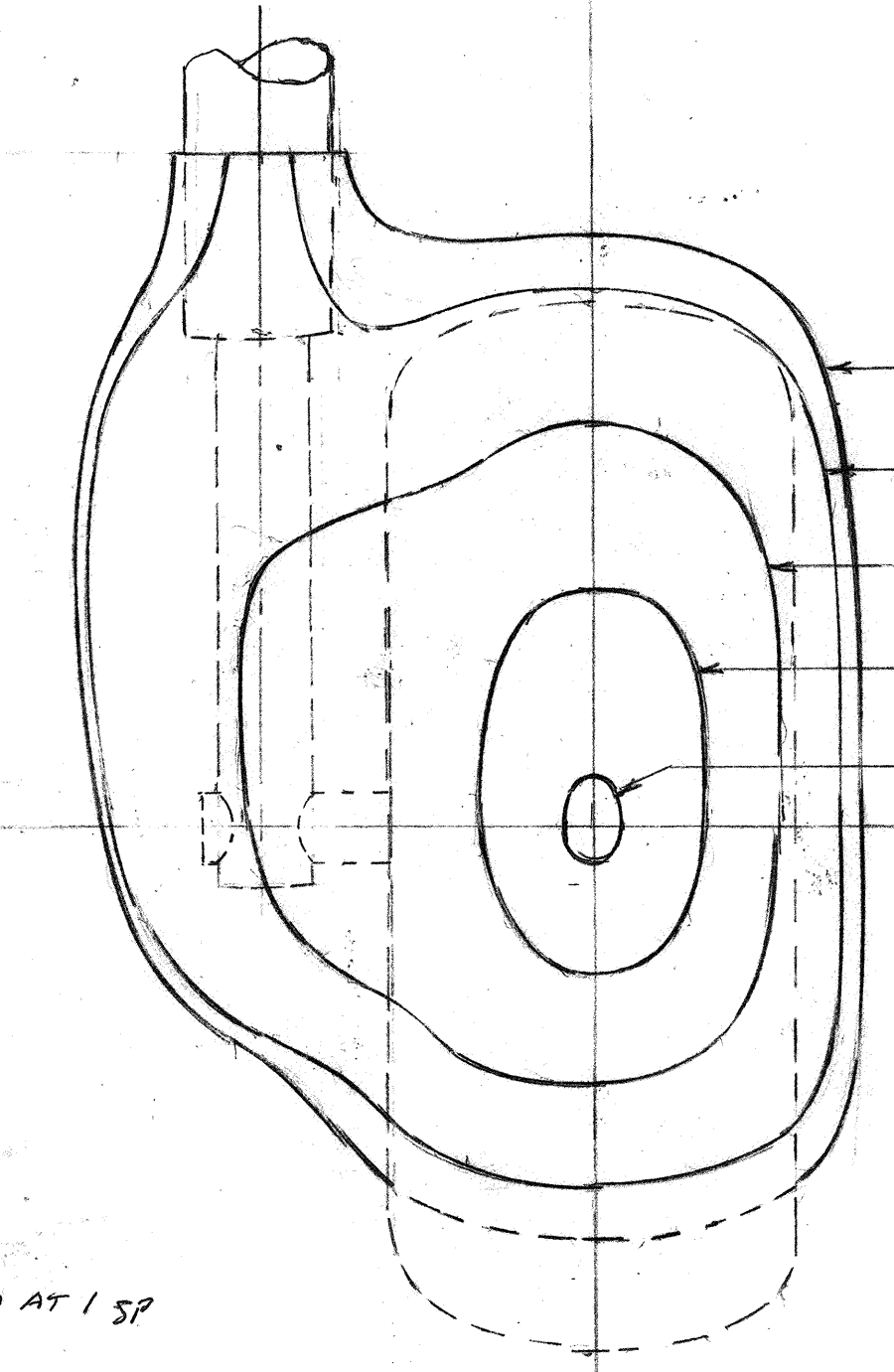
FRONT VIEW



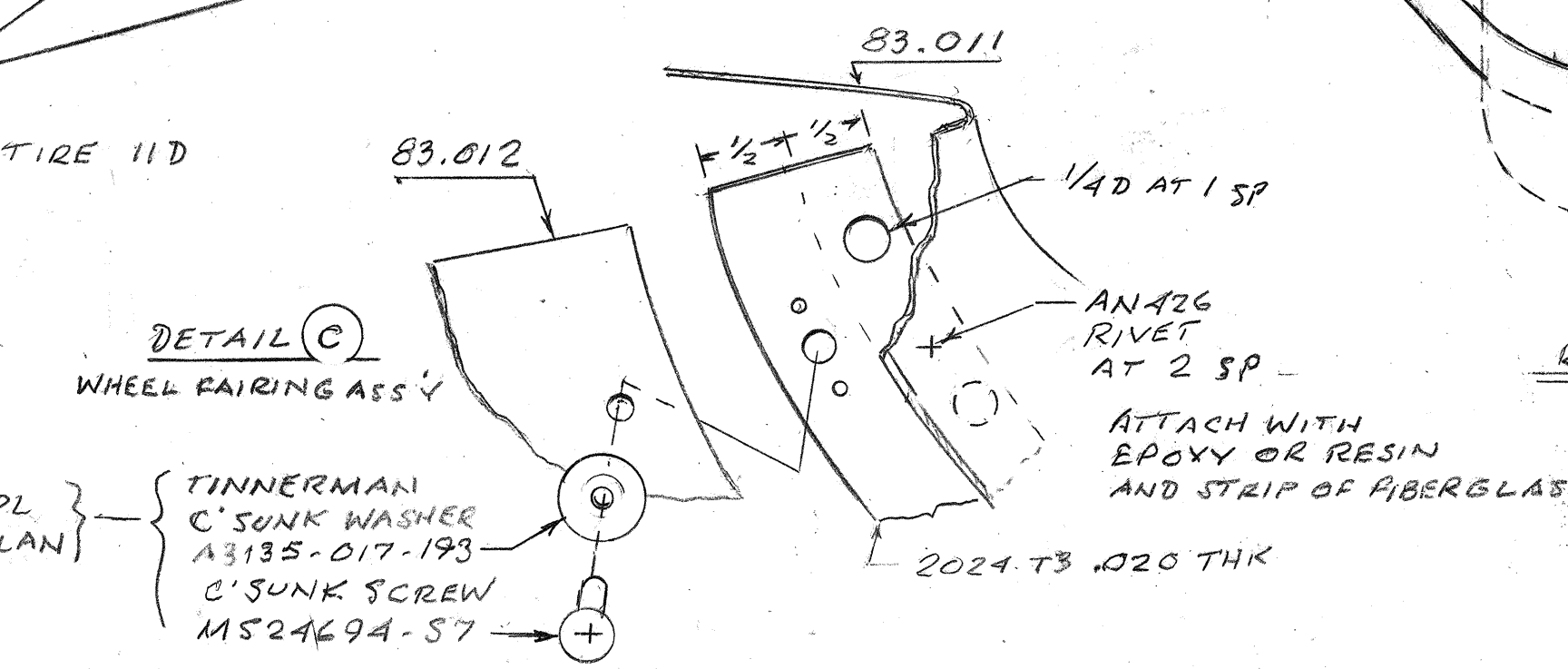
TOP VIEW



SIDE VIEW - BUS LOOKING OUTBD



REAR VIEW



DETAIL C  
WHEEL FAIRING ASSY

83.019	2	LOWER STRUT FAIRING SUPPORT	
83.018	2	UPPER STRUT FAIRING SUPPORT	
83.017	2	STRUT FAIRING	2024-T3 .020 SHEET THK
83.016	2	INBOARD WHEEL FAIRING SUPPORT	2024-T3 .040 SHEET THK
83.015	2	OUTBOARD WHEEL FAIRING SUP ASSY	STEEL SHEETS 085/082 4130 TUBING 1/2x.035

83.012	2	INBOARD WHEEL FAIRING MEMBER	2 OR 3 LAYERS FIBERGLASS
83.011	2	OUTBOARD WHEEL FAIRING MEMBER	6 OR 7 OZ
PART NO.	NO PER ACCT	PART NAME	MATERIAL

WHEEL AND STRUT FAIRINGS

SCALE: 1/8" NOTED APPROVED BY: R.A. MacDonald DRAWN BY: RLH  
DATE: 9/21 REVISIONS: REVISED

MAC DONALD S-22

DRAWING NUMBER: 83.02