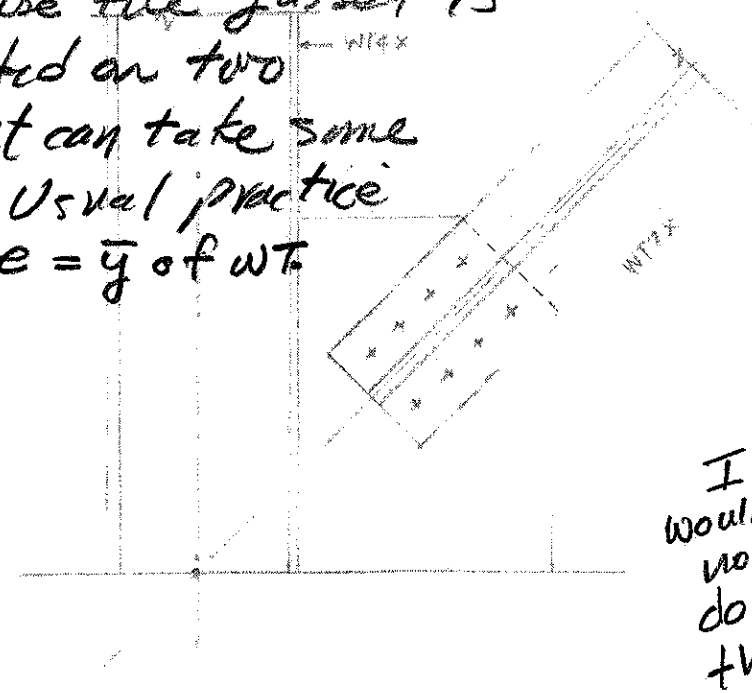
Comments:

1. use option 1
2. Design WT for P and M = Pe
3. Bolts for shear due to P
4. Gusset and connections for in-plane forces due to P
5. Because the gusset is supported on two edges, it can take some moment. Usual practice is to use e = $\bar{y}$ of WT.



This moment is in WT and should be designed for, especially for compression.

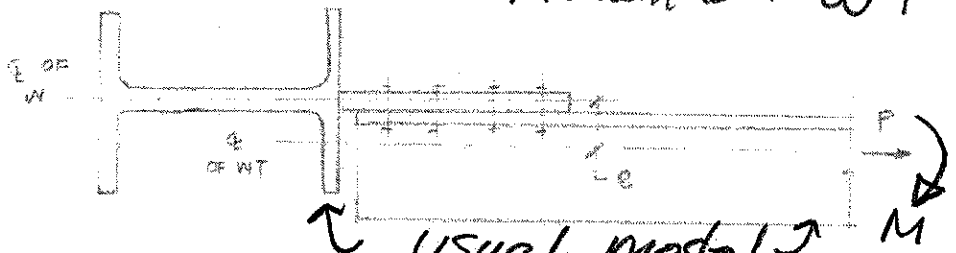
OPTION 1

No — CENTROID OF WT & W14 ARE NOT CONCENTRIC. M = P.e

DO BOLTS HAVE TO BE DESIGNED FOR TENSION / SHEAR INTERACTION ? Shear only

Yes — IS MOMENT HANDLED IN MEMBER 'WT' AS AXIAL + BENDING & GUSSET DESIGNED ONLY FOR AXIAL

No — IS 'Pxe' REQUIRED TO BE RESISTED BY GUSSET IN WEAK AXIS BENDING — Moment is in WT

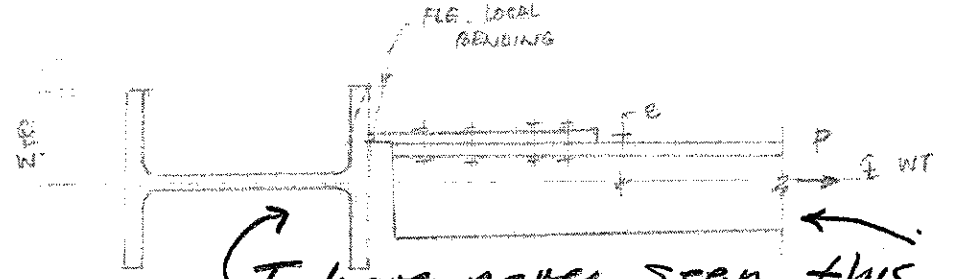


Usual model

I would not do this

OPTION 2

- CENTROIDS COINCIDE.
- ECCENTRICITY EXISTS BETWEEN GUSSET & WT
- BOLTS TRANSFER LOAD INTO GUSSET THROUGH SHEAR AND BENDING
- CHECK FLANGE FOR LOCAL BENDING
- GUSSET DESIGNED FOR AXIAL ONLY & WT TO TAKE MOMENT ?



I have never seen this done.

QUESTION ON SHEAR LAG.

IF U < 0.6, MEMBERS ARE SUBJECT TO AXIAL LOAD & BENDING (§ 16.1-252 AISC 13th)

DOES THIS MEAN THAT MEMBERS WITH U ≥ 0.6, (MOST OF THE CASES) CAN BE DESIGNED ONLY FOR AXIAL LOAD ? — No

This was wrong. See attached 2010 Specification Section D3, lines 61 – 80

$\phi_t = 0.75$ (LRFD) $\Omega_t = 2.00$ (ASD)

where

A_e = *effective net area*, in.^{2} (mm^2)
A_g = gross area of member, in.^{2} (mm^2)
F_y = *specified minimum yield stress*, ksi (MPa)
F_u = *specified minimum tensile strength*, ksi (MPa)

When members without holes are fully connected by welds, the effective net area used in Equation D2-2 shall be as defined in Section D3. When holes are present in a member with welded end *connections*, or at the welded connection in the case of plug or *slot welds*, the effective net area through the holes shall be used in Equation D2-2.

Comment [CJD2]: TC 2 editorial review of symbols

Deleted: of the type of steel being used

Deleted: of the type of steel being used

D3. EFFECTIVE NET AREA

The gross area, A_g, and net area, A_n, of tension members shall be determined in accordance with the provisions of Section B4.3.

The effective net area of tension members shall be determined as follows:

$$A_e = A_n U \qquad \text{(D3-1)}$$

where U, the shear lag factor, is determined as shown in Table D3.1.

For open cross-sections such as W, M, S, C, or HP shapes, WTs, STs, and single and double angles, the shear lag factor, U, need not be less than the ratio of the gross area of the connected element(s) to the member gross area. This provision does not apply to closed sections, such as HSS sections, nor to plates.

User Note: For bolted splice plates $A_e = A_n \leq 0.85A_g$, according to Section J4.