

CW-504  
A-236  
RED

## FRONT SPAR

This section of the front spar spans from LBL 75.92 to LBL 114.95. CW-502 connects to this section on the right side, and CW-507, CW-510, CW-516, and CW-518 on the left side. CW-515 forms part of the upper boundary of this section. The upper and lower connections separated along the radius of the upper/lower skin/spar chords. The sides separated by a tearing action.

The stiffeners at LBL 75.82, 83.24 and 91.14 suffered severe impact damage and fractured at 18", 15" and 12" from the upper shear ties respectively. The aft flange and the stiffener web at the impact location was crushed forward. A 2.5" wide impact mark was observed on the aft flange of the stiffeners. The stiffener at LBL 98.48 remained attached to the front spar web and the aft flange suffered impact damage from 17" to 23" from the upper shear tie. The shear ties are missing from the stiffeners at the bottom.

For fatigue cracking found on the horizontal flange of the shear ties, attached to the lower skin at approximately LBL 83.24 and 91.14, see the shear tie study.

Other than the fatigue damage mentioned above, pre-existing cracking or corrosion to this section of the front spar.

There is a black, oily residue on the aft side in the upper outboard area; this is similar to the residue on the upper surface of the upper skin panel.

*SD GREEN ALPA*

*12-06-96*

*(A) Kerney BOEING 12/7/96*

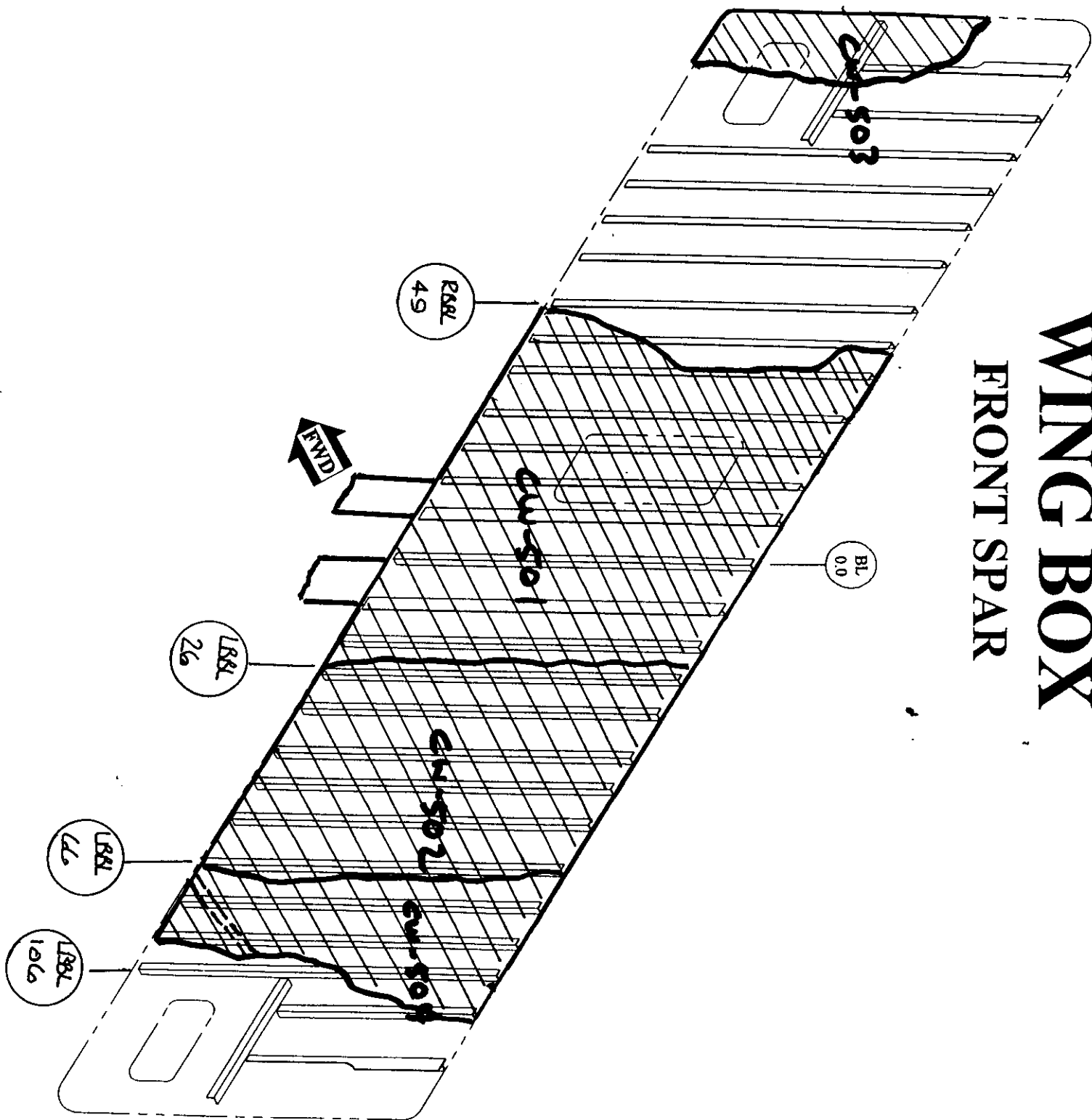
*J. M. Pelt 12-6-96 WA*

*Stephen F. Klappach*

*FAN 12-06-96*

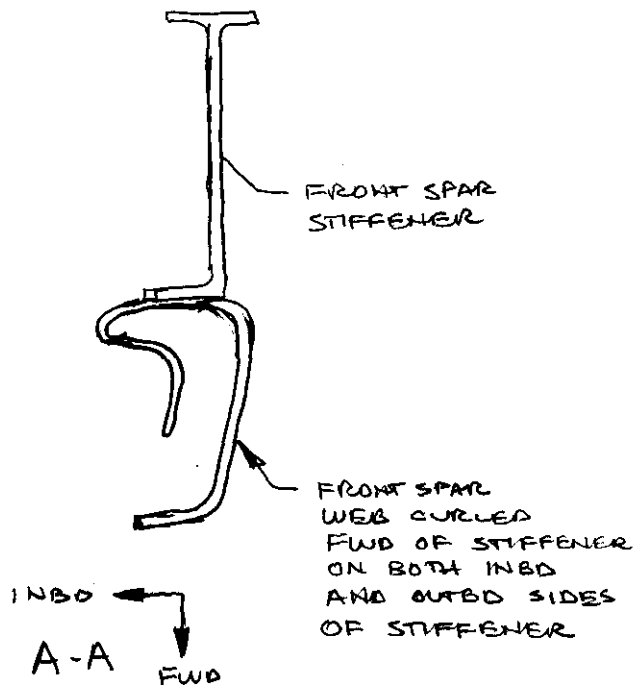
*R. Brachetti IAM 12-6-96*

# WING BOX FRONT SPAR



2  
Stephen F. Klappach  
FPA 10-31-96

CW 504



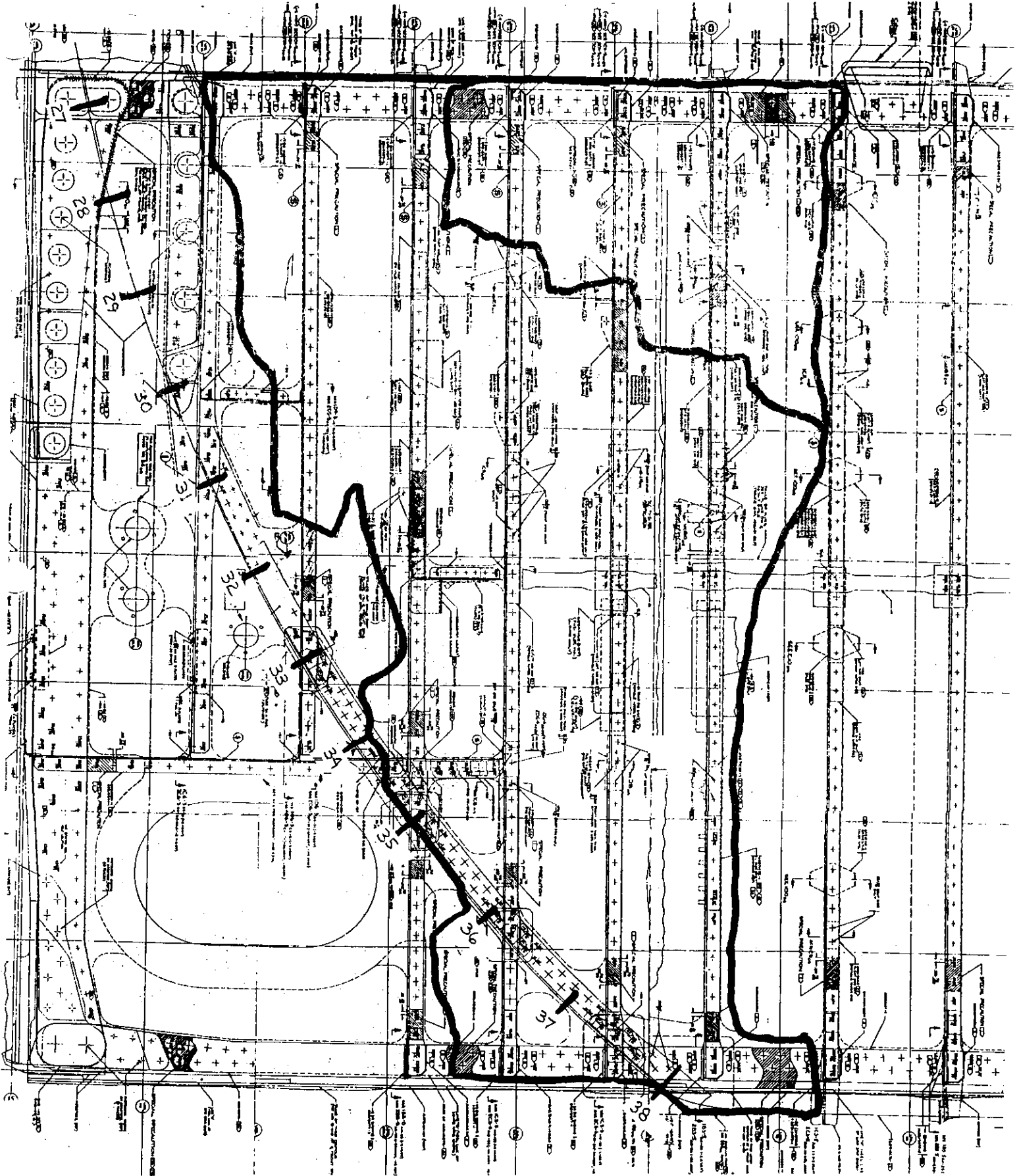
NOTES:

AFT SIDE OF CW-504 AT INTERFACE WITH CW-515 SHOWS SAME EVIDENCE OF BEING STRUCK BY SWB #3 AS OTHER FRONT SPAR SECTIONS. STIFFENERS ARE BUCKLED AND DISTORTED AT UPPER END COMMON TO CW-504.

SIGNIFICANT EVIDENCE OF FWD APPLIED FORCE TO LWR WEB AROUND ACCESS HOLE CAUSING WEB TO FRACTURE AND TOTALLY CURL AROUND ON ITSELF AT SEGMENTS CWS10, CWS08, AND CWS07. RADIUS OF CURVATURE OF APPROX 7"

NO EVIDENCE OF ANY BURNING OR SOOT EXCEPT ON INTERCOSTAL ATTACHED TO STIFFENER WHICH SHOWS BURNING AND SOOT.

W. STEYARDT  
8-30-96



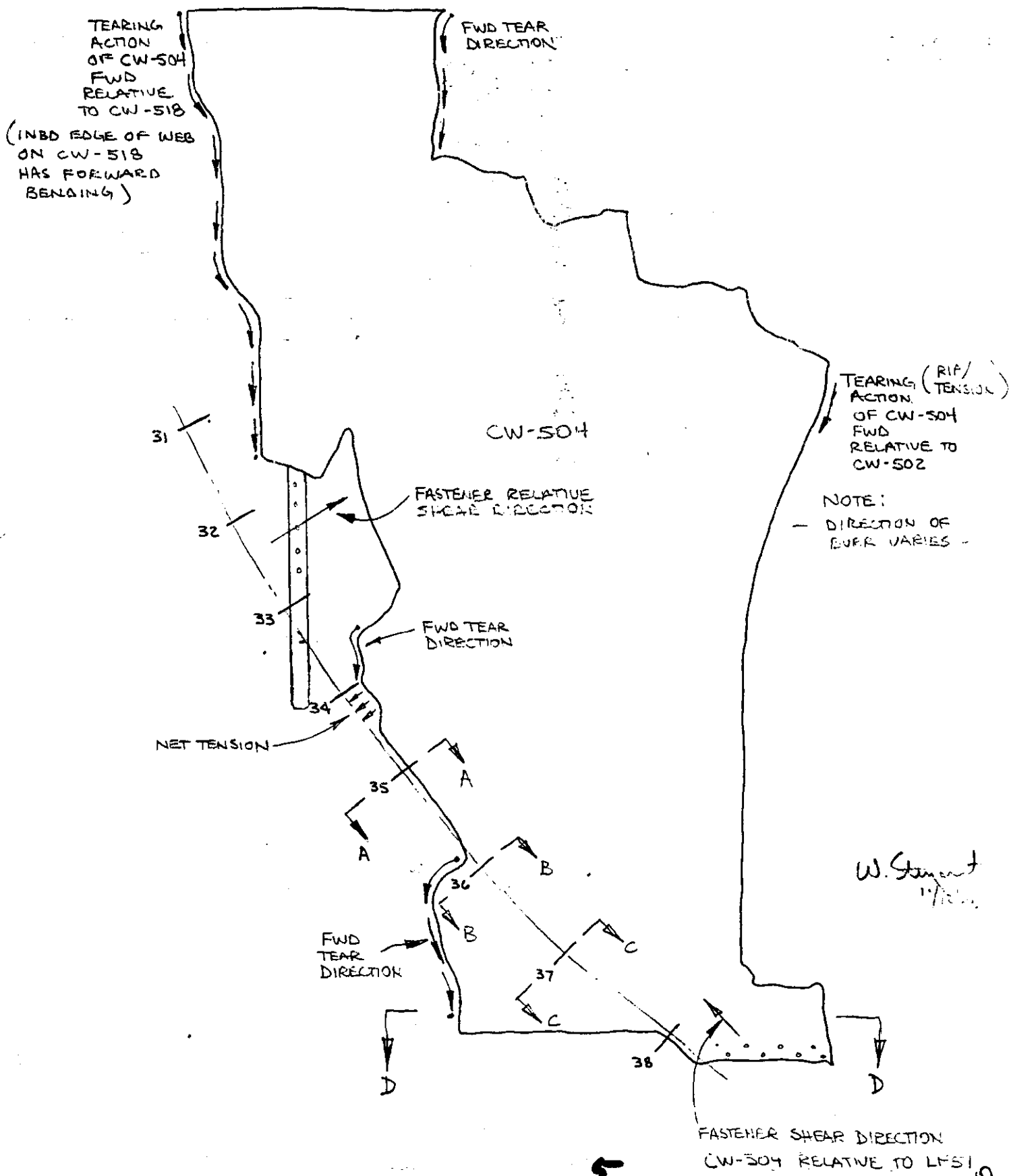
4

W. Stewart 1/2/20

9

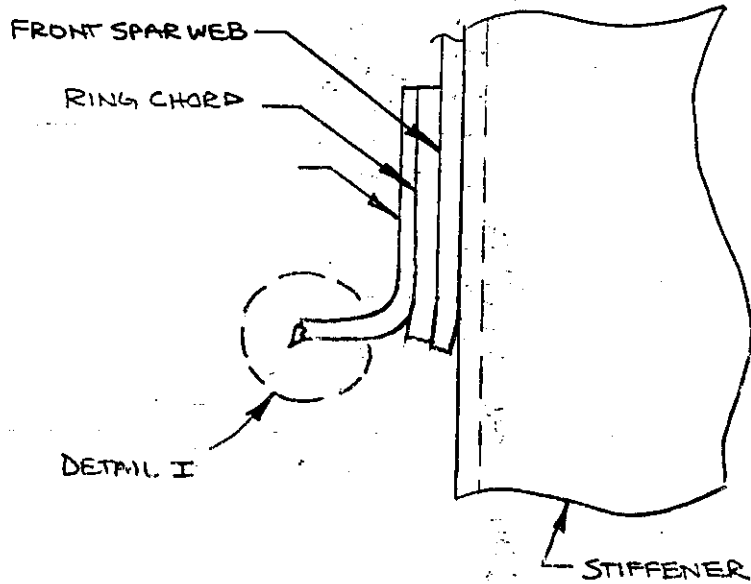
PRELIMINARY

11/5/90 17:46



PRELIMINARY.

11/5/63 17:46



A-A



DEFORMATION AT FASTENER LOCATIONS

DETAIL I

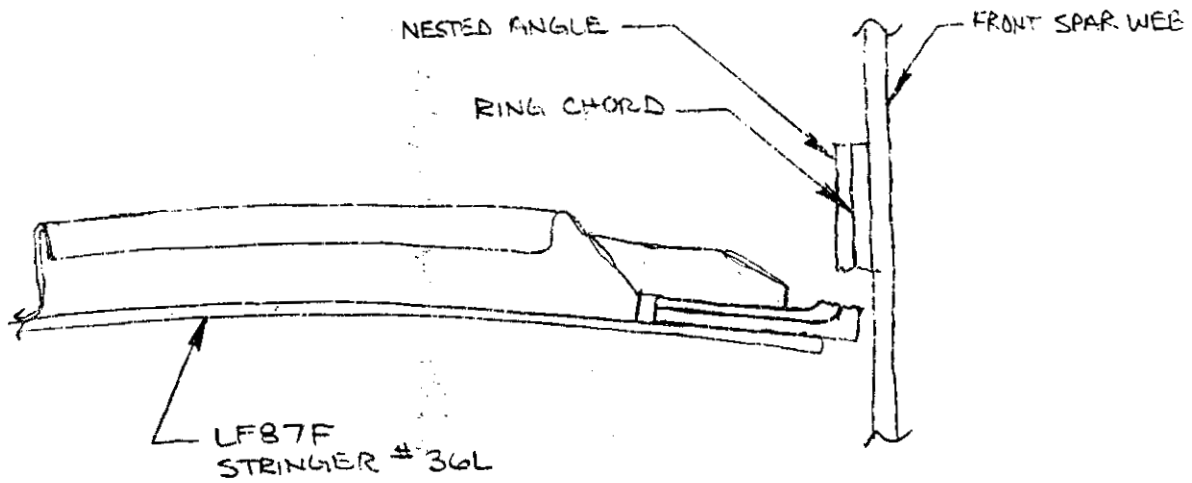
W. Stuyvesant 11/2/60

6

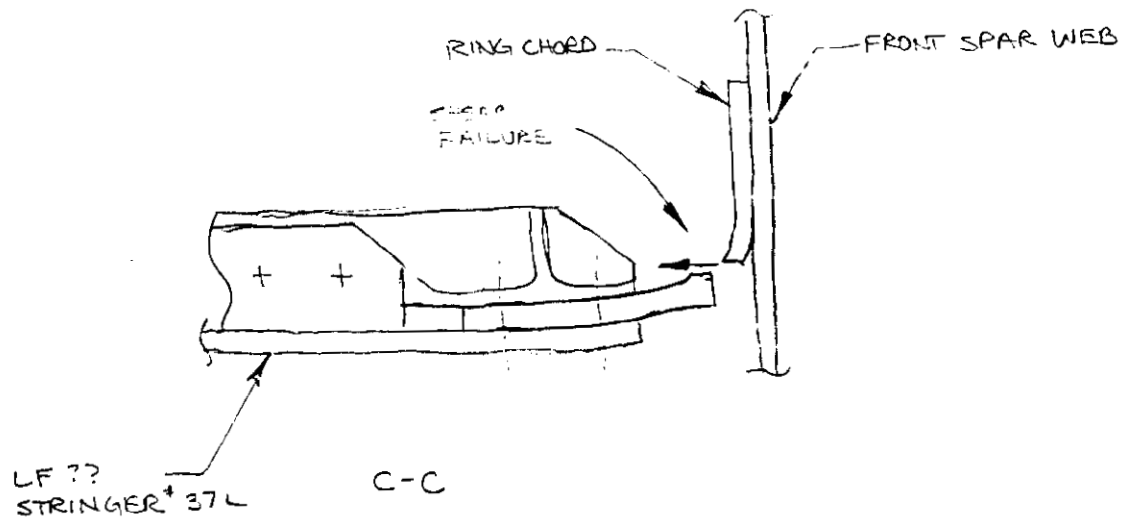
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11/5/96 17:46



B-B

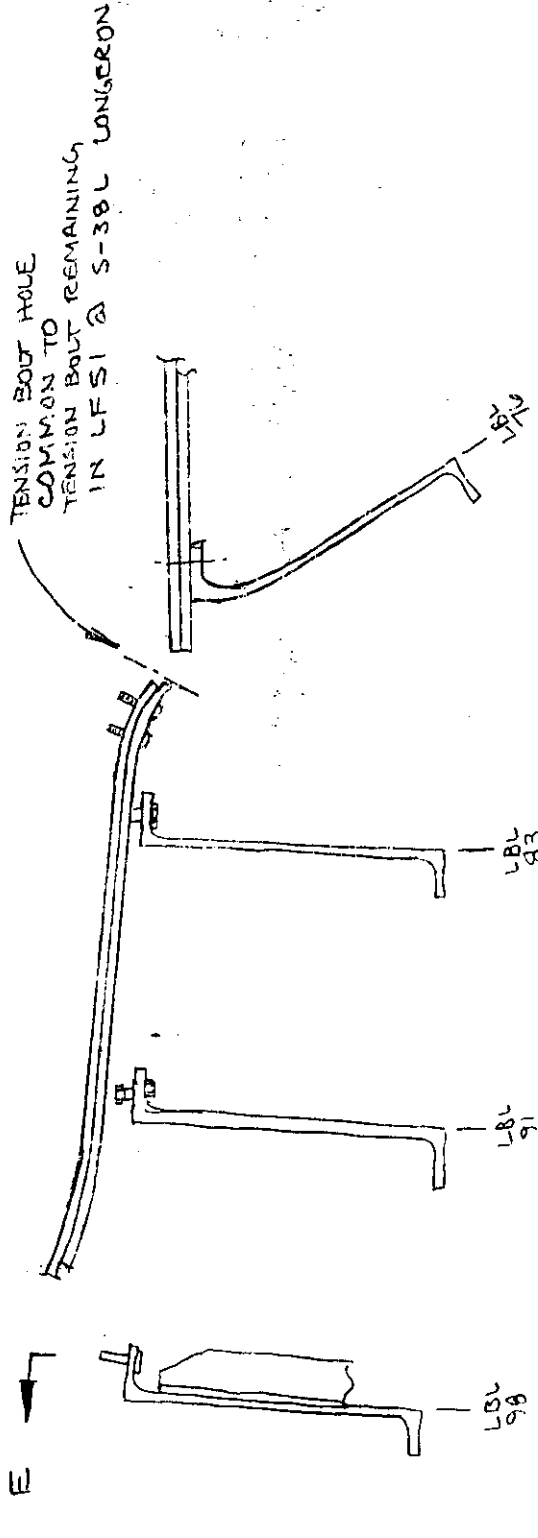


C-C

W. Stuyvesant 11/12/96

PRELIMINARY

11/5/96 47:46



D-D

8

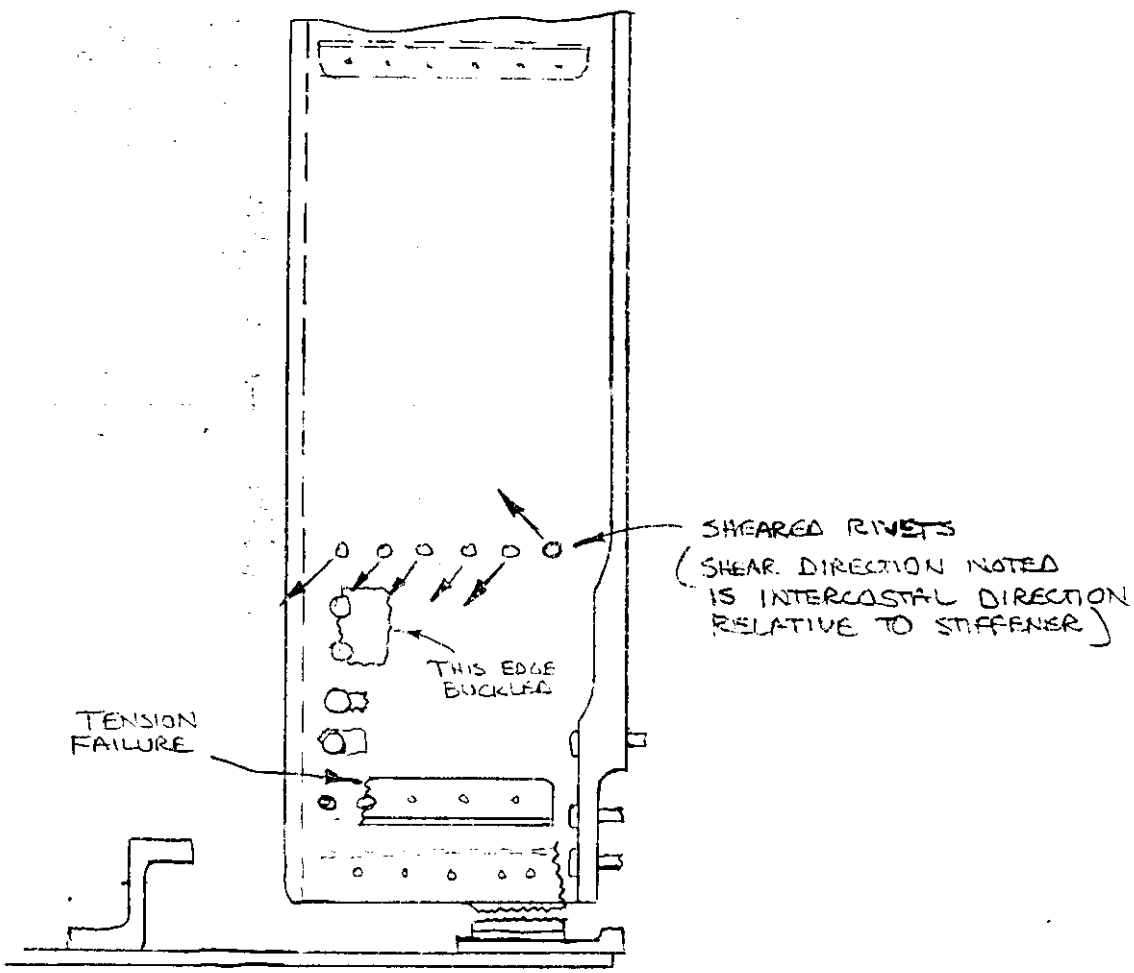
12) Stuyvesant 11/2/96

(15)

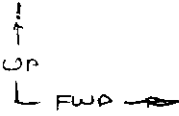


PRELIMINARY

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E-E

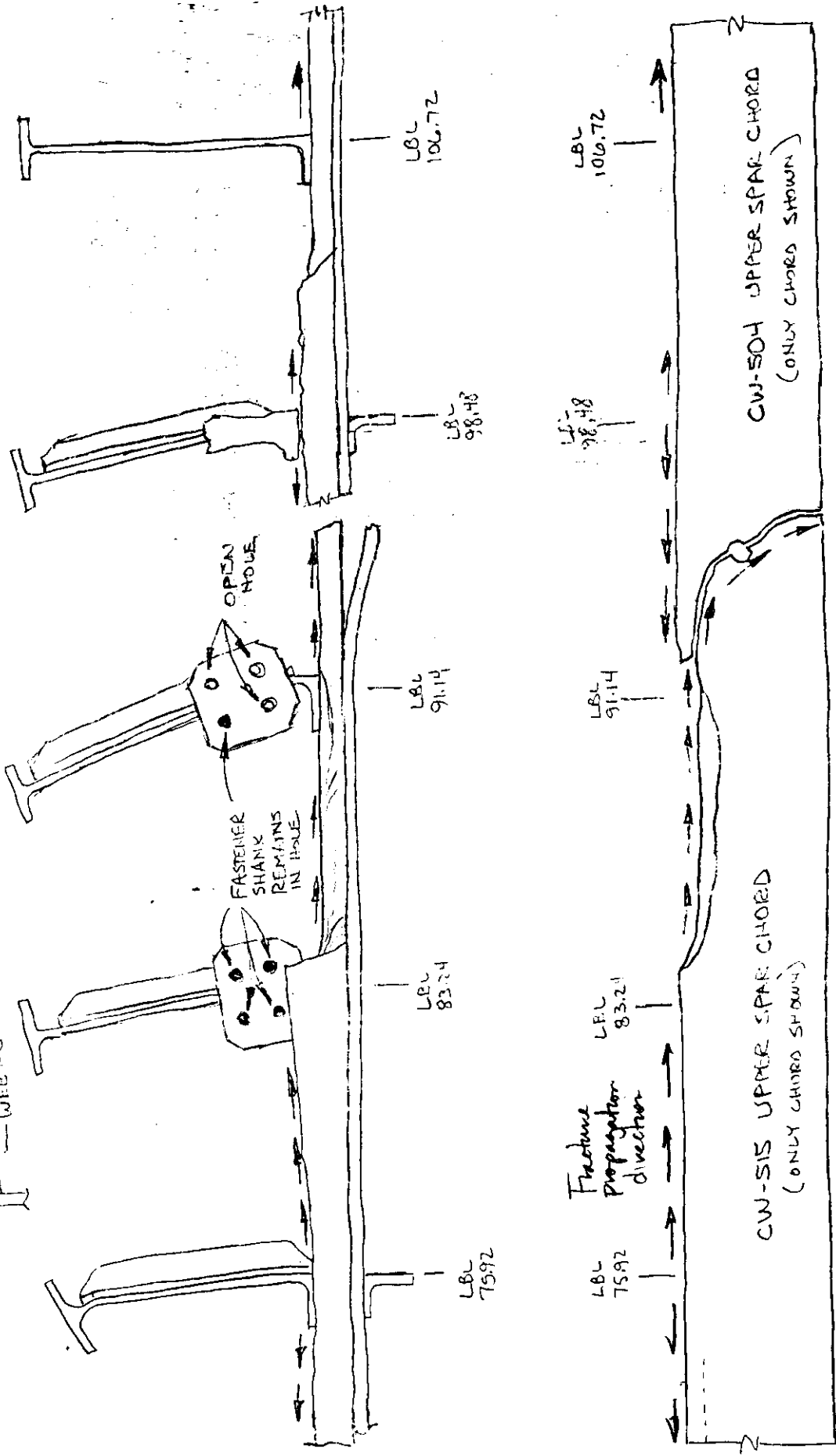
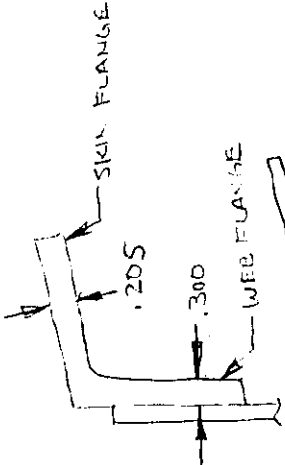


VIEW LOOKING OUTBOARD  
LBL 98.48

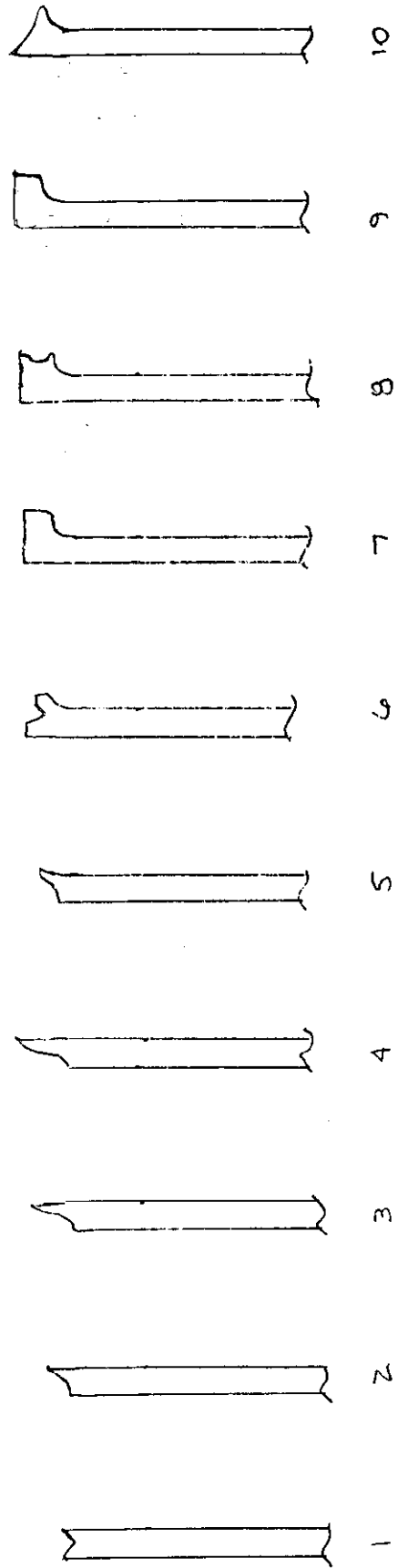
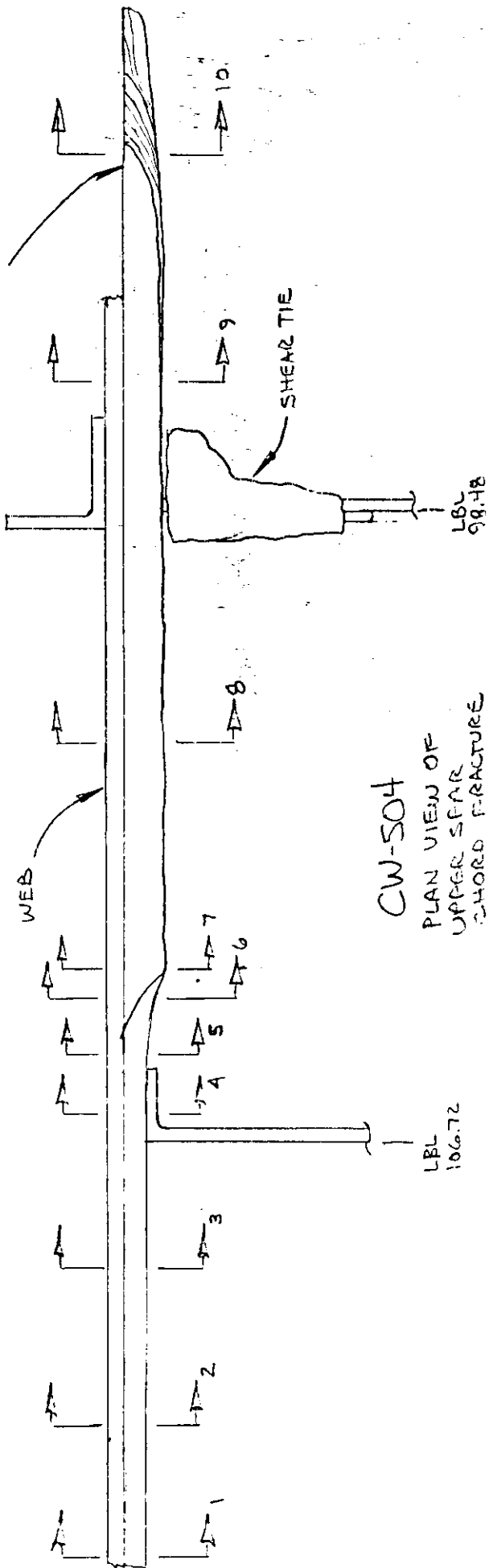
W. Stewart "Wiz" [signature]

PRELIMINARY

HAS ONLY BEEN REVIEWED BY BOEING 1/2/91 W. Stoyant



VIEW LOOKING AFT



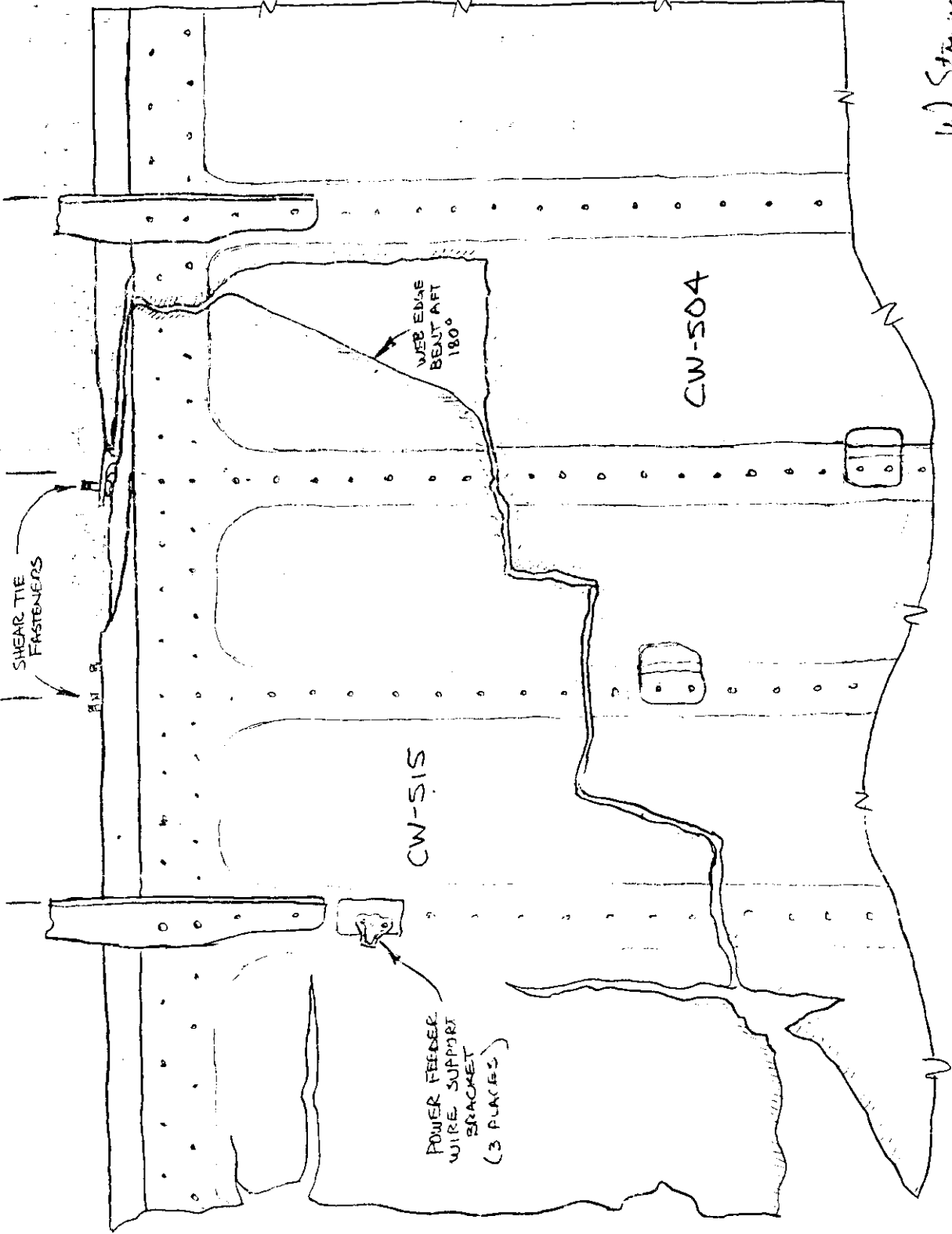
W. Stewart "Inches"

LBL  
98.48

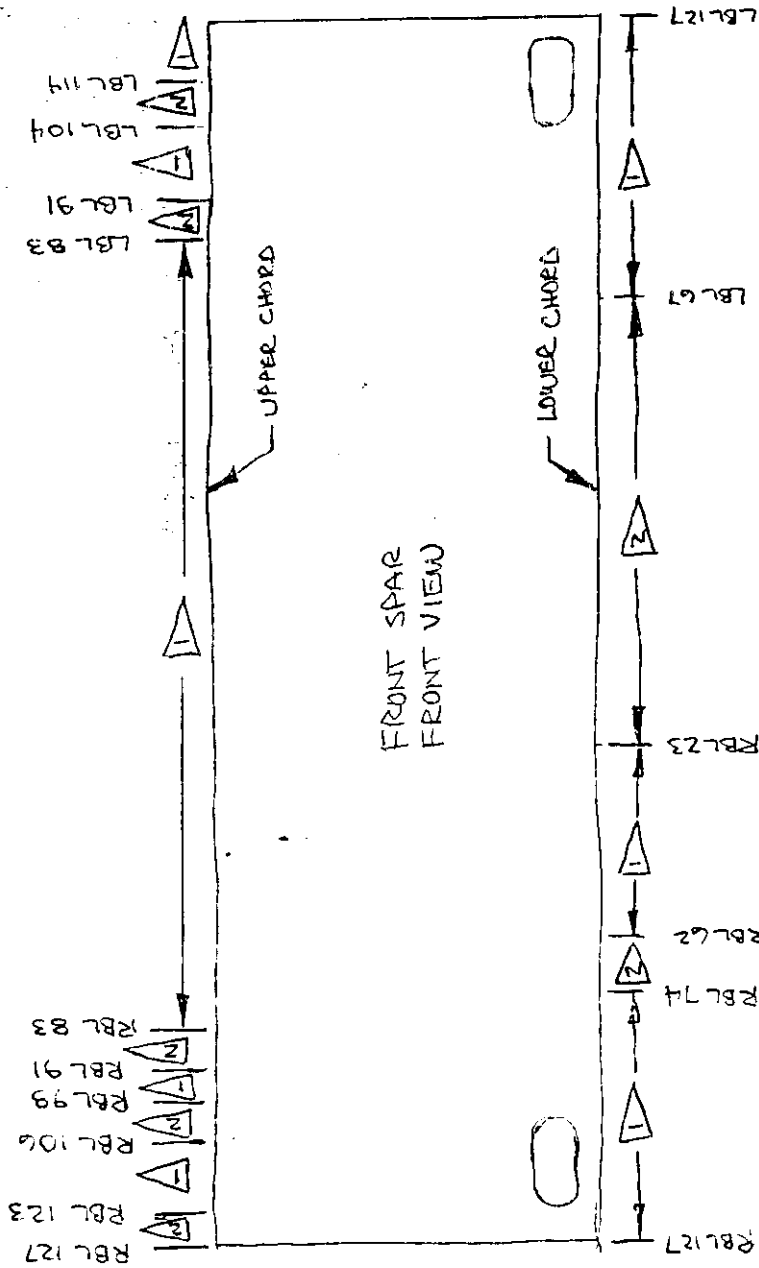
LBL  
91.14

LBL  
83.24

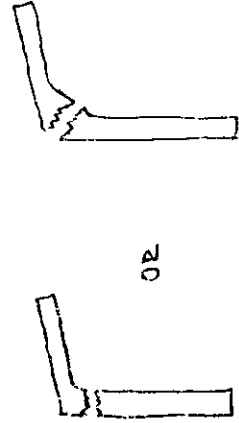
LBL  
75.92



W. Stangorick 11/2/48



FRACTURE TYPE # 2



FRACTURE TYPE # 1



PRELIMINARY

FOR STUDY PURPOSE ONLY