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all sections occurs with factored L applied simultaneously to all panels.

6.4.3.3 For loading conditions other than those defined in 6.4.3.1 or 6.4.3.2, it shall be permitted to assume (a) and (b):

- (a) Maximum positive M_u near midspan of panel occurs with 75 percent of factored L on the panel and alternate panels
- (b) Maximum negative M_u at a support occurs with 75 percent of factored L on adjacent panels only

6.5—Simplified method of analysis for nonprestressed continuous beams and one-way slabs

6.5.1 It shall be permitted to calculate M_u and V_u due to gravity loads in accordance with this section for continuous beams and one-way slabs satisfying (a) through (e):

- (a) Members are prismatic
- (b) Loads are uniformly distributed
- (c) $L \leq 3D$
- (d) There are at least two spans
- (e) The longer of two adjacent spans does not exceed the shorter by more than 20 percent

6.5.2 M_u due to gravity loads shall be calculated in accordance with Table 6.5.2.

R6.4.3.3 The use of only 75 percent of the full factored live load for maximum moment loading patterns is based on the fact that maximum negative and maximum positive live load moments cannot occur simultaneously and that redistribution of maximum moments is thus possible before failure occurs. This procedure, in effect, permits some local overstress under the full factored live load if it is distributed in the prescribed manner, but still ensures that the design strength of the slab system after redistribution of moment is not less than that required to resist the full factored dead and live loads on all panels.

R6.5—Simplified method of analysis for nonprestressed continuous beams and one-way slabs

R6.5.2 The approximate moments and shears give reasonable values for the stated conditions if the continuous beams and one-way slabs are part of a frame or continuous construction. Because the load patterns that produce critical values for moments in columns of frames differ from those for maximum negative moments in beams, column moments should be evaluated separately.

Table 6.5.2—Approximate moments for nonprestressed continuous beams and one-way slabs

Moment	Location	Condition	M_u
Positive	End span	Discontinuous end integral with support	$w_u \ell_n^2 / 14$
		Discontinuous end unrestrained	$w_u \ell_n^2 / 11$
	Interior spans	All	$w_u \ell_n^2 / 16$
Negative ⁽¹⁾	Interior face of exterior support	Member built integrally with supporting spandrel beam	$w_u \ell_n^2 / 24$
		Member built integrally with supporting column	$w_u \ell_n^2 / 16$
	Exterior face of first interior support	Two spans	$w_u \ell_n^2 / 9$
		More than two spans	$w_u \ell_n^2 / 10$
	Face of other supports	All	$w_u \ell_n^2 / 11$
	Face of all supports satisfying (a) or (b)	(a) slabs with spans not exceeding 10 ft (b) beams where ratio of sum of column stiffnesses to beam stiffness exceeds 8 at each end of span	$w_u \ell_n^2 / 12$

⁽¹⁾To calculate negative moments, ℓ_n shall be the average of the adjacent clear span lengths.

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6.5.3 Moments calculated in accordance with 6.5.2 shall not be redistributed.

6.5.4 V_u due to gravity loads shall be calculated in accordance with Table 6.5.4.

Table 6.5.4—Approximate shears for nonprestressed continuous beams and one-way slabs

Location	V_u
Exterior face of first interior support	$1.15w_u\ell_n/2$
Face of all other supports	$w_u\ell_n/2$

6.5.5 Floor or roof level moments shall be resisted by distributing the moment between columns immediately above and below the given floor in proportion to the relative column stiffnesses considering conditions of restraint.

6.6—Linear elastic first-order analysis

6.6.1 General

6.6.1.1 Slenderness effects shall be considered in accordance with 6.6.4, unless they are allowed to be neglected by 6.2.5.1.

6.6.1.2 Redistribution of moments calculated by an elastic first-order analysis shall be permitted in accordance with 6.6.5.

6.6.2 Modeling of members and structural systems

6.6.2.1 Floor or roof level moments shall be resisted by distributing the moment between columns immediately above and below the given floor in proportion to the relative column stiffnesses and considering conditions of restraint.

6.6.2.2 For frames or continuous construction, consideration shall be given to the effect of floor and roof load patterns on transfer of moment to exterior and interior columns, and of eccentric loading due to other causes.

6.6.2.3 It shall be permitted to simplify the analysis model by the assumptions of (a), (b), or both:

(a) Solid slabs or one-way joist systems built integrally with supports, with clear spans not more than 10 ft, shall be permitted to be analyzed as continuous members on knife-edge supports with spans equal to the clear spans of the member and width of support beams otherwise neglected.

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R6.5.5 This section is provided to make certain that moments are included in column design. The moment refers to the difference between the end moments of the members framing into the column and exerted at the column centerline.

R6.6—Linear elastic first-order analysis

R6.6.1 General

R6.6.1.1 When using linear elastic first-order analysis, slenderness effects are calculated using the moment magnifier approach (MacGregor et al. 1970; MacGregor 1993; Ford et al. 1981).

R6.6.2 Modeling of members and structural systems

R6.6.2.1 This section is provided to make certain that moments are included in column design if members have been proportioned using 6.5.1 and 6.5.2. The moment refers to the difference between the end moments of the members framing into the column and exerted at the column centerline.

R6.6.2.3 A common feature of modern frame analysis software is the assumption of rigid connections. Section 6.6.2.3(b) is intended to apply to intersecting elements in frames, such as beam-column joints.

