



SPECIAL DEFLECTION REQUIREMENTS

Steel buildings with steel, PBR walls are estimated using standard deflection requirements. In general, “deflections” refers to how much a material can bend and flex over the course of its lifetime as part of a building. This is important when the end user intends to put an alternative material over, or in place of, the standard steel sheeting typically provided; such as stucco, CMU, vinyl siding, etc. A steel panel can bend and flex a great deal without failing or causing permanent damage to the material compared to many other building materials, like glass or stucco. If the end user applies stucco or frames in large glass windows in a building with standard steel panel deflections, the material could crack and/or break over time. Special Deflection requirements are typically described as "L" or "H" "/" (over) a number that describes the deflection limit. The architect or engineer of record is the best source to determine the deflection limits required for a project.

For example, take a building is 100'x190'. The standard deflection limit for steel panels of L/90 describes the amount of movement the cladding take without failing. To find out the amount the building can deflect, or move, take the Length of the building in feet (190) times 12 (number of inches in a foot) to get the total length of the building in inches. Take that, (2280) divided by the deflection limit (90), and that is the maximum the building can deflect of the course of it lifetime for the entire length. In this case, it is 25.3 inches end to end with a steel panel and standard deflections.

For the same building with L/240 Deflections, again, take the length in inches (2280) divided by (240) = 9.5 inches allowable deflection from end to end. This lower amount of movement is critical when using a brittle material such as stucco, block, glass, etc. Increasing the deflection limit does add weight, and therefore cost, to the building, however, it is very critical that deflection is considering during the estimation and ordering of a steel building will alternative exterior finishes.

The following page lists common alternative exterior finishes and conditions that affect the deflection limit of a pre-engineered building and recommended minimum deflection criteria.

Special Deflection Requirements



BUILDING COMPONENT	UBC, NBC, SBC	BOCA 99	FBC	IBC 00/03	MBMA 02	LOAD
BUILDINGS WITH METAL WALLS						
MAIN FRAMES						
Drift	H/60	H/60	H/60	H/60	H/60	WL
Vertical	L/180	L/180	L/240	L/180	L/180	LL
PURLINS						
Vertical			L/240	L/180		WL
Vertical	L/180	L/180	L/240	L/180	L/150	LL
GIRT	L/90	L/120	L/180	L/120	L/120	WL
WALL PANEL	L/90	L/120	L/240	L/120	L/120	WL
ROOF PANEL	L/180	L/180	L/240	L/180		LL
ROOF PANEL	L/120	L/120	L/240	L/180		WL
EW COLUMNS	H/180	H/180	H/180	H/180	L/120	WL
EW RAFTERS	L/180	L/180	L/240	L/180	L/180	LL
DRYWALL, STUCCO, TILT-UP, REINFORCED MASONRY (ALL CODES)						
MAIN FRAMES		ALL CODES				
Drift	H/200					WL
GIRT/EAVE BEAMS	L/240					WL
EW COLUMNS	H/240					WL
BUILDINGS WITH MEZZANINE						
MAIN FRAME DRIFT	H/200	ALL CODES				WL
MEZZANINE BEAMS	L/360					WL
MEZZANINE BEAMS	L/240					DL+LL
BUILDING WITH CRANES						
MAIN FRAME DRIFT	H/100	ALL CODES				CL
RUNWAY BEAMS						
TOP RUNNING VERTICAL		L/600 Class A, B, and C (Light Duty Cranes) L/800 Class D (Heavy Duty)				
MONORAIL & UNDERHUNG VERTICAL	L/450	ALL CODES				CL
HORIZONTAL DEFLECTION OF RUNWAY BEAMS	L/400					CL
BUILDING WITH BI-FOLD DOORS						
BI-FOLD DOOR JAMB	H/240	Door Jamb is to be designed for 70% of WL, remaining load transfers to header				WL
RIGID FRAME	H/300	ALL CODES				
***CUSTOMER SHOULD CONSULT THE ENGINEER OF RECORD FOR VERIFICATION OF ALL DEFLECTION REQUIREMENTS!						