DESIGN PRINCIPLES AND CALCULATIONS - WEB DESIGN

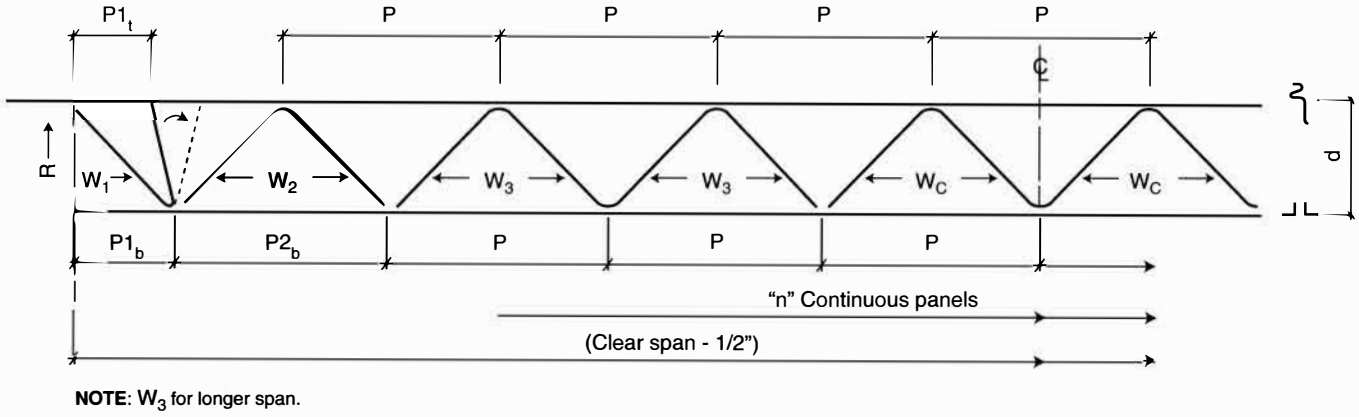
VERTICAL SHEAR (WEB DESIGN)

The vertical shear forces are assumed to be carried entirely by the web member, forces being calculated using the conventional pin jointed truss analysis method. These assumptions result in calculated bar forces which have been shown by tests to be as much as 15% higher than the actual values because the slab, acting compositely with ⌐ section, is stiff enough to transmit some load directly to the support. This is particularly true of web members at the joist ends - those which are subjected to the highest vertical shear.

EFFECTIVE LENGTH OF COMPRESSION DIAGONAL

With the web member forces calculated as below, the bar sections are sized to prevent failure in either axial tension or axial compression using conventional working stress design procedures. As per AISC specifications fig. 7 is used as a reference in determining the effective length, k_l, of the compression diagonals.

It is important to note that the web members are sized for the specified load capacity including concentrated loads where applicable. Furthermore, the webs are designed according to the latest requirements of the Steel Joist Institute.



NOTE: W_3 for longer span.

Fig. 7
D500™ and MD2000® Geometry

WEB GEOMETRY (in.)				
NOM. DEPTH "d"	$P1_t$	$P1_b$	$P2_b$	P
8, 10	6 @ 12	6 @ 16	12	20
12	10 @ 16	10 @ 21	16	24
14, 16	15 @ 24	15 @ 32	20	24
18, 20, 22, 24	19 @ 24	19 @ 32	24	24