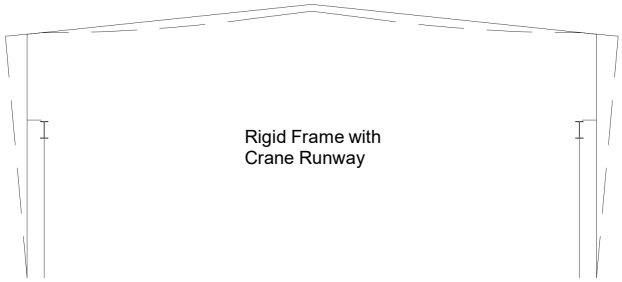
LATERAL LOAD RESISTING SYSTEM



Rigid Frame Systems

- Does not require roof deck diaphragm parallel to rigid frames
- Spreads lateral forces out to more elements of the building – less taxing on building foundations
- Applicable for buildings with smaller or larger aspect ratios
- Use of continuous horizontal truss diaphragm can be advantageous for buildings with top running cranes
- Concern regarding column spread under roof gravity loads and effect on crane girder gage and alignment

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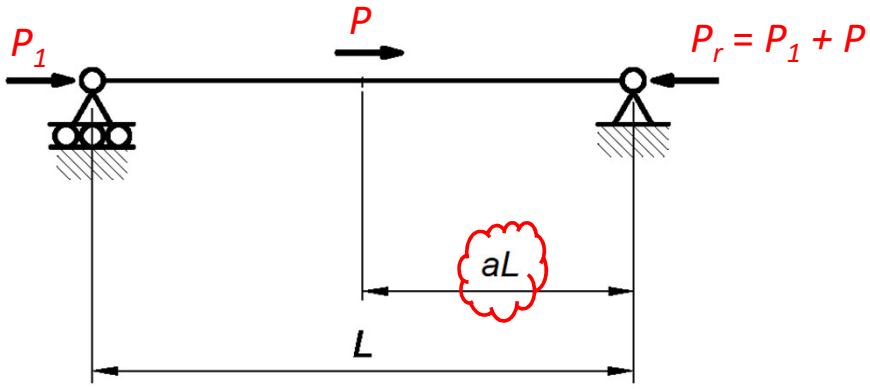
Loads Within the Unbraced Length

Load anywhere within the span



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Loads Within the Unbraced Length

Table 1. Effective Length Factors K for a pin-ended column with an intermediate axial load P at height aL and a load P_1 at the top

a	P_1/P	0.10	0.25	0.50	0.75	1.0	2.0	3.0	4.0
		Effective Length Factor K							
0.25		0.715	0.750	0.795	0.840	0.863	0.903	0.927	0.940
0.50		0.745	0.775	0.825	0.860	0.875	0.915	0.935	0.955
0.75		0.815	0.835	0.860	0.890	0.895	0.930	0.950	0.965
0.85		0.880	0.905	0.910	0.920	0.930	0.955	0.965	0.975
0.95		0.950	0.955	0.965	0.970	0.975	0.980	0.985	0.985
1.00		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Sandhu, B.S. (1972), "Effective Length of Columns with Intermediate Axial Load," *Engineering Journal*, American Institute of Steel Construction, October.

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