Made By: CTY / CJM / BKC Date: 6/2/2009

Changes to ODOT Gusset Plate Rating Spreadsheet

		Table name	Cells Affected	Change
Revision 2	1	Member Factored Axial Loads From Truss Analysis:	E65-E69, F65-F69	Rewrite the formula to move muliplying value B35 inside of the False return so that the true return value "N/A" will not be multiplied by a number causing #VALUE!
	2	Gusset Plate Geometric Properties	R89-R93, W89-W93	Change IF statement to check not only if referenced cell is zero, but also if it is N/A, so make an OR statement
	3	Axial Loading Acting to Shear Rivets	L154-L158	Rewrite the formula to move the addition of the number 1 to be inside of the False return of the second IF statement so that the true return value of the second if statement "N/A" will not be added to a number causing #VALUE!
	4	Rating Factor For Axial Loading Acting on Rivets	J163-J167	Rewrite the formula to move the dividing value inside of the False return so that the true return "N/A" will not be divided by a number causing #VALUE!
	5	Rating Factor For Local Tension and Fracture	I191-I195, J191-J195, K191-K195	Rewrite formula to include the possibility of the Whitmore widths in columns G and H being "None"
	6	Rating Factor For Local Tension and Fracture	L191-L195, M191-M195, N191-N195	Rewrite formula not only to check for "Compression" member, but also to check if the member is "N/A" and to return "N/A" if it is
	7	Rating Factor For Global Shear Yielding and Fracturing Requirement (Horizontal Shear Only). Rating Factor For Global Shear Yielding and Fracturing Requirement (Vertical Shear Only)	I369, I376	Rewrite formulas to include possibility of loads being zero so that the rating factor does not return #DIV/0!
	8	Table 5 of Info Tables		Add 4 columns at end for % Remaining Plate thickness for Whitmore and Shear Areas for Inner and Outer plates, reference these numbers to the Gusset Plates Rating Tab and use them in the calculations instead of just a single percentage for everything This will affect the following cells in the rating tab: D89-93, E191-195, E89-E93, F89-93, F191-195, G89-93
Revision 3	1	Rating Tab:	G50-54, H50-54, I50-54, J50-54, K50-54, D89-93, E191-195, E89-E93, F89-93, F191-195, G89-93	For the remaining thickness rewrite formulas to allow for cases where there is no member
	2	Rating Tab - Table 1 Gusset Plate Minimum Edge Stiffness	B106-107	Rewrite formula, so that instead of referencing one thickness from the geometric properties table so that it finds the minimum of the Whitmore and Shear, since we changed how the properties are calculated
	3	Rating Tab - 7: Gusset Plate Combined Planes Shear Rupture Resistance	D278-285	Rewrite formulas to find the minimum between the left and right values, since they are not all the same thickness anymore since the geometric properties table was changed
	4	Rating Tab - 8: Gusset Plate Global Shear Yielding and Fracturing Requirement (Shear Only)	B361-362	Rewrite formula to find minimum thickness, since geometric properties table changed
	5	Rating Tab - 4: Gusset Plate Local Tension Yield and Fracture	G191-195, H191-195	Rewrite the initial check to check the ID column not the member column to see if there is "None"
	6	Rating Tab - 7: Gusset Plate Combined Planes Shear Rupture Resistance	C284	Incorrect Spelling, changed Nine to None
	7	Rating Tab	J22	Rewrite formula to find minimum thicknesses, since geometric properties table changed
Revision 4	1	Rating Tab:	B56, C56, E65-69, F65-69	There is no allowance for ODOT Truck Train loading, so add this into the scroll bar and update the false statements of cells E65-69 and F65-69 to lookup the truck train loading
	2	Member loads tab	columns AB, AC, AD	Add columns for ODOT Truck Train loading
Revision 5	1	Rating Tab: Check 7 Tables A and B	D-H292-294, D-H317-320	Logic was messed up and not referencing the correct left or right side and also the Fy and Fu were being referenced incorrectly in some cells
	2	Rating Tab: Table 1	C113-114	Reference thickness to b106-107, don't lookup

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		Table name	Cells Affected	Change
Revision 6	1	Rating Tab: Table 2	E-I 163-167	Reformat IF statement to check if the member is spliced from the table above, if it is, return N/A
	2	Rating Tab: Member Factored Axial Loads From Truss Analysis	I65-69	Range was incorrect in the LOOKUP
	3	Rating Tab: Gusset Plate Geometric Properties	I&J 89-93	Range was incorrect in the LOOKUP
	4	Rating Tab: Table 1	B106-107, C113-114	Revoke Change 2 in R5, let the thickness look up the remaining thickness from Table 3 on the Info Tab
Revision 7	1	Rating Tab: 4: Gusset Plate Local Tension Yield and Fracture	L-N 191-195	Add another "OR" conditional to check if the member is spliced in order to check if tension is carried by the gusset plate.
	2	Rating Tab: Table 4	M-N 191-195	The last number with $ was dragged down so number did not update for rows, updated to the correct cell reference
	3	Rating Tab: Table 2	F-H 133-137	Rating factor is #DIV/0! If the member is a counter since the dead load is zero, so make a check to see if the member type is "N/A" and return N/A if it is
Revision 8	1	Rating Tab: 7: Gusset Plate Combined Planes Shear Rupture Resistance	B-C 291-294, 299-302, 307-310, 325-328, 333-336	Add another "OR" conditional to check if there is a vertical member present. If no vertical member is present the combined planes shear check should not be administered.
			B-C 317-320	**Note These cells were left alone as they reference cells that were updated with the correct logic.
	2	Rating Tab: Table 6	K243-247	Was referencing incorret table, net width instead of gross width from info tab
	3	Rating Tab: Table 8	B361-362	Changed actual thickness to remaining plate thickness overall, instead of min of whitmore and shear (too conservative)
	4	Rating Tab: Information at top	G-K49, G-K52	Added % remaining thickness for tensile as a possibility
	5	Rating Tab: Tables 5 and 6	J and K 211-215, J and K 220-224, K and L 243-247	Cells are using percent remaining whitmore to calculate the tensile, use the newly added % remaining tensile to calculate these correctly
	6	Rating Tab: Table 5	H and I 219	Heading was incorrect it should read "outer" instead of "inner"
Revision 9	1	Rating Tab: Information at top	48-56	Insert 2 rows to include: Rivet Count % Remaining for Check 3, Global Horizontal and Global Vertical Shear % Remaining for Check 8, and Maximum Unstiffened Edge Thickness for Check 1 (For both Inner and Outer Plates).
	2	Rating Tab: Table 3: Minimum Rivet Count Requirement	I-J:156-160	Change the Thickness to reference the (Overall thickness * % remaining within the member rivets)
	3	Rating Tab: 4: Gusset Plate Local Tension Yield and Fracture	H-K: 184-188	Change the Thickness to reference the (Overall thickness * % remaining whitmore)
	4	Rating Tab: Check 8: Global Shear	column e: 362-364	Insert a column to include vertical shear line thickness of plate. See note 4
	5	Rating Tab: Check 8: Global Shear	N-O:363-364	Change the vertical shear stress checks to reference the vertical thickness
	6	Info Tables Tab: Table 3	P-S:19-58	Are now utilizing columns for as-inspected global shear % remaining.
	7	Info Tables Tab: Table 5	J,N:119-195	Insert columns for As-Inspected values (rivets @ member connections,)
	8	Info Tables Tab: Table 3	T-U: 19-58	Added column for inner and outer max edge stiffness % remaining
	9	Rating Tab: Information at top	k245-249	locked the lookup values, so that it will return the correct values for all members
	10	New Tab		Added a macro to sort the RF for each point.
	11	Info Tables Tab	Tables 16 & 17 were deleted	Deleted Tables 16 and 17, and now only utilizing the summary table (Table 18) for milled ends, and splices.
	12	Info Tab Table 3	J18, K18	Rename the columns instead of vertical and horizontal unsupported edges, put maximum inner and outer unsupported edges
	13	Rating Tab: Table 1	D115, D116	Instead of looking up the max unsupported edge length, now just reference the correct inner or outer column made possible by change number 11

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		Table name	Cells Affected	Change
Revision 9 Final	1	Members tear out block shear	K245-K249	The cells were not returning the correct column value for the lookup option, they were always referencing column C in info tab, updated to reference correct columns from info tab
	2	Minimum edge stiffness	B108-109	The cells were not utilizing the as-inspected percent remaining if applicable, changed it to reference the original thickness x the percent remaining
	3	Minimum Rivet Count	E166	The cell is referencing the table above left chord, when it should be the right chord
	4	Minimum Rivet Count	F166	The cell is referencing table above left chord, when it should be the right chord and the true statement is referencing the bolt area when it should be the bolt diameter
	5	Resolved Axial Loads into Horizontal and Vertical Components in Gusset Plates	H83, J83, L83, N83	If the vertical angle is greater than 90° the COS of the angle is negative and switches the signs of the horizontal component forces, when actually the sign in these cells refers to a tension or compression, not a direction, so change the cells to take the absolute value of the COS
	6	Gusset Plate Global Shear Yielding and Fracturing Requirement (Shear Only)	E357	The direction of the horizontal component force depends on the COS of the angle, right now it just checks to see if the member is tension or compression to determine the sign of direction, put in a check if the angle is negative to switch the signs
	7	Gusset Plate Global Shear Yielding and Fracturing Requirement (Shear Only)	L358:O358; T354:W357	The previous direction components for the force did not account for reversal members. Reversal members triggered the false statement for the direction. This update added direction signs for all 4 cases (horiz - ten/comp, vert - ten/comp), and updated the cells that referenced the old.