

### FHWA Guidance Example vs. PennDOT Gusset Plate Spreadsheet (TGPARv1.01) Comparison Study

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Location		Resistance of Fasteners Kips		Axial Resistance of One Gusset Plate Kips						Controlling Axial Resistance Kips		Operating Rating Factor	
				Effective Gross Section Yielding in Tension		Block Shear Rupture		Compression Buckling					
At End of Member		Fastener Shear		Effective Gross Section Yielding in Tension		Block Shear Rupture		Compression Buckling		Kips		Operating Rating Factor	
FHWA	PennDOT	FHWA	PennDOT	FHWA	PennDOT	FHWA	PennDOT	FHWA	PennDOT	FHWA	PennDOT	FHWA	PennDOT
1	1	1885	1884	1679	1665.57	1602	1587.35	-	-	1602	1587.35	4.83	5.66
2	5	1272	1271.7	1715	1715	1678	1691.4	-	-	1272	1271.7	3.00	3.6
3	4	848	847.8	-	-	-	-	1226	1228.38	848	848	5.12	5.89
4	3	1272	1271.7	-	-	-	-	1417	1417.33	1272	1271.7	5.01	5.73
5	2	1885	1884	1679	1665.57	1602	1587.35	-	-	1602	1587.35	2.11	2.65

Orientation of Section	Shear Resistance of One Gusset Plate		Controlling Shear Resistance Kips		Operating Rating Factor	
	Gross Section Yielding in Shear					
	FHWA	PennDOT	FHWA	PennDOT	FHWA	PennDOT
Vertical	1051	1050.67	1051	1050.67	3.18	3.8
Horizontal	1281	1280.4	1281	1280.4	2.96	3.51

**Conclusion:**

Note: FHWA applied a reduction of 10% on capacity to increase the margin of safety due to the non-redundancy behavior of the structure.

FHWA Controlling Operating Rating	2.11	
PennDOT Controlling Operating Rating	2.13	[After 10% Reduction on Capacity]