

AMERICAN  
PATENTS

BOEING  
AIRPLANE  
COMPANY

52  
12  
64

SEATTLE — WASHINGTON  
U. S. A.



BOEING TRAINING SEAPLANE

- PERFORMANCE -

High Speed:	100 M.P.H.
Low Speed:	48 M.P.H.
Rate of Climb:	800 feet per minute at ground
Service Ceiling:	11,000 feet
Absolute Ceiling:	12,000 feet
Time to Service Ceiling:	40 minutes.

Performance with J-3 engine developing 220 H.P. at 1750 R.P.M. with plane equipped for primary flight training.

## BOEING TRAINING SEAPLANE

### - GENERAL DESCRIPTION -

1. WINGS:

Wing structure is of the orthogonal biplane type, with 36'-10" span, 60" chord and 68" gap. This gives a very good aspect ratio and also gap chord ratio. The structure consists of a center section mounted upon the fuselage on six steel tubing struts, the front pair of which form an "A" strut, which takes the drift loads, thereby eliminating all cross wiring in the center section bracing. Two short inboard sections are mounted on the lower longerons, directly under the center section. These inboard sections are braced by steel struts inclined from the outer ends of the sections to the upper longerons. The bracing between the center section and the inboard sections consists of light steel tube tension members. This design of inboard sections permits the use of either a twin float or divided wheel landing gear, as well as the single float. The outer wings are made up in rights and lefts, and are inter-changeable as uppers and lowers, that is, the wing fittings are fastened to both top and bottom of the beams, and the long lugs for the wires swing through small slots in the upper and lower surfaces, thus permitting the wing to be used as an upper when the lugs are swung through the lower surface, and as a lower when the lugs are swung through the upper surface. The wing beams are of solid spruce. The ribs are of the trussed type, with spruce members and plywood gussets.

2. EMPELLAGE:

The empennage structure is built up entirely of welded steel tubing. The stabilizer is hinged from the leading edge, and is adjustable through six degrees by means of an adjusting gear, similar to the one used on the DeH, which has proven very satisfactory in service.

3. BODY:

The fuselage construction is of welded steel tubing, braced with swaged wire tie rods in top and bottom trusses. Side trusses are braced entirely by steel tubing. All fairing consists of bent-up steel tubing of light gauge, covered with fabric or sheet aluminum. By this method of construction the use of wood parts in the fuselage has been reduced to a minimum. Practically the only wood parts used in the body are the plywood floors, seats, instrument board, and a few small plywood panels for mounting engine controls and accessories. All flight controls, armament installation, and several major assemblies are mounted directly on steel clips, welded to the fuselage structure.

4. LANDING GEAR:

The landing gear consists of a single main float, mounted on four steel struts extending down from the body and braced fore and aft

## BOEING TRAINING SEAPLANE

### GENERAL DESCRIPTION (Continued)

#### 4. LANDING GEAR (Cont.)

by cables in the plane of the struts and cross-braced by cable extending out from the float to the outer ends of the inboard wing section. The structure of the main float consists of a spruce, ash and oak frame-work, with two-ply spruce bulkheads. This structure is decked with an inner ply of Washington Red Cedar laid forty-five degrees to the center line and an outer ply of mahogany laid ninety degrees to the inner. The bottom is built up in the same manner as the deck. All fittings for attachment of struts and wires are of steel and are covered with removable ply-wood panels, making replacement of the fittings a simple job. The wing floats are built of ply-wood laid on an ash frame-work. These are attached by steel struts to the Universal wing fittings. The twin float landing gear is attached to the outer end of the inboard section by means of vertical steel tubes, and cross-braced by means of steel struts from the float to the body. The wheel landing gear consists of three units, an axle extending from the body to the point below the outboard end of the outer wing strut, an "A" strut carrying the shock absorber unit mounted directly below the front beam of the inboard section, and a brace tube from the lower end of the "A" strut to the rear beam of the inboard section. The tires are of the straight side type, 28 x 4.

#### 5. POWER PLANT:

The power plant consists of a Wright Lawrence J-3 engine, mounted on a removable engine section on the front of the fuselage. This engine section is attached to the body by four taper bolts, and is inter-changeable with a similar engine section built to take a Wright E-2 or a Wright E-4 engine. The J-3 engine section consists of a heavy steel mounting plate, reinforced by steel gusset plates, welded to four steel tubes, which are bolted by the four taper bolts directly to the ends of the longerons. This structure is braced by steel tubes and semi-flexible wire. The E-2 engine mount consists of a welded steel structure with ash engine bearers. This mount is so constructed that either a nose or under-slung type of radiator can be installed. The gas tank is slung under the fuselage directly under the pilot's seat. This tank is made either of aluminum with all aluminum fittings, or of tin plate with bronze fittings. The oil tank is mounted on the rear of the fire-wall at fuselage Station I, directly back of the removable engine section, so that the same oil tank is used for both engine installations. The main shaft of the engine controls is mounted at Station I, just forward of the firewall, and is equipped with cranks to take the necessary control rods for both the J-3 and the E-2 engine installations, so that it is not necessary to disturb any of the controls in the body when changing engines. The engine cowling is made of sheet aluminum, supported on light gauge steel tubing.

BOEING TRAINING SEAPLANE

GENERAL DESCRIPTION (Continued)

6. EQUIPMENT:

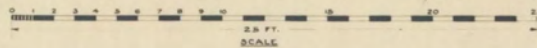
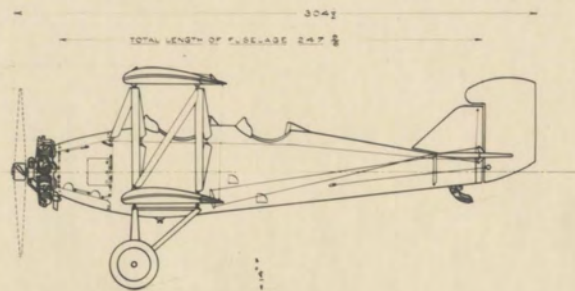
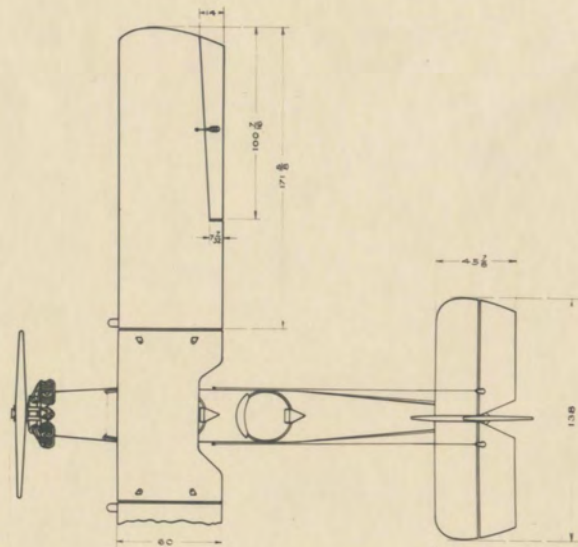
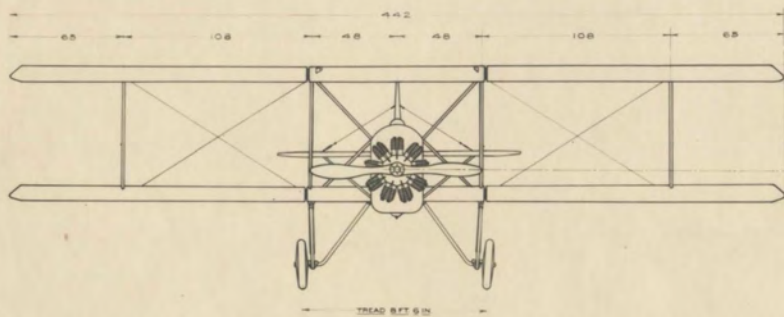
The necessary instruments for primary flight training are supplied in both the front and rear cockpits. The seats are built to take a seat type parachute pack, and cushions are supplied for use when no parachutes are available.

7. ARMAMENT:

For gunnery training provision is made to mount a 30 cal. Browning gun firing forward through the propeller, and two Lewis guns, flexibly mounted, firing to the rear. The mounting for the flexible guns is built into the rear cowling, so that all parts required for gunnery training are readily removed, leaving the cockpit clear for primary flight training.

DESIGN DATA

NAME .....	BOEING TRAINING PLANE
TYPE .....	TRAINING (LAND PLANE)
CREW .....	PILOT & STUDENT
DEAD WEIGHT .....	1868 LBS.
USEFUL LOAD .....	721 LBS.
FULL LOAD .....	2889 LBS.
POUNDS PER SQ. FT. ....	7.48 LBS.
ENGINE .....	LAWRANCE J-3 (200 H.P.)
POUNDS PER H.P. ....	12.85
WING SECTION .....	GOTTINGEN NY 28Z
UPPER WING AREA (INCLUDINGAILERONS) ..	178 SQ. FT.
LOWER WING AREA .....	186 SQ. FT.
TOTAL WING AREA .....	364 SQ. FT.
AILERON AREA .....	30.4 SQ. FT.
STABILIZER AREA .....	20.8 SQ. FT.
ELEVATOR AREA .....	17.0 SQ. FT.
RUDER AREA .....	11.0 SQ. FT.
FIN AREA .....	5.25 SQ. FT.



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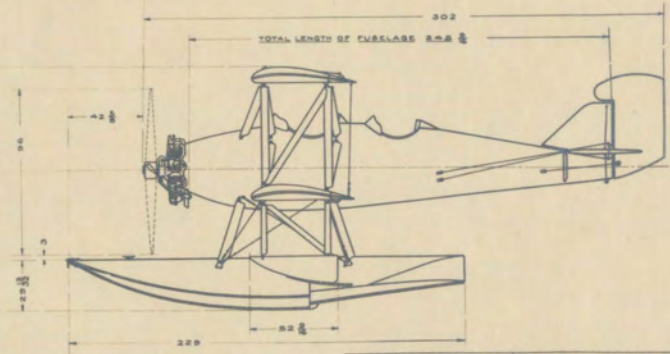
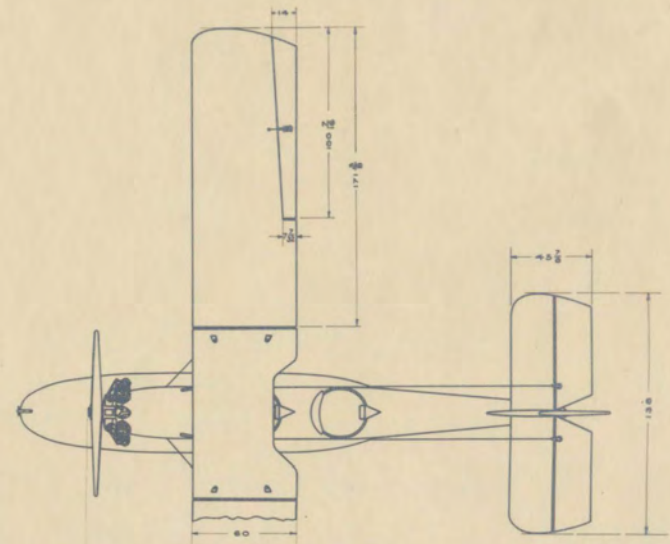
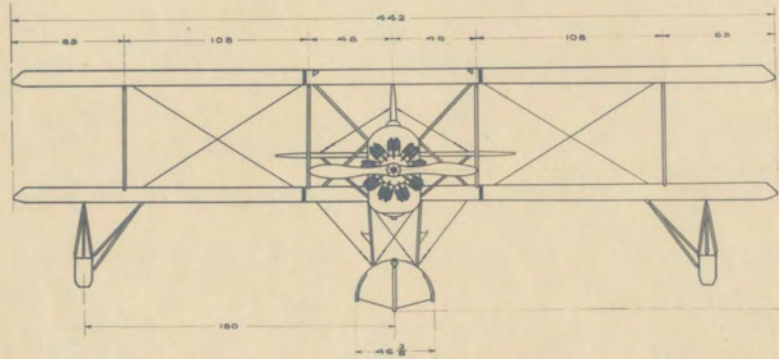
DESIGNED BY: [Signature] CHECKED BY: [Signature] DATE: [Date]

BOEING AIRPLANE COMPANY  
SEATTLE WASHINGTON

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DESIGN DATA

NAME .....	BOEING TRAINING PLANE
TYPE .....	TRAINING (SEAPLANE)
CREW .....	PILOT & STUDENT
DEAD WEIGHT .....	2100 LBS
USEFUL LOAD .....	700 LBS
TOTAL LOAD .....	2800 LBS
ENGINE PER SQ. FT. ....	0.22
ENGINE .....	LAWRANCE J-3 (200 H.P.)
ENGINE PER CUB. FT. ....	12.32
WING SECTION .....	80 INCHES HI. S&P
UPPER WING AREA (INCLUDING ALERONS) ..	172 SQ. FT.
LOWER WING AREA .....	188 SQ. FT.
TOTAL WING AREA .....	360 SQ. FT.
AILERON AREA .....	30.0 SQ. FT.
STABILIZER AREA .....	20.0 SQ. FT.
ELEVATOR AREA .....	17.0 SQ. FT.
RUDDER AREA .....	11.0 SQ. FT.
CR. AREA .....	8.22 SQ. FT.



ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED UNITS TO BE INCHES

DESIGNED BY	W. H. WELLS
CHECKED BY	J. H. WELLS
DATE OF DESIGN	12/22/20
DATE OF REVISION	

**GENERAL ARRANGEMENT**  
**BOEING TRAINING PLANE**  
 BOEING AIRPLANE COMPANY  
 SEATTLE WASHINGTON

11-179





BOEING TRAINING PLANE  
797 B  
1-2-25



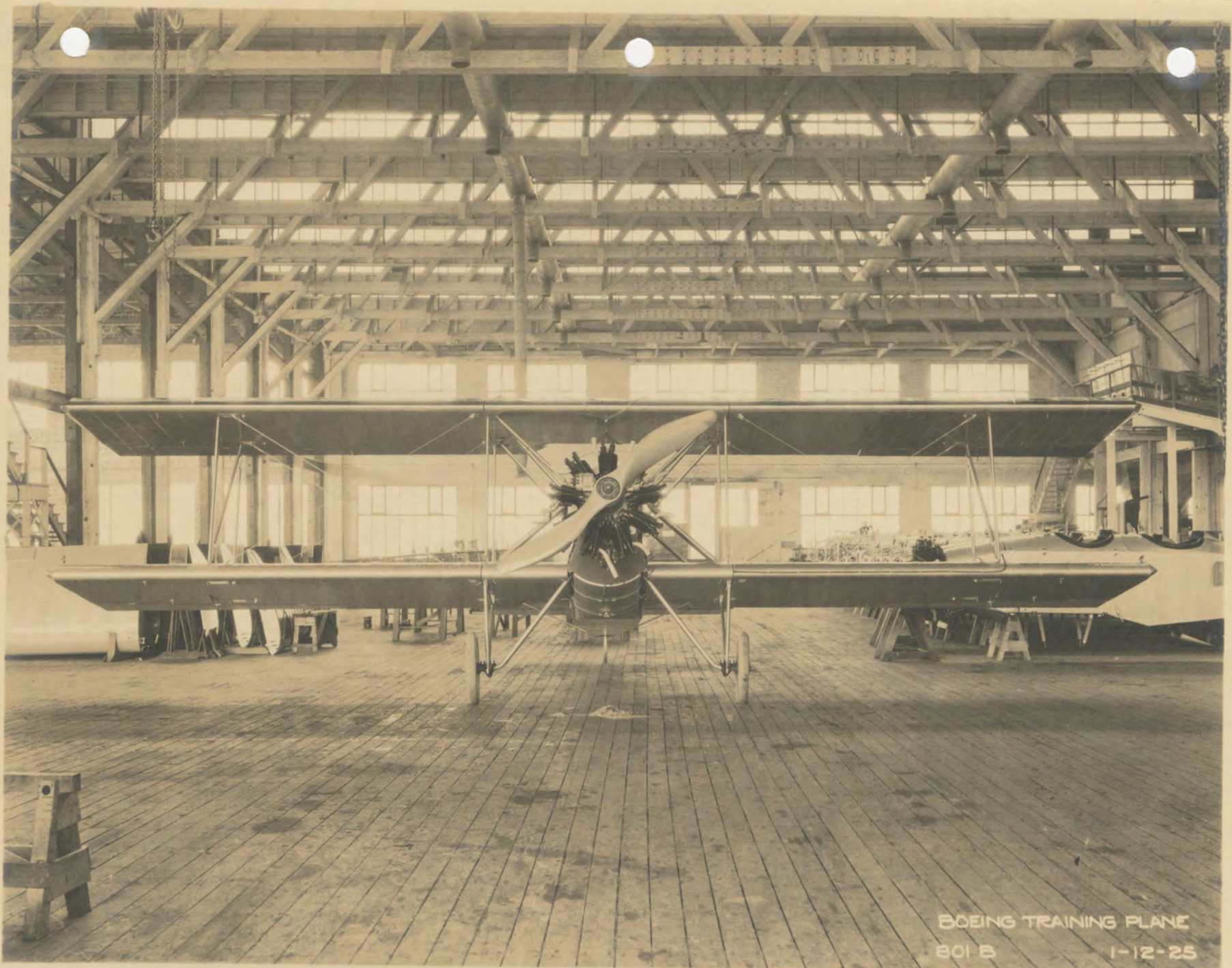
BOEING TRAINING PLANE

796 B

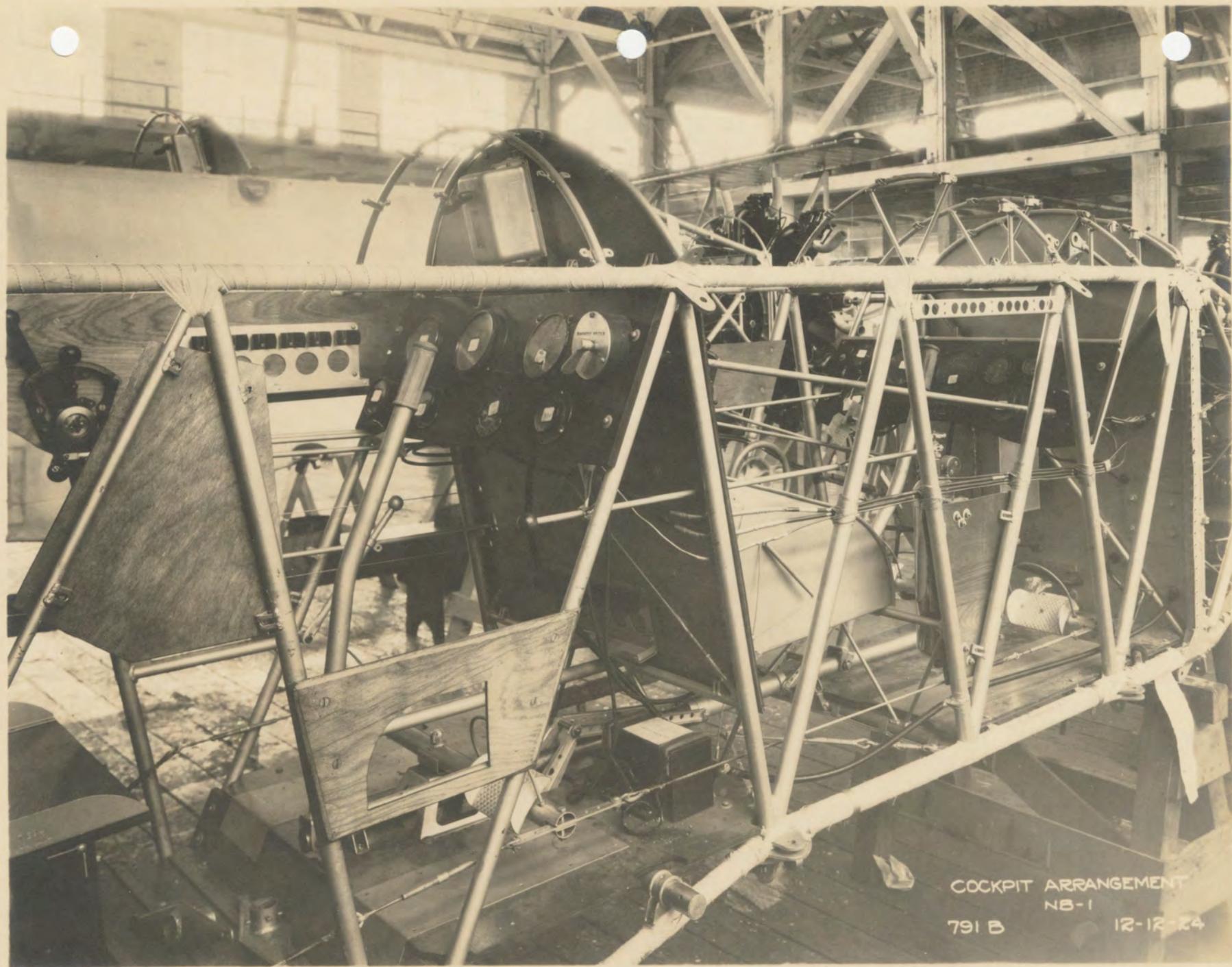
1-2-25



BOEING TRAINING PLANE  
804 B 1-12-25



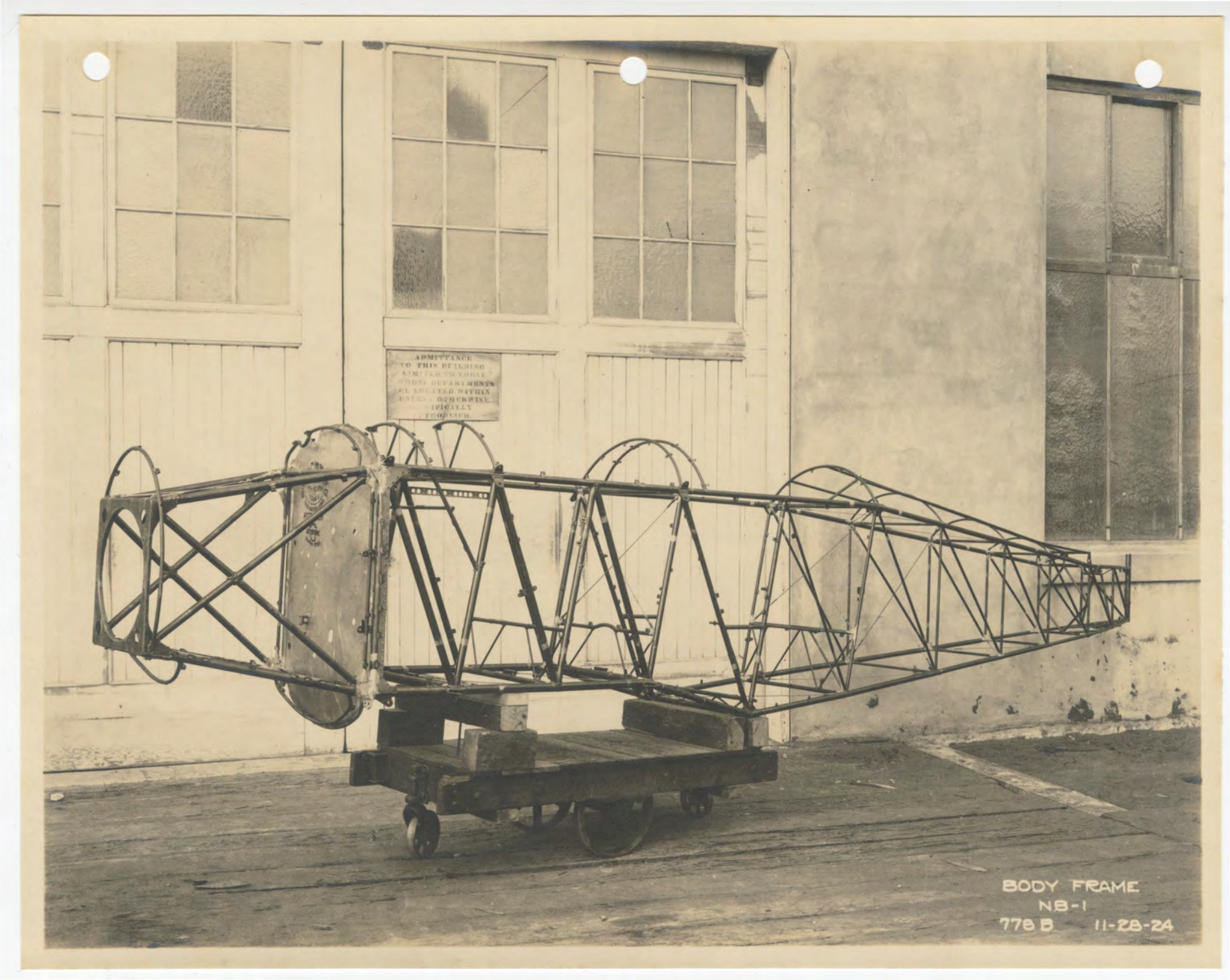
BOEING TRAINING PLANE  
601 B  
1-12-25



COCKPIT ARRANGEMENT  
NB-1

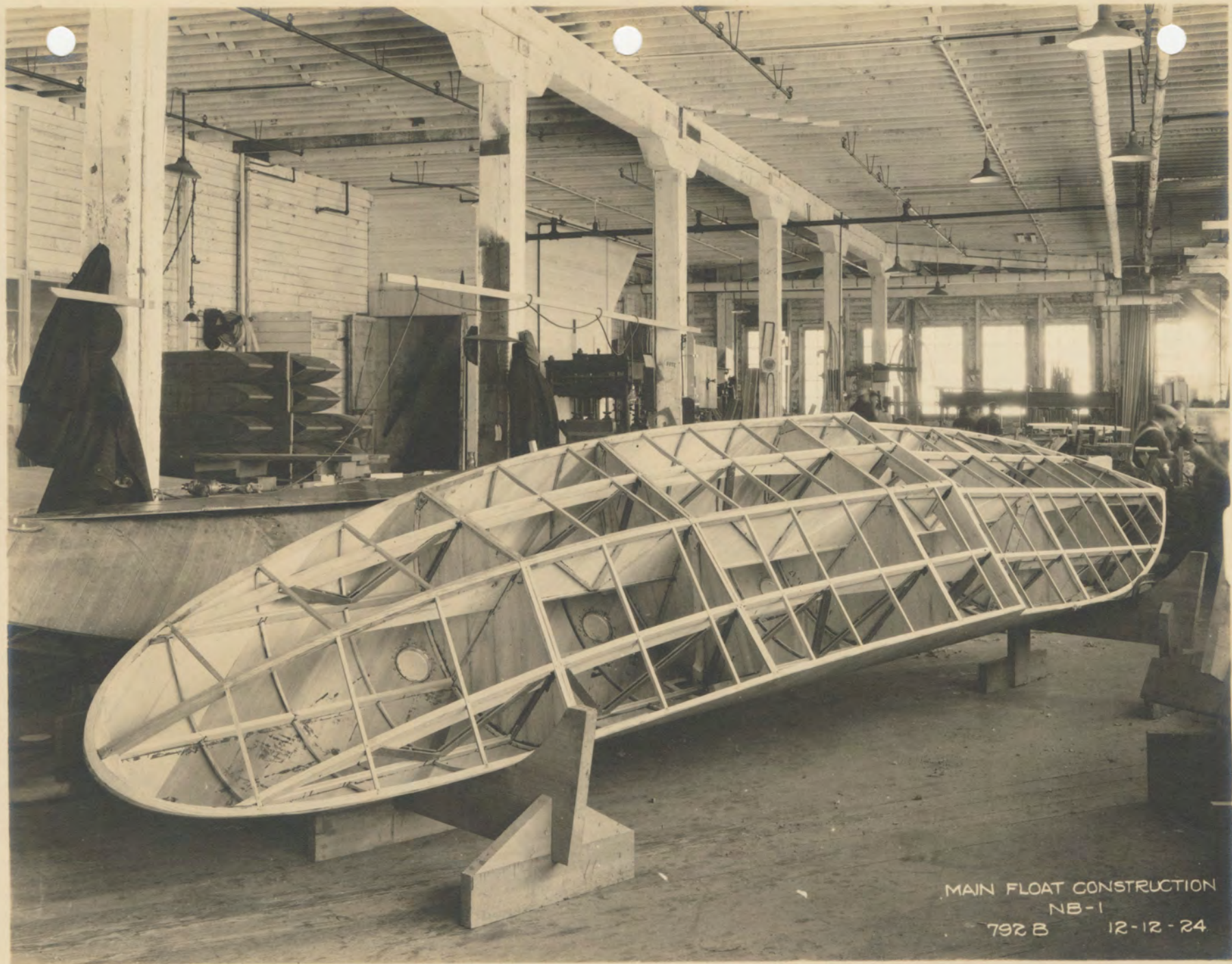
791 B

12-12-24

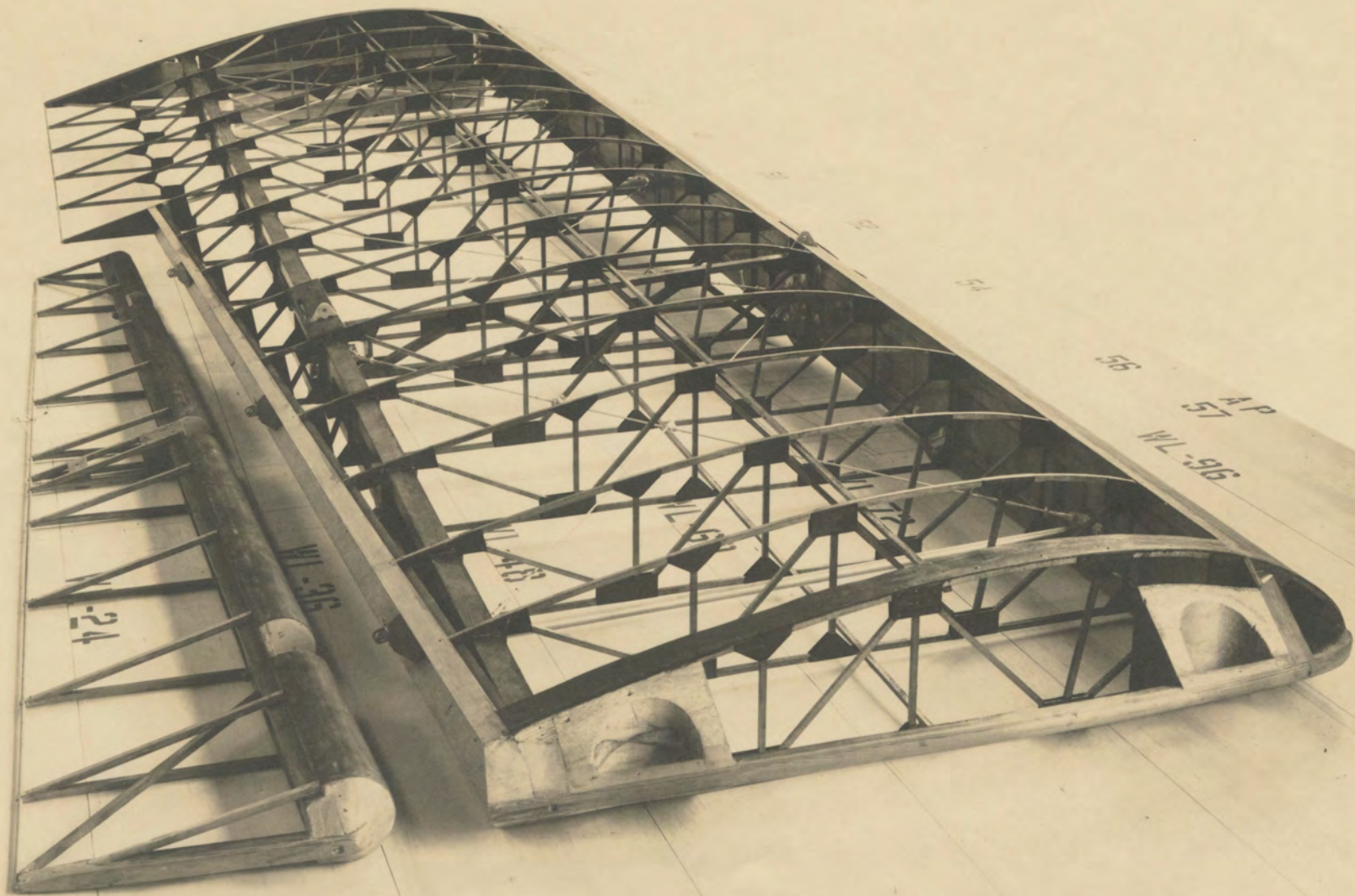


ADMITTANCE  
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IS LIMITED TO PERSONS  
WHOSE DEPARTMENTS  
ARE LOCATED WITHIN  
THIS BUILDING  
EXCEPT BY  
PERMISSION

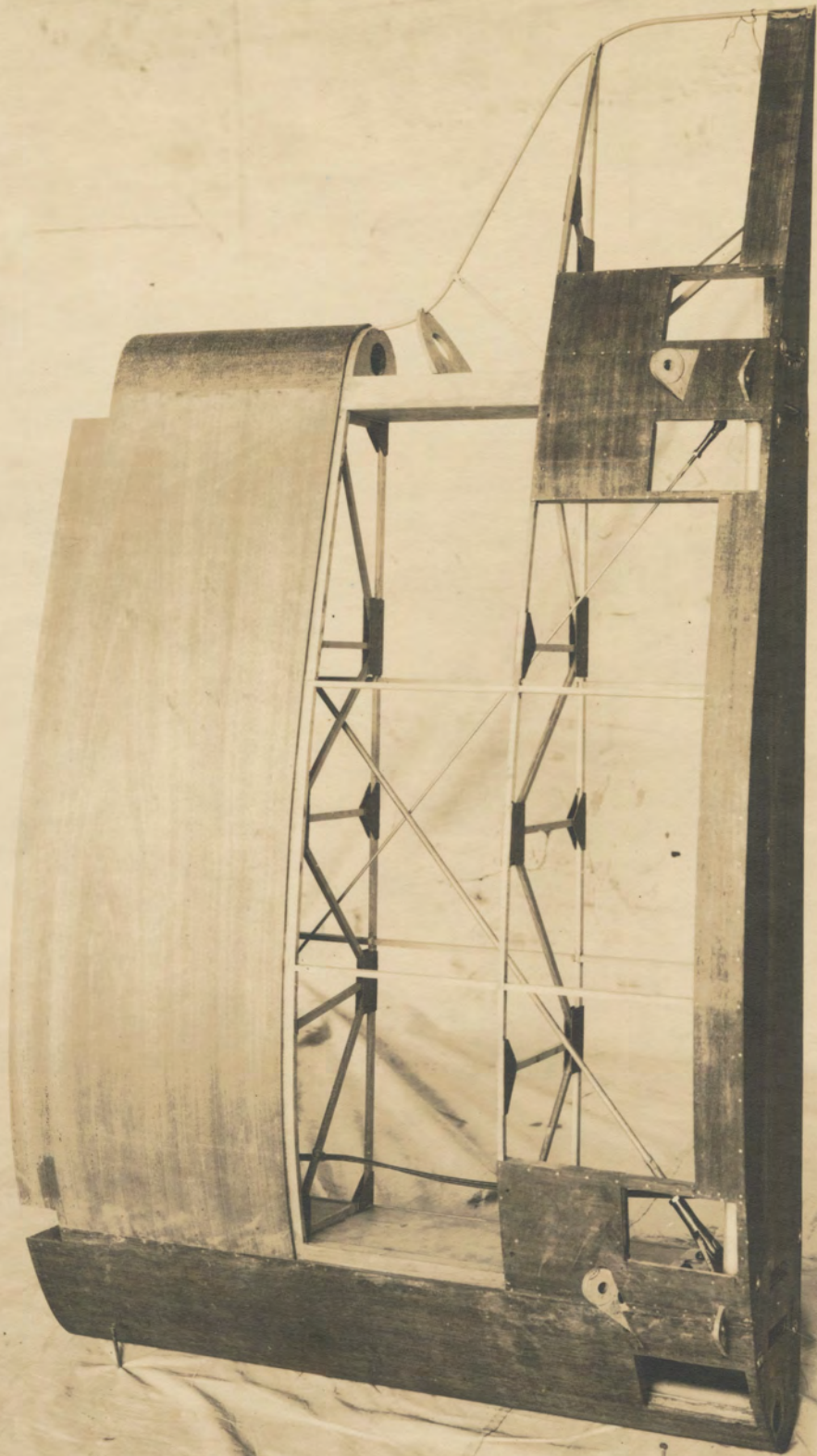
BODY FRAME  
NB-1  
778 B 11-28-24



MAIN FLOAT CONSTRUCTION  
NB-1  
792 B 12-12-24







7719  
11-23-51  
INBOARD WING  
NB-1

