Account for splice PL thickness in shear calcs by increasing %Rem t above 100% & tension

191'4" Span

L2 Left Chord (1021) 1/2" Gusset 1/2" splice PL
L6 Right chord (1064)

$\%\ t\ Rem = \frac{1/2" + 1/2"}{1/2"} = 200\%$

L2 Right chord (1024)
L6 Left Chord (1061) Same as above 200%

L3 both chords (1031, 1035) Same 200%
L5 both chords (1051, 1055)

U1 + U7 also have Splice PL, since this is still failing in Global shear try including Sp PL

$\therefore \%\ Rem\ t = \frac{1/2" + 1/2(3/8")}{1/2"} = 137.5\%$ → fixes problem

Now only failing gusset is L3 for checks 3 & 4 (L5 similar)

Check #3 Diagonal Left is failing for Rivets needed in shear 20 as opposed to 22

Check #4 Left chord failing

Gusset PL Max Yield stress based on effective Area = 34.166 ksi > 33 ksi

250' Span

L2 Left chord (1021)
L8 Right chord (1084)

$\frac{9/16" + 7/16"}{9/16"} = 177.\overline{7}\%$

L2 Right chord (1024)
L8 Left Chord (1081)

(conservative 7/16" partially)

$\frac{9/16" + 3/8"}{9/16"} = 166.\overline{6}\%$

L3 Left Chord (1031)
L7 Right Chord (1074)

$\frac{9/16" + 3/8" + 3/8"}{9/16"} = 233.\overline{3}\%$

L3 Right Chord (1034)
L7 Left chord (1071)

$\frac{9/16" + 3/8" + 3/8"}{9/16"} = 233.\overline{3}\%$

L4 Left chord (1041)
L6 Right chord (1065)

$\frac{9/16" + 1/2" + 5/8"}{9/16"} = 300\%$

L4 Right Chord (1045)
L6 Left chord (1061)

$\frac{9/16" + 1/2" + 5/8"}{9/16"} = 300\%$

Increase Whitmore R thickness Remaining

Sp1+4 L3/L5 (1031 Left chord / 1055 Right Chord)

Whitmore Width = 19.217" t_{gusset} = 0.5"

splice R = 15" $t_{splice\ R}$ = 0.5"

$$\therefore \%\ Rem\ t = \frac{\left(\frac{4.217"(.5") + 15"(1")}{19.217"}\right)}{.5"} = 178\%$$

Sp2+3

L3/L7 Whit Width = 23.372" t_{gusset} = .5625"

Left chord 1031 / Right chord 1074 Splice R = 18" t_R = 3/8" + 3/8" = .75"

$$\%\ Rem\ t = \frac{\left(\frac{5.372"(.5625") + 18"(1.3125")}{23.372"}\right)}{.5625"} = 203\%$$

L4/L6 Whit Width = 23.66 t_{gusset} = .5625"

Left chord 1041 / Right chord 1065 Splice R = 18" t_R = 5/8" + 1/2" = 1.125"

$$\%\ Rem\ t = \frac{\left(\frac{5.66"(.5625") + 18"(1.6875")}{23.66"}\right)}{.5625"} = 252\%$$

U1/U9 Increase Global shear width % Rem t because of splice R

t_{gusset} = 9/16" t_{sp} = 7/16" say splice for 1/2 width ∴

$$\%\ Rem = \frac{9/16" + \frac{1}{2}(7/16")}{9/16"} = 139\%$$