ADD BOTH f's TOGETHER ie $f_{bending} + f_{direct}$
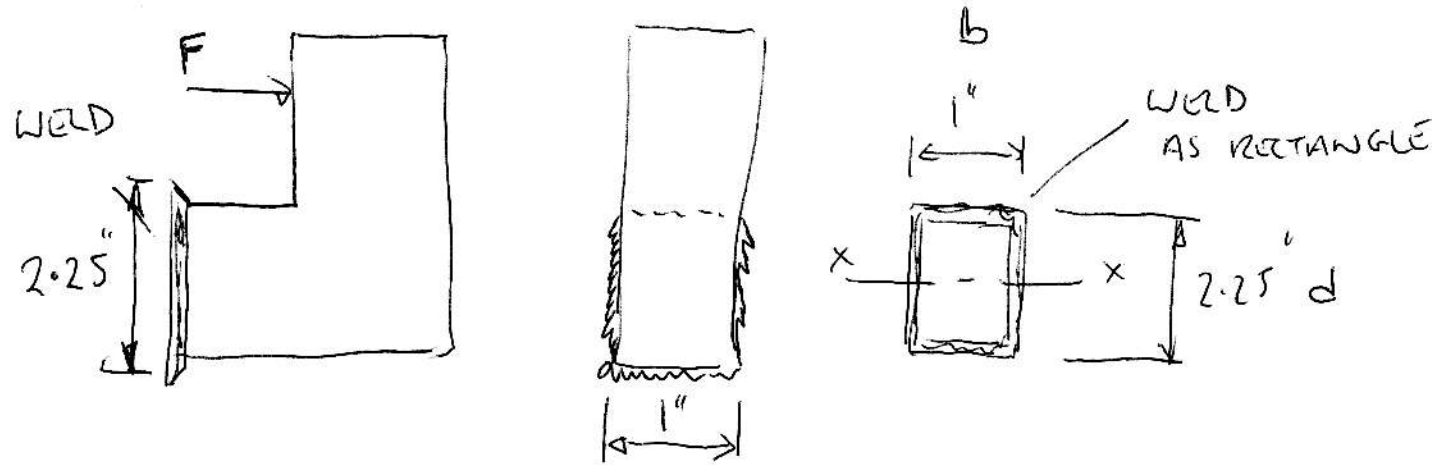
YOU NOW HAVE THE RESULTANT FORCE PER INCH OF WELD FOR YOUR JOINT.

NOW $\dfrac{f_{RESULTANT\ (ACTUAL)}}{f_{allowable}} =$ SHOULD EQUAL LESS THAN 1

$f_{allowable} = S_{ALL} \times A$ WHERE S_{ALL} = ALLOWABLE SHEAR STRESS IN WELD

A = THROAT AREA = $0.707 \times W$

W = WELD LEG LENGTH

WELD

F

2.25"

b

1"

WELD
AS RECTANGLE

X —— X 2.25" d

1"

Z_w = SECTION MODULUS OF WELD AS A LINE

$$Z_w = bd + \frac{d^2}{3} \quad (\text{BENDING ABOUT AXIS } X-X)$$

$$f = \frac{M}{Z_w}$$ WHERE M IS YOUR BENDING MOMENT

f IS THE FORCE PER INCH WHEN WELD IS TREATED AS A LINE.

SIMILIARLY FOR THE DIRECT LOAD IN YOUR DIAGRAM MARKED 'F'

$$f = \frac{'F'}{L_w}$$ WHERE f IS FORCE PER INCH OF WELD

L_w IS THE TOTAL LENGTH OF WELD