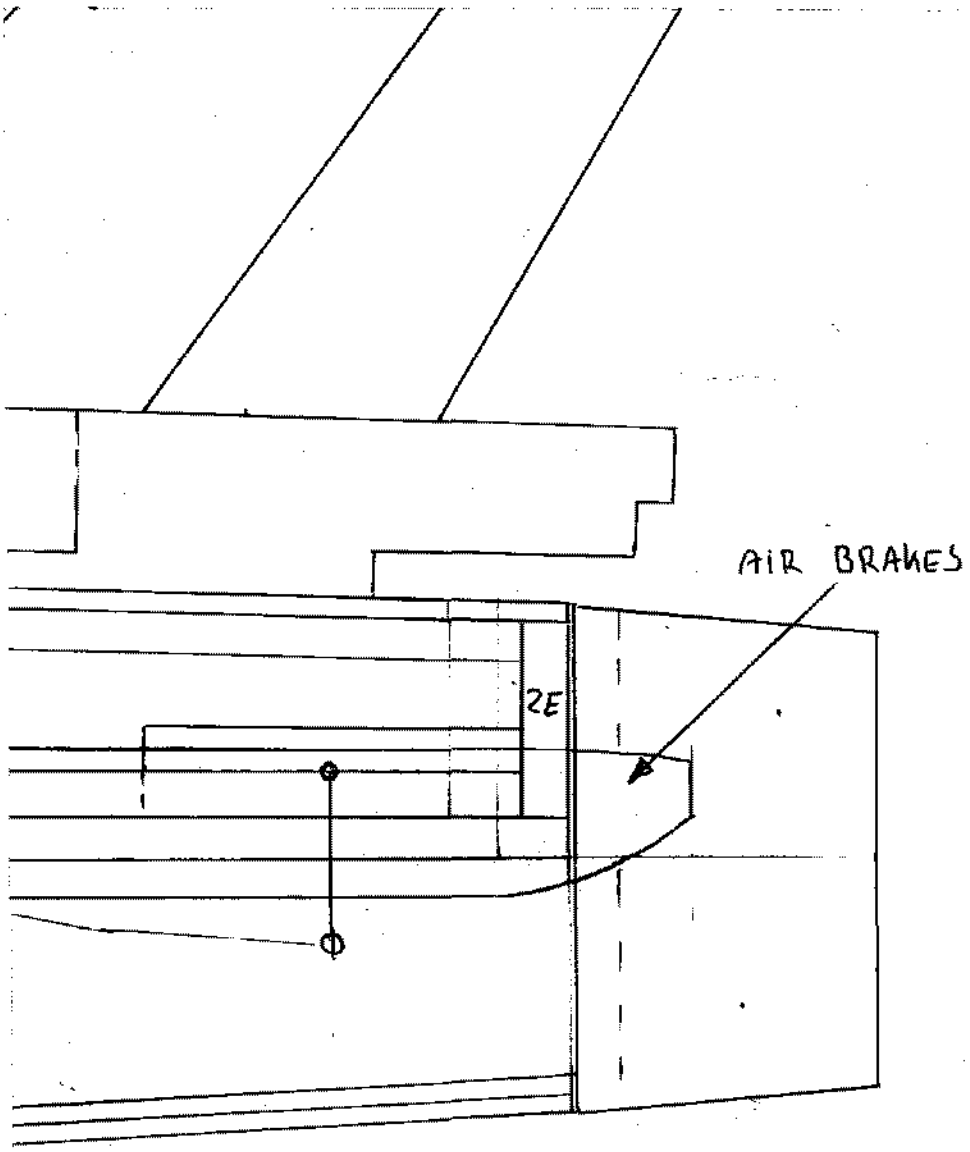
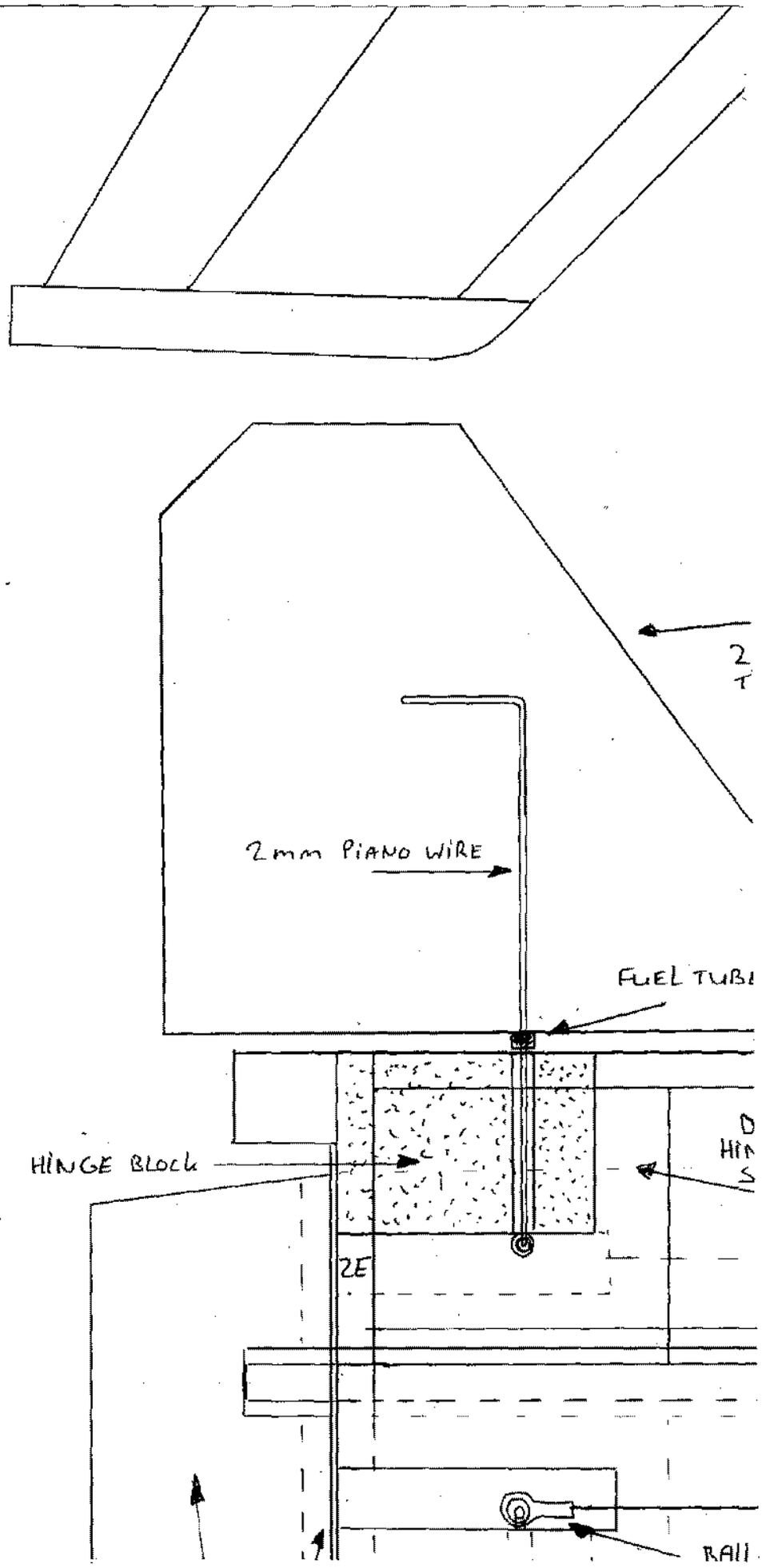
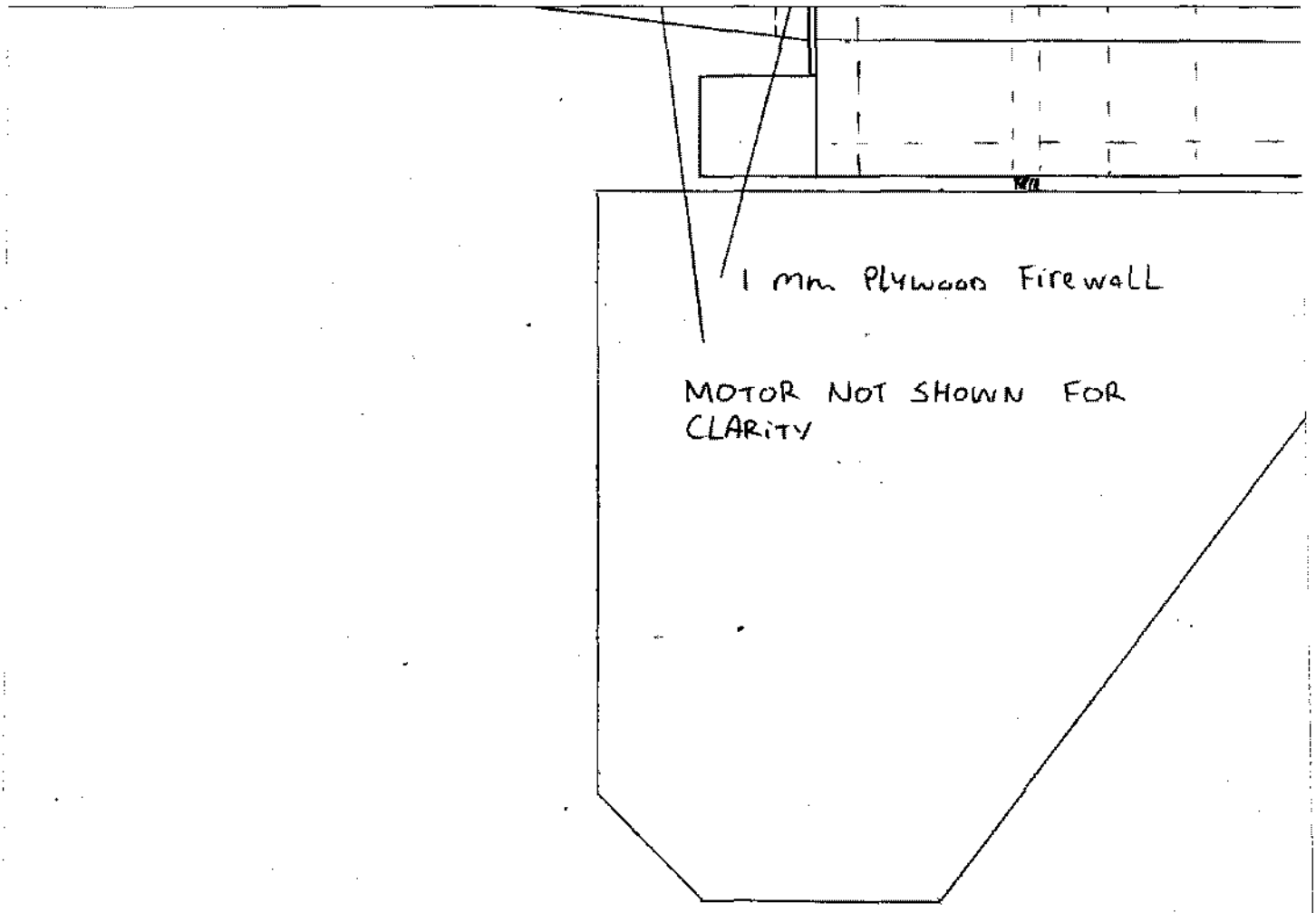

AIR BRAKES
2E

2A

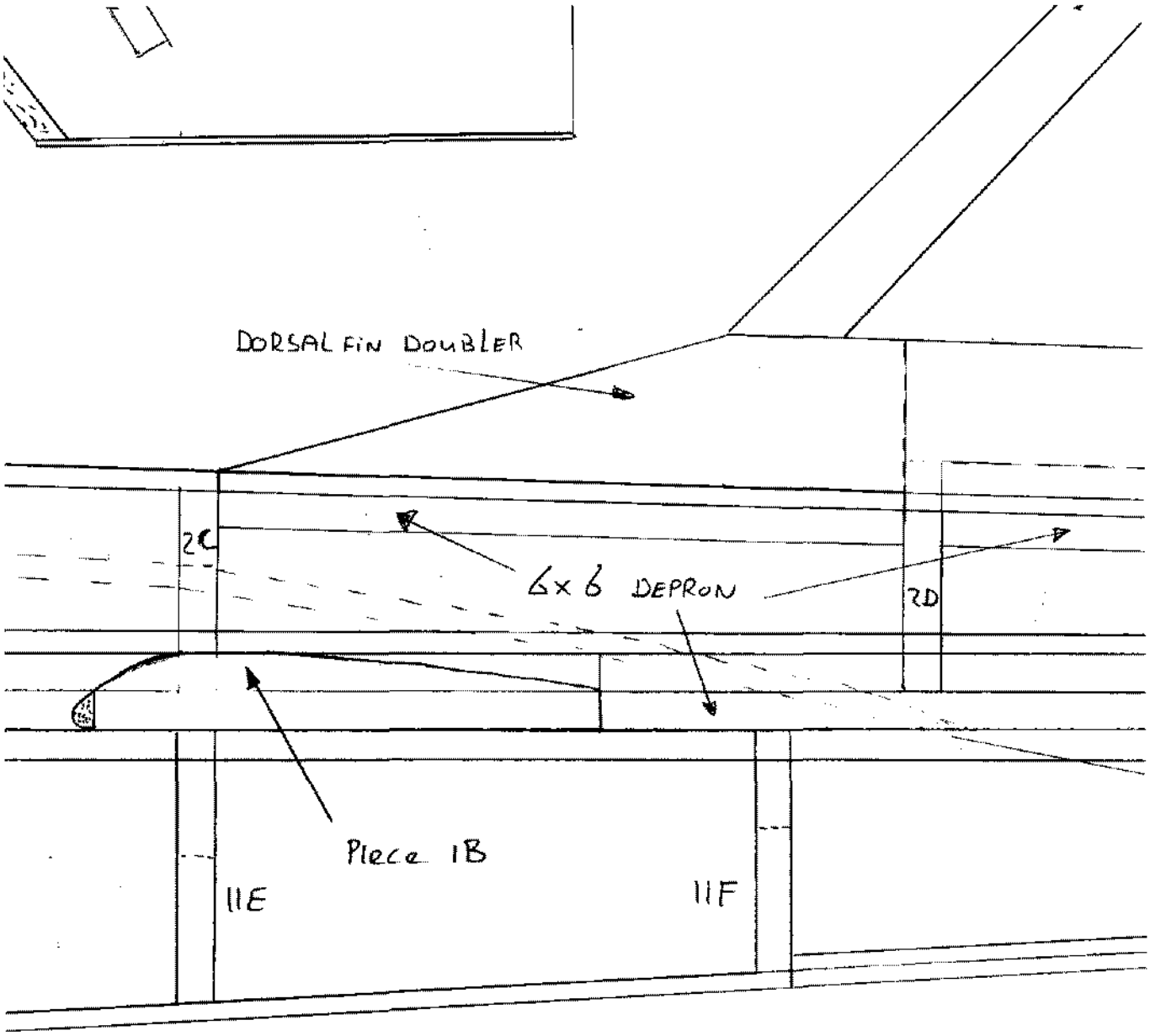


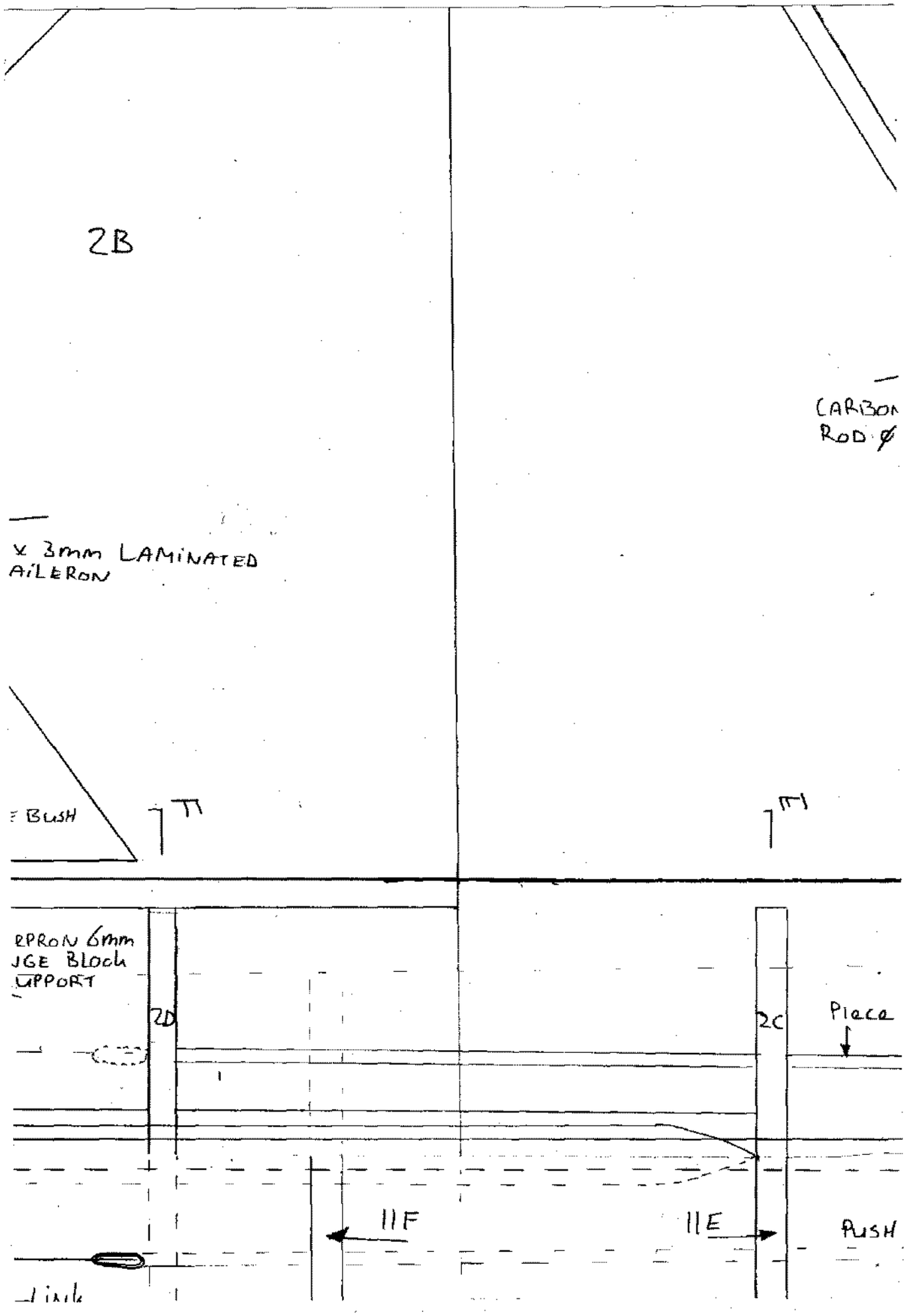


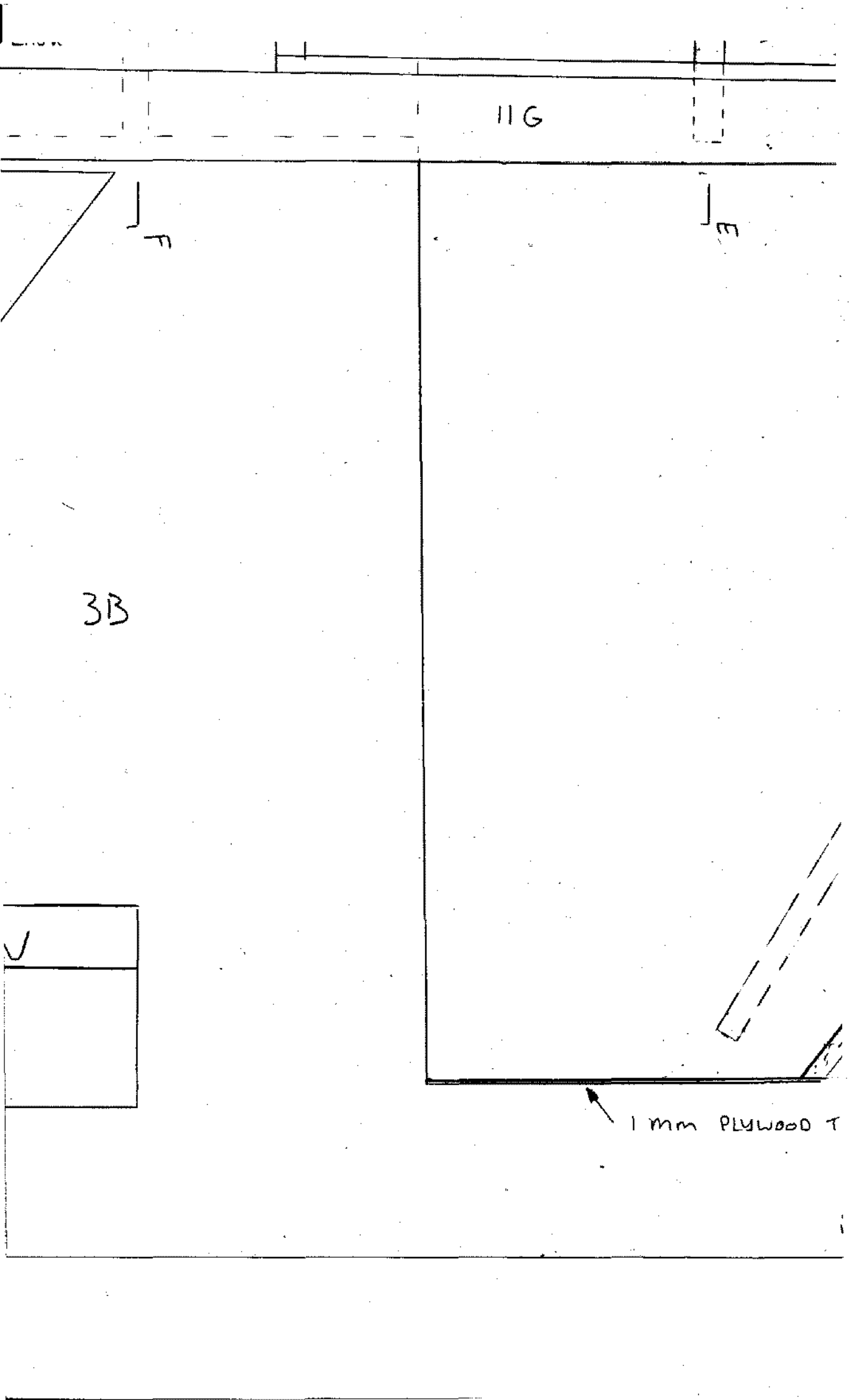
3A

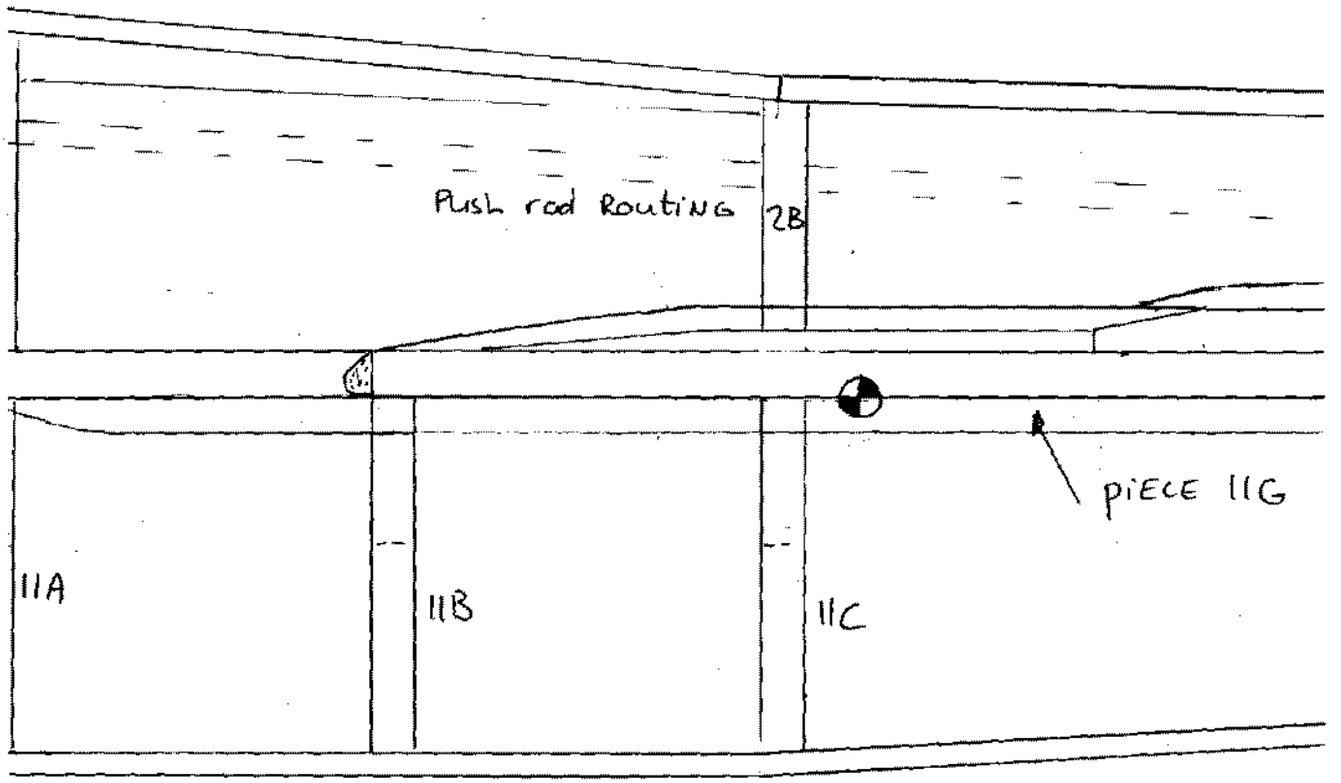
F-16 FIGHTING FALCON

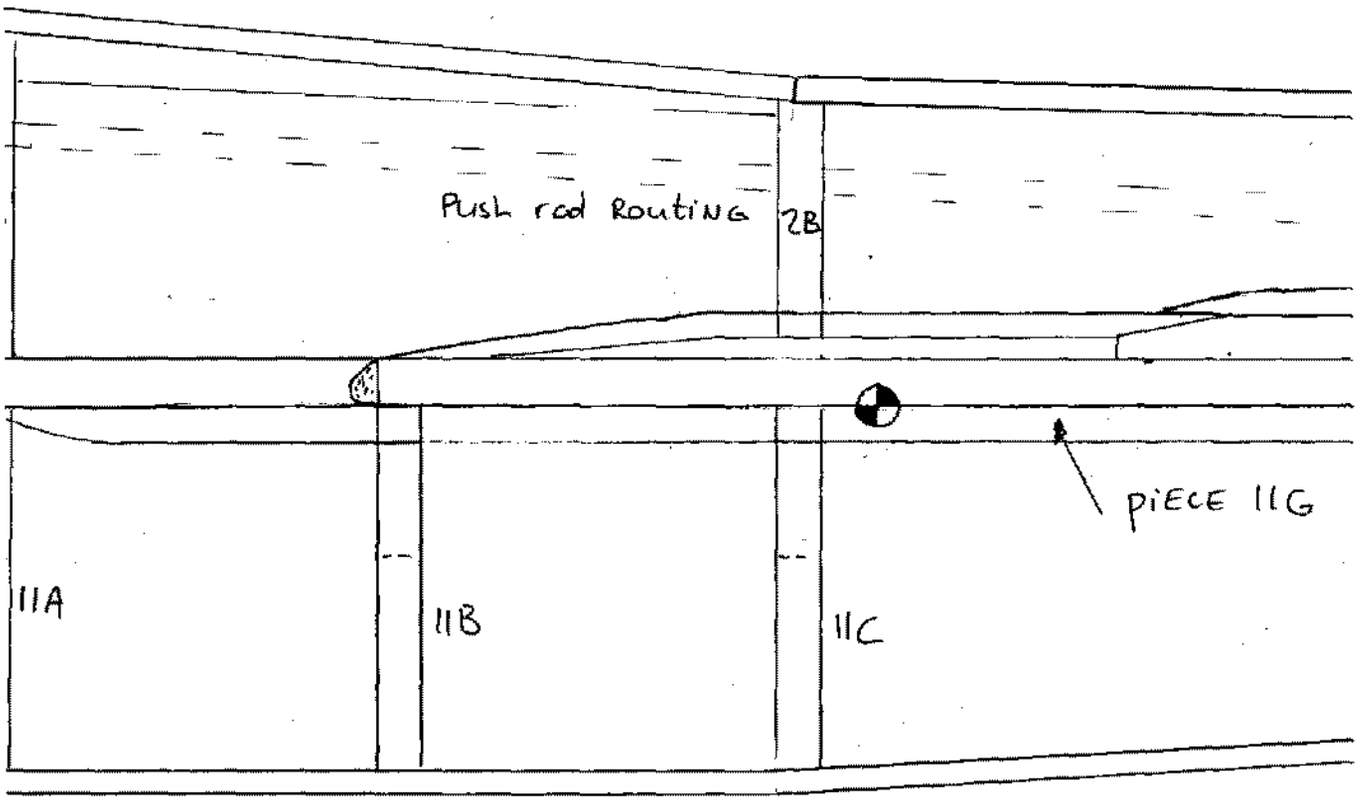
DESIGNED BY STEFAN LAMERS
ELECTRIC PUSHER PROP
WEIGHT APPROX 430 GRAM


DORSAL FIN DOUBLER
2C
6x6 DEPRON
2D
Piece 1B
11E
11F


2B
CARBON
ROD ⌀
x 3mm LAMINATED
AILERON
BUSH
APRON 6mm
DGE BLOCK
UPPORT
2D
2C
Piece
11F
11E
PUSH


11G
3B
1 mm PLYWOOD T


Push rod Routing
2B
piece 11G
11A
11B
11C


Push rod Routing
2B
PIECE 11G
11A
11B
11C

THROUGH DEFRON
ART BLOCK

2C

FIBER
5 mm

A

BEVE

21

BEVEL

2A

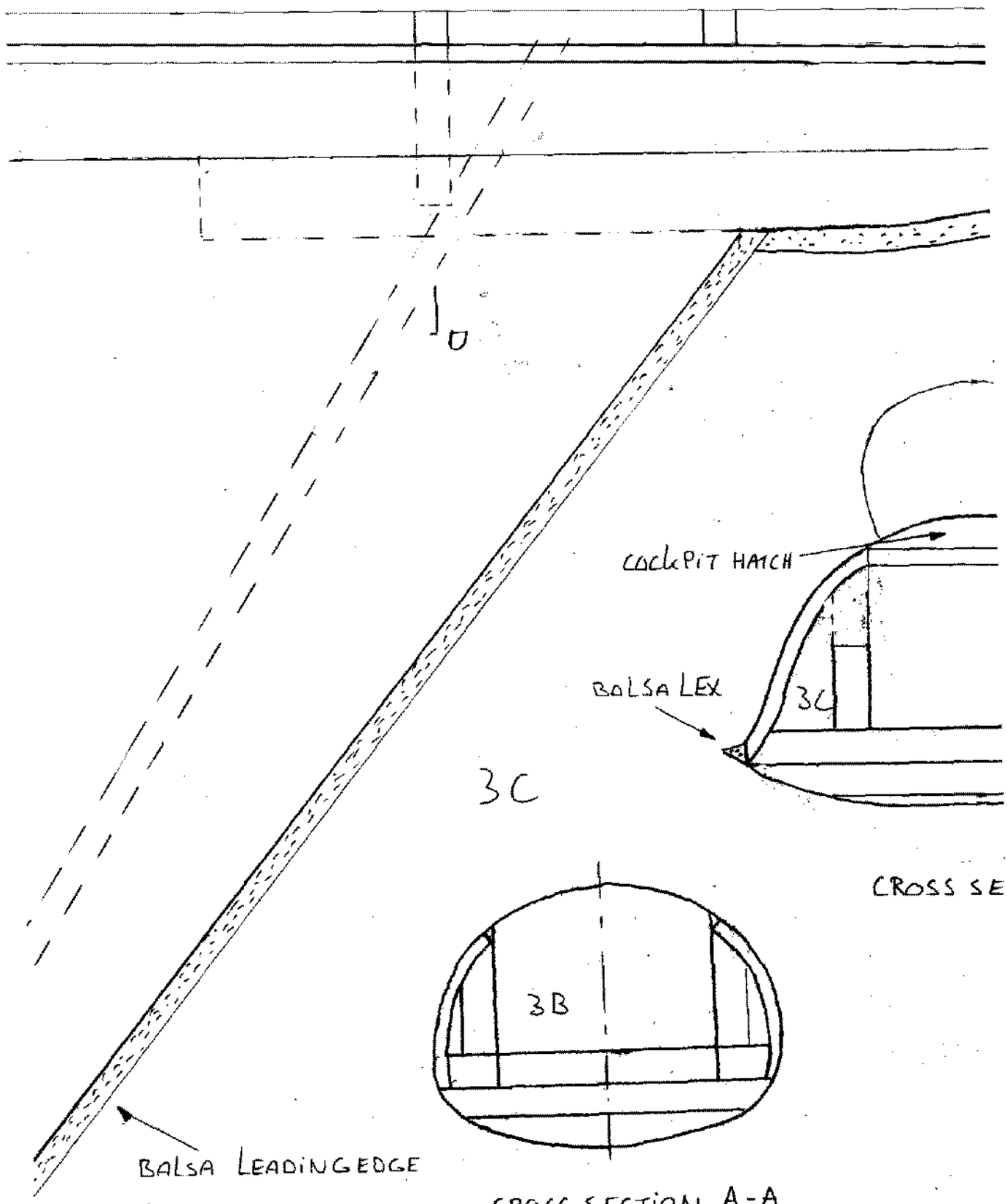
2B

11C

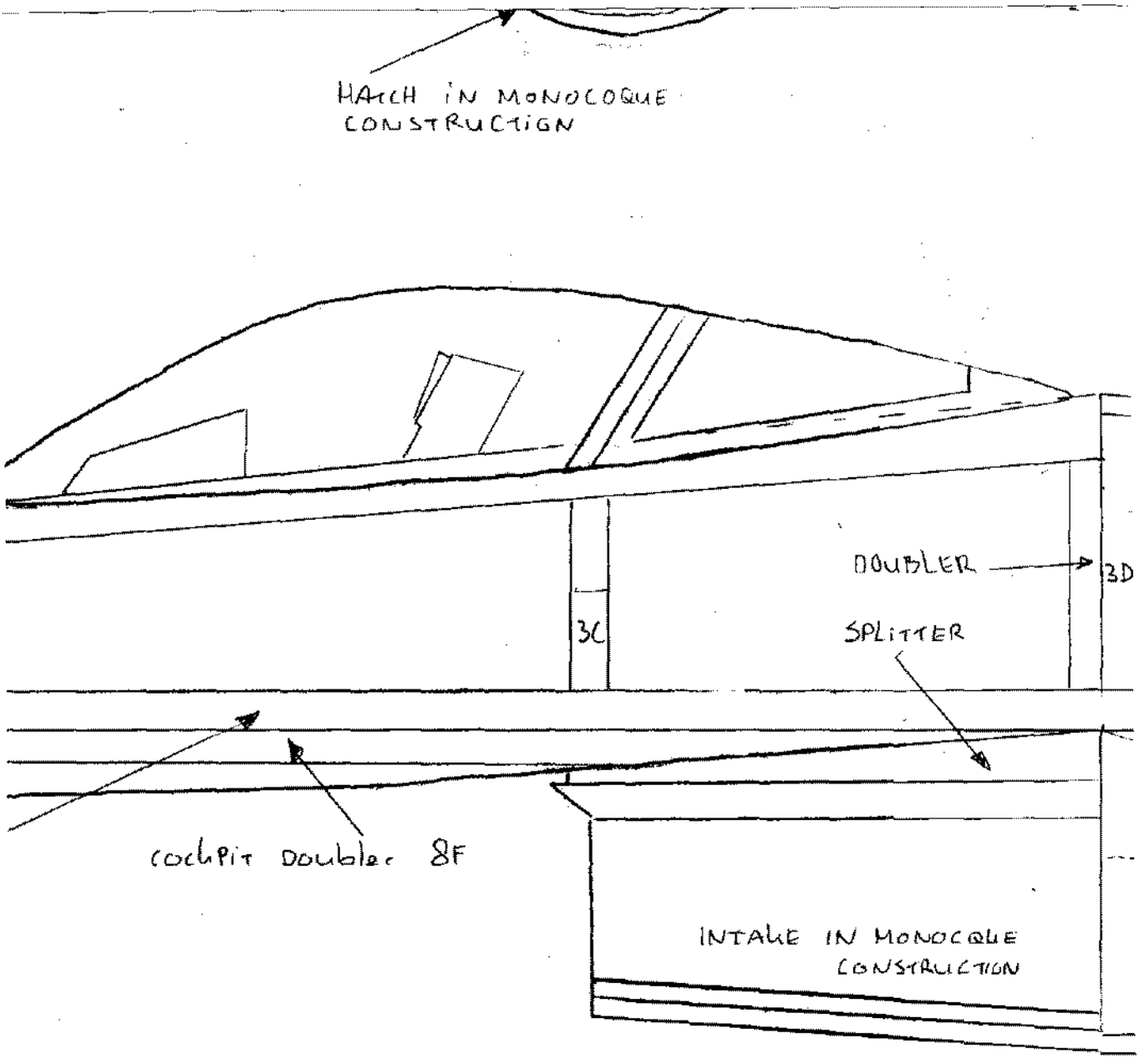
11B

11A

ROD ROUTING



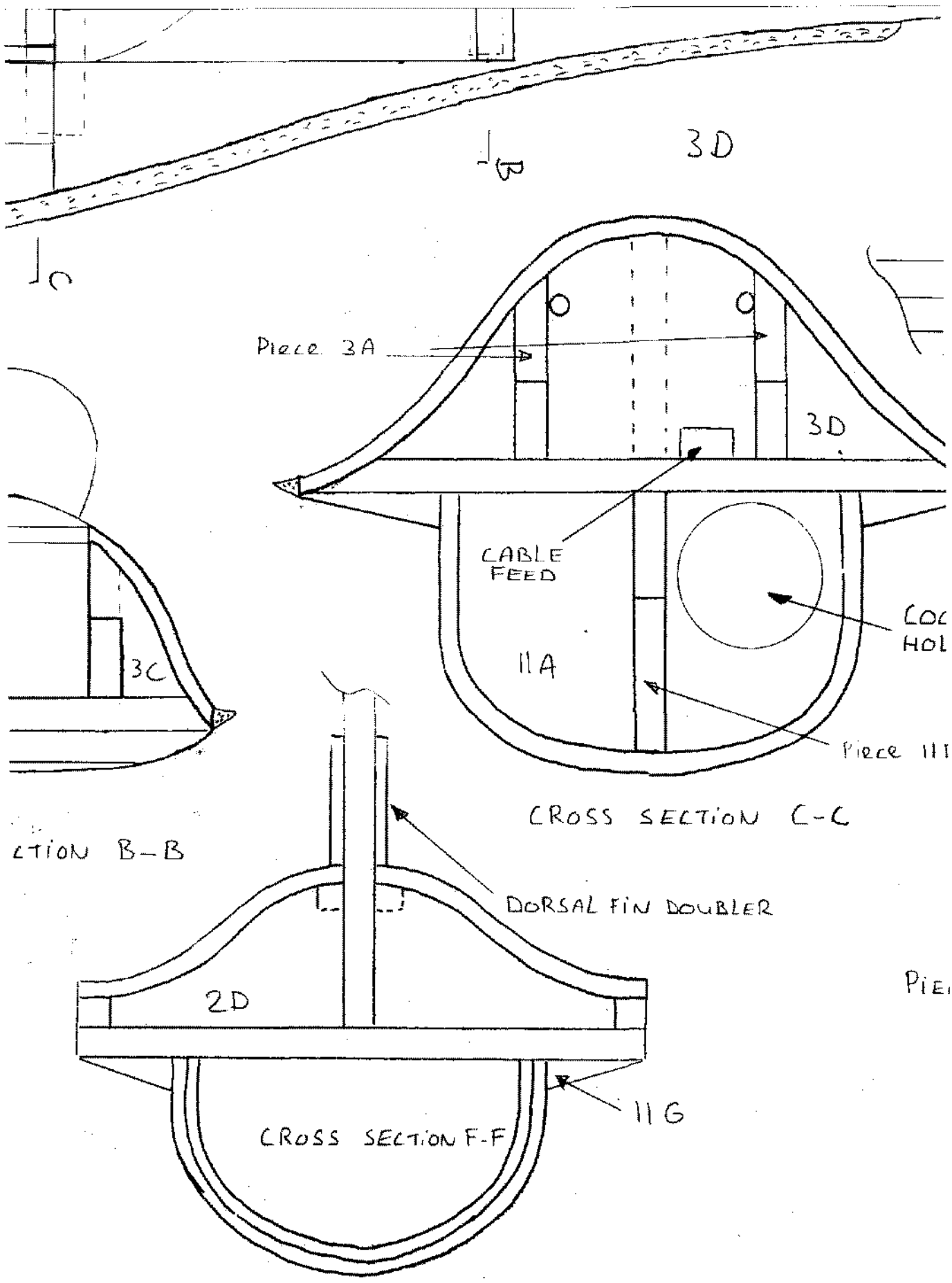
IP PROTECTION


HATCH IN MONOCOQUE CONSTRUCTION
DOUBLER
3D
3C
SPLITTER
cockpit Doubler 8F
INTAKE IN MONOCOQUE CONSTRUCTION

Cut Slot into Supp
Ball Link
Deppon Hinge Block Support

2D

1C
1B
3D
3C
3A


B
3D
C
Piece 3A
3D
CABLE FEED
11A
Piece 11
3C
CROSS SECTION C-C
DORSAL FIN DOUBLER
2D
11G
CROSS SECTION F-F

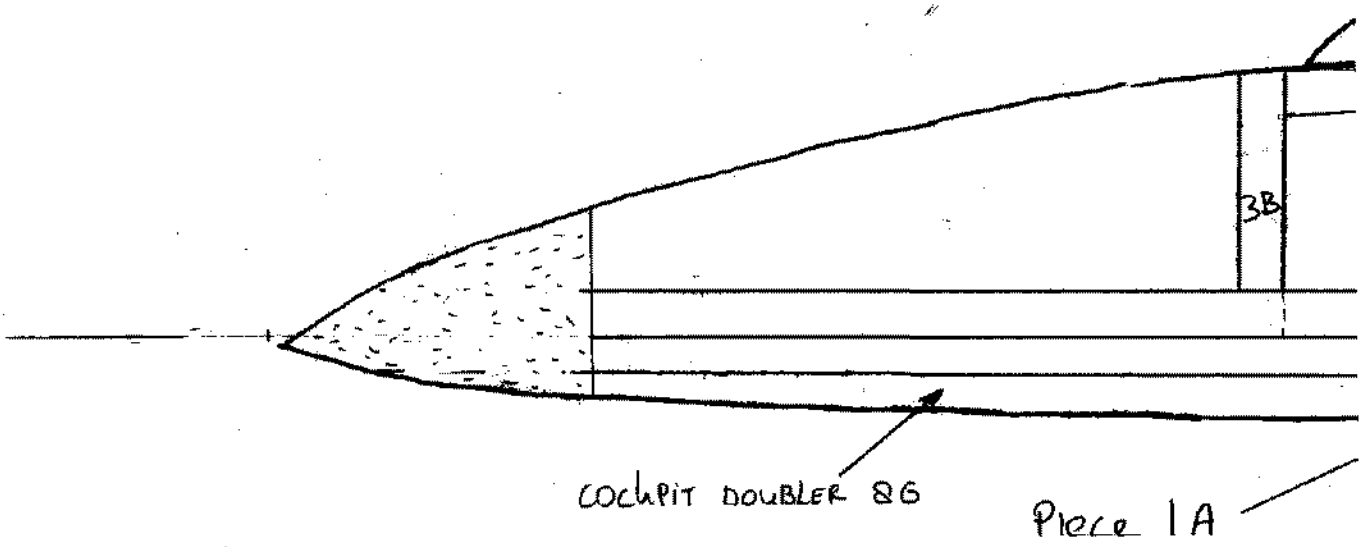
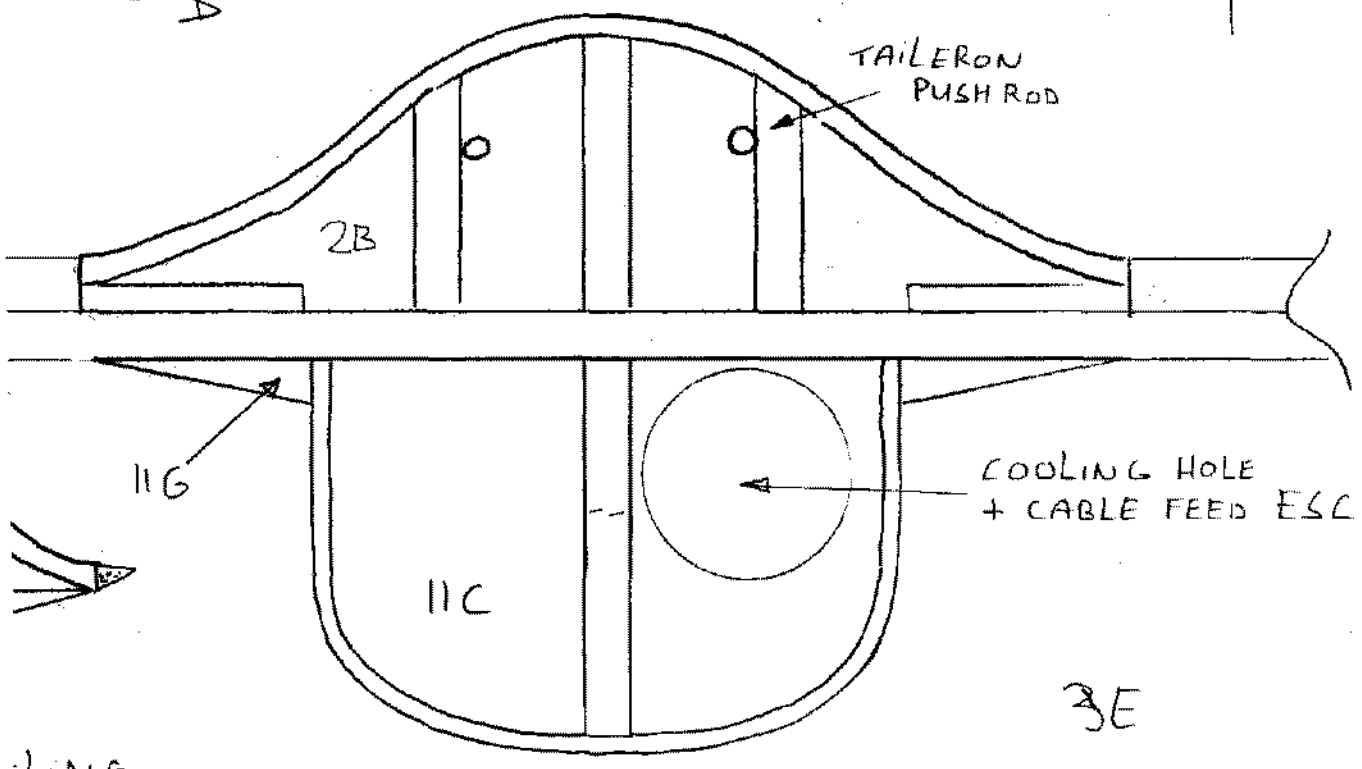

3B
COCKPIT DOUBLER 86
Piece 1A

Plate 1B

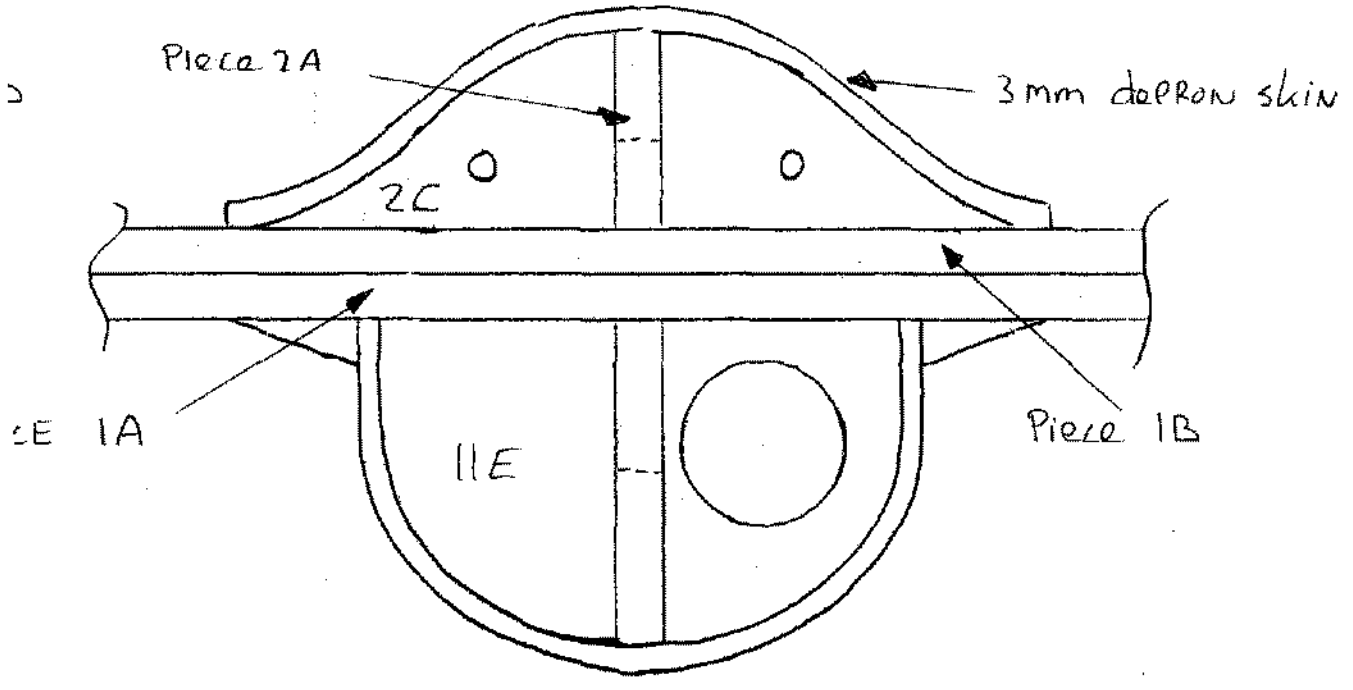
2E

A
LH half showing
TOP VIEW
LAMINATED 6MM DEPRON
3B
BALSA NOSE TIP

RH half showing
BOTTOM VIEW



CROSS SECTION D-D



CROSS SECTION E-E

Plans for depron F16 pusher prop

First I want to thank ezonemag.com for their great website, this goldmine of knowledge.

These plans are based on my previous F16. The plans are drawn by hand on A4 paper and then scanned to a PDF file. There is a construction drawing that shows all the pieces in place and a parts template drawing. All the drawings are tiled so it takes some time to put everything together.There is a number/letter on each tile. Start in the LH top corner with 1A. Go 1B, 1C, 1D etc for horizontal tiles. Go 2A, 3A, 4A etc. for vertical tiles All parts are numbered using the stepnr. they are used in. For example pieces 1A and 1B and 1C are the three pieces you need in step 1.
The new F16 is a little bit different from the old one for the following reasons:

-The size is about 10 % smaller. The AUW of the old one was 530 grammes which was just a little bit to much for my power system. It flew fine but I didn't have a big reserve.
-This one only has tailerons instead of ailerons and a full flying elevator for much easier building

The aircraft is made from 6 and 3 mm depron. All bonds are made with styrofoam safe CA and accelerator. When I had to carve and sand after laminating several pieces of depron (nosecone) I did not use accelerator because it makes the CA too hard to sand. Spars and firewall are glued with 5 min epoxy.
In some areas it takes some sanding and carving, but other than that it is a conventional contsruction. The canopy is made with the thermoplastic bottleshrinking method. The wings have a 5mm diameter CF spar and balsa leading edges. The nosetip is full balsa and the belly is covered with a glass/resin strip to protect it during landing (this under –belly big intake damages easily).

My power system consists of the following:

PJ550 Brushless motor (60 grammes)
Kokam 1200 3S1P battery (75 grammes)
Jeti 8 amp BEC controller (9 grammes)
Multplex 4 channel mini receiver (10 grammes)
Two mini servo's (8 grammes each)

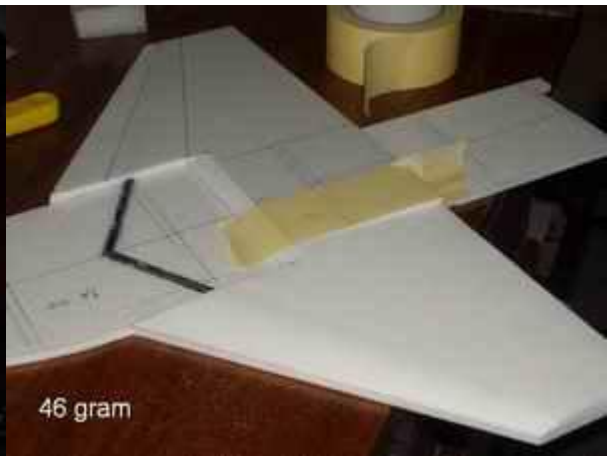
I measured 450 grammes static thrust with 8 amps, and 6700 RPM and a 9X4,7 prop. Handlaunches were not a problem but I didn't get very high speeds with this propellor. I guess I need a different set-up for that.

Points to consider before building:
-My motor mounts very easily with a flange and four screws on a vertical (bulkhead) surface. If your motor mounts differently you already have to consider how to adapt before you start building.
-The equipment bay below the canopy cover measures 180X40X40 mm. make sure that your battery will fit in the nose. You need all the weight you can get in the nose to get the C of G right.

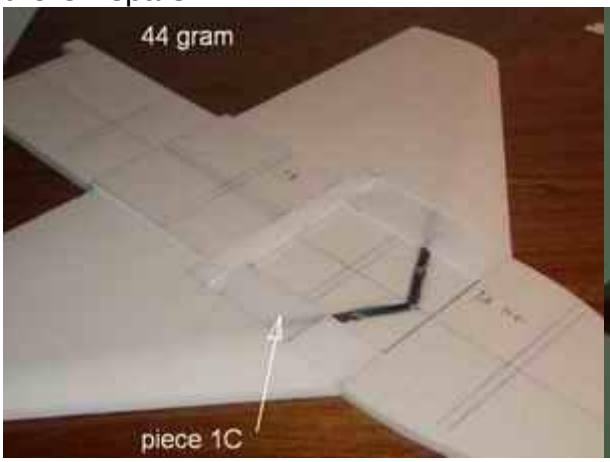

Tools
-Sharp hobby knife, and my two trusty sanding blocks. One side of the block has coarse sandpaper glued to it and the other side fine. So when you're sanding it is just a matter of turning the block when you go from coarse sanding to finetuning.
Same with the broomhandle sander for round shapes.
-A tableknife to score panel lines in the depron.

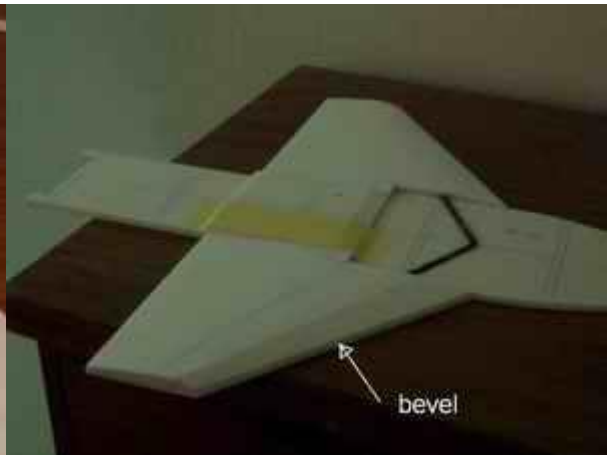
Building
Step 1

Cut out piece 1A and 1B .I drew the locations for the formers on with a pen for future ref.
Cut the 5mm diameter CF rod to length. Make a slot in the top of piece 1A so that the CF rods are embedded halfway into the depron, and glue with epoxy.
Push piece 1B on top of the CF rods so they make a mark. Make a slot in piece 1B. Bevel 1B as indicated on the plans (from 6 to 3 mm not 0 mm). To laminate both pieces I used foamsafe CA only. Apply around edges and on spots in the middle. Foamsafe CA does not cure as fast as normal CA on balsawood so you have enough time to install the piece and weigh it down with some books. Should be fully cured after a few minutes.
Draw the profile forming lines on top of the wing. Bevel top piece from the thickest point to leading and trailing edges. **Do not** bevel bottom piece 1A. I used masking tape to get a clean straight edge where the fuselage will be.This is important for later. After beveling just slightly round of the top and the wingprofile is finshed. This way you're sure both wings have the same profile.

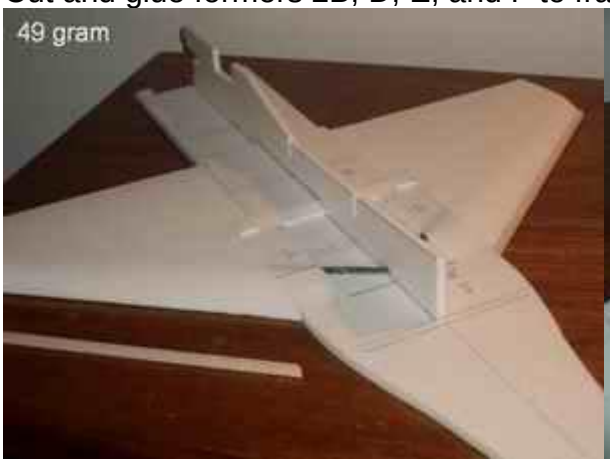


Cut out and slot two pieces 1C (3 mm depron 30 X 100 mm) so they can be glued on the CF spars.

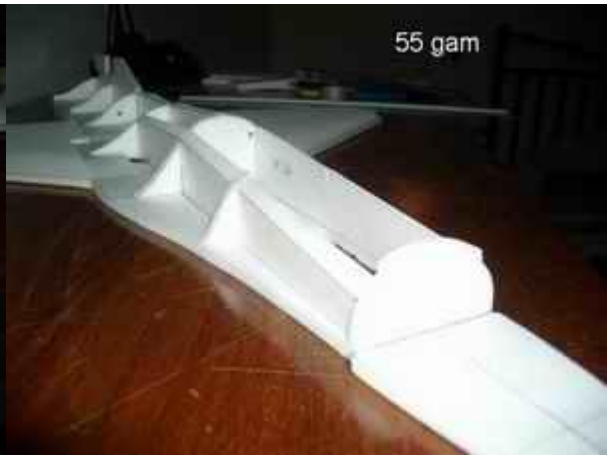




Glue 4 mm wide balsastrips to the leading edge and sand to shape.
Cut and glue piece 2A to frame using the penlines drawn before.
Cut and glue formers 2B, D, E, and F to frame

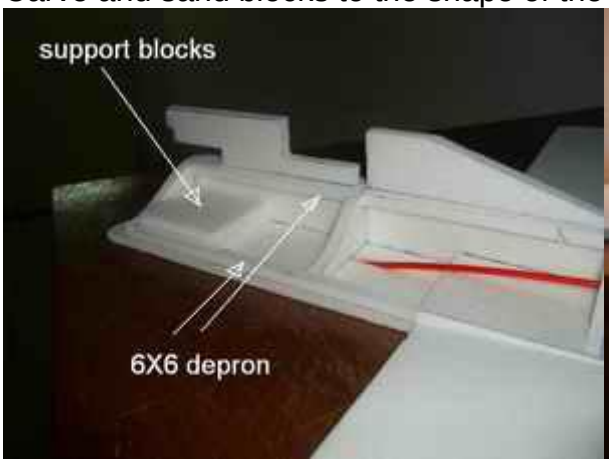


Cut and glue pieces 3A, B, C and D. Bevel 3A so it is flush with the formers, and can be sheeted later.

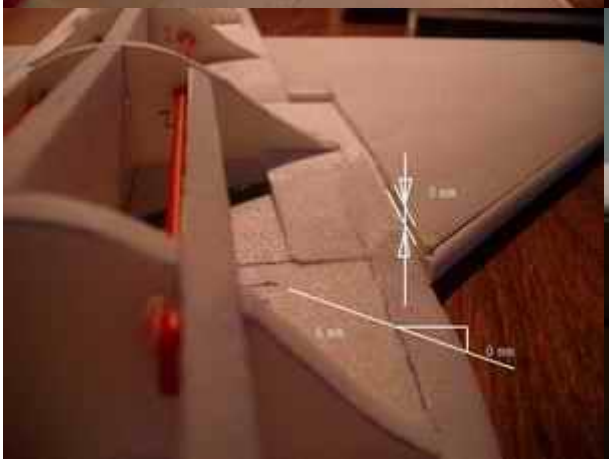


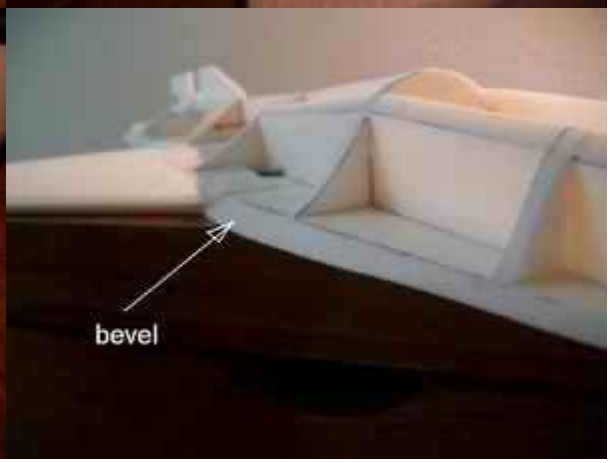
Install push rod outer tubes. Cut them flush with bottom so frame can still be built on a flat surface. They do have to exit with a pretty shallow angle on the bottom so they approach the horns on the right angle. Test with inner tubes, should run very free.

Cut 4 pieces of 4A and some 6X6 mm depron pieces. Glue in place in tail section. Carve and sand blocks to the shape of the formers.

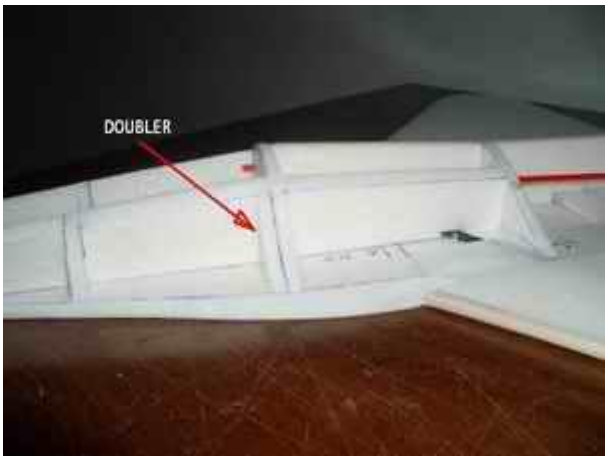


Prepare the nose section for sheeting. Draw a line from former 3D to the next fwd. Check the cross sections of these formers to see where to bevel the baseplate piece 1A. Bevel from 6 to 0 mm. Use sandpaper to bevel fuselage next to wingroot. You want to go 3 mm deep so that when you glue the top sheeting on the fuselage, the sheeting will be flush with the wing. See pictures.





Add the doubler on former 3D. this will be for sheeting.

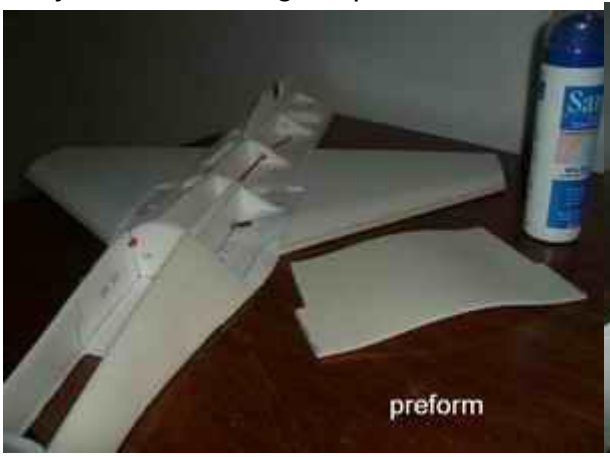


The sheeting is made from 3 mm depron**. There is a grain in depron**, in one way it bends much more difficult than 90 degrees turned. All the sheeting is bent the easy way. If you have it wrong the depron will crease when you try to attach it to the formers. I cut a piece and preform it using my hands and a spraycan. Then you trial fit and sand it untill it fits. I glue one side first, and then the rest. I feel I don't have enough hands to do it in one go. I always try to keep the not shiny side of depron on the outside. The dull side seems to crease later, and also when you sand it a little and later paint it, the difference between the sanded and unsanded is less pronounced.

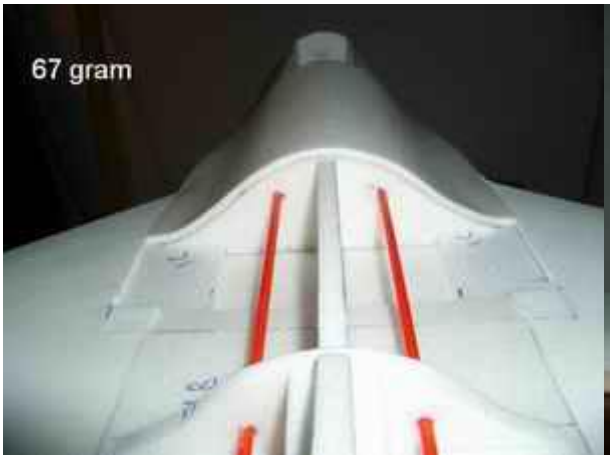
Cut the LH and RH cockpit sheeting. Preform it with a spraycan and your fingers. Glue the top first. When that is cured put glue on the formers and bottom plate. Spray some accelerator in there and fold it down. Hold with your hands untill cured.

Cut the extending piece flush with piece bottomplate 1A

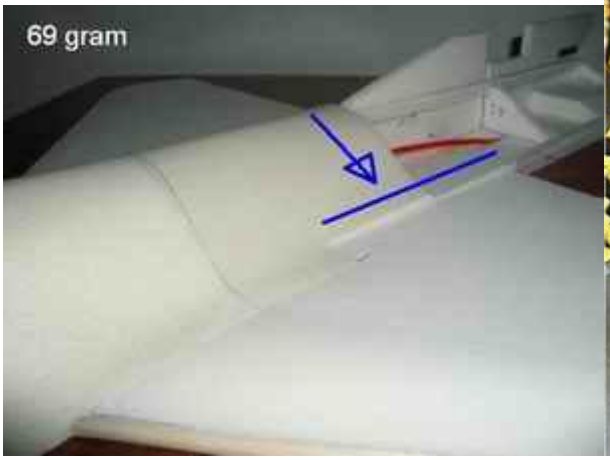
Cut the fwd middle top sheeting using the template. Prefom and trial fit again a lot of times to make sure it fits properly. If you do, there is no need for filler and the lines will just look like original panel lines. Start with glueing one side. Then the other.

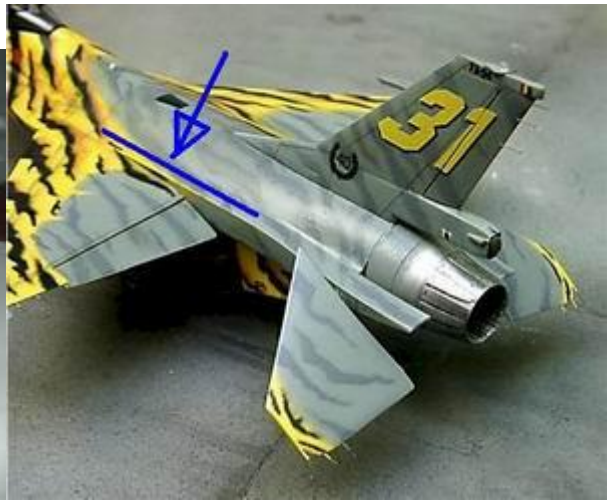


If you have beveled the bottom plate enough before, the wing / fuselage joint will be nice and smooth.

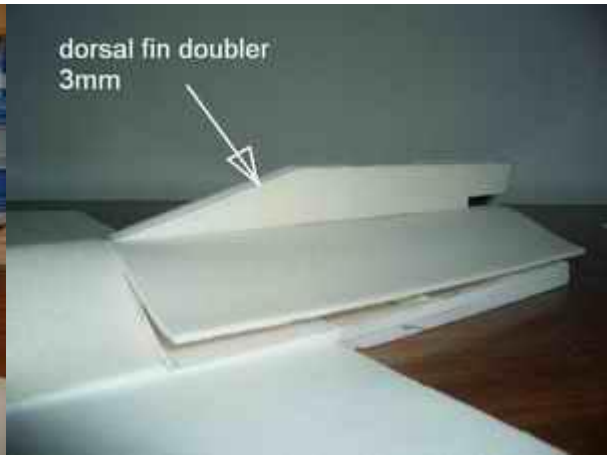


Cut the aft middle sheeting. Preform and trial fit. Check the blue line to see what you try to achieve. After the thickest point in the wing the aft fuselage is perpendicular to the wing, this was also already achieved during the wingprofile sanding process and now you add 3 mm sheeting to it





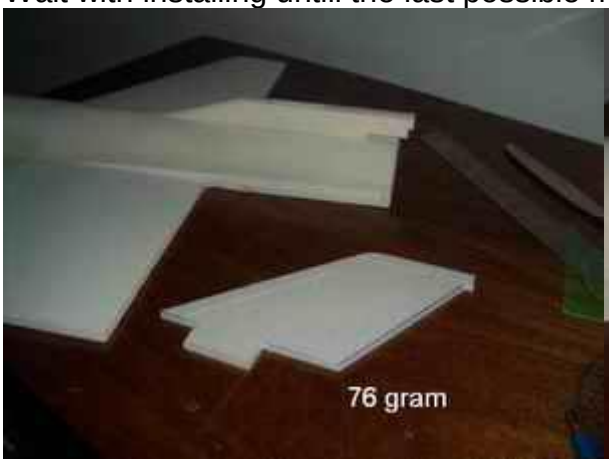
Cut the aft top sheeting and the dorsal fin doublers. Preform sheeting. Glue top of sheeting first (on the 6X6 mm depron pieces). Glue the dorsal fin doubler in place. Glue the rest of the sheeting and trim ends.



To protect the sheeting I used some tape when I sanded profile in the dorsal fin.

The top is now finished. This is a good time to score some panel lines on the top because it is still flat on the table. To score I use the dull side of a tableknife. Use a piece of tape where you want the panel line and follow it with the knife. No need to press very hard, you only want to dent it, not partly cut it. My lines are semi-scale. Use the topview to determine where a line should be. It will look great even if not all lines are there or in the right place.


Cut out the vertical fin and sand some profile in it. Score rudder hingelines etc. Wait with installing untill the last possible moment.



Gather all the parts for the tailerons. 2 mm pianowire, a bushing with a 2 mm inner diameter, 1mm and 3 mm balsa and some fuel tubing. Laminate the bushing between the balsa.