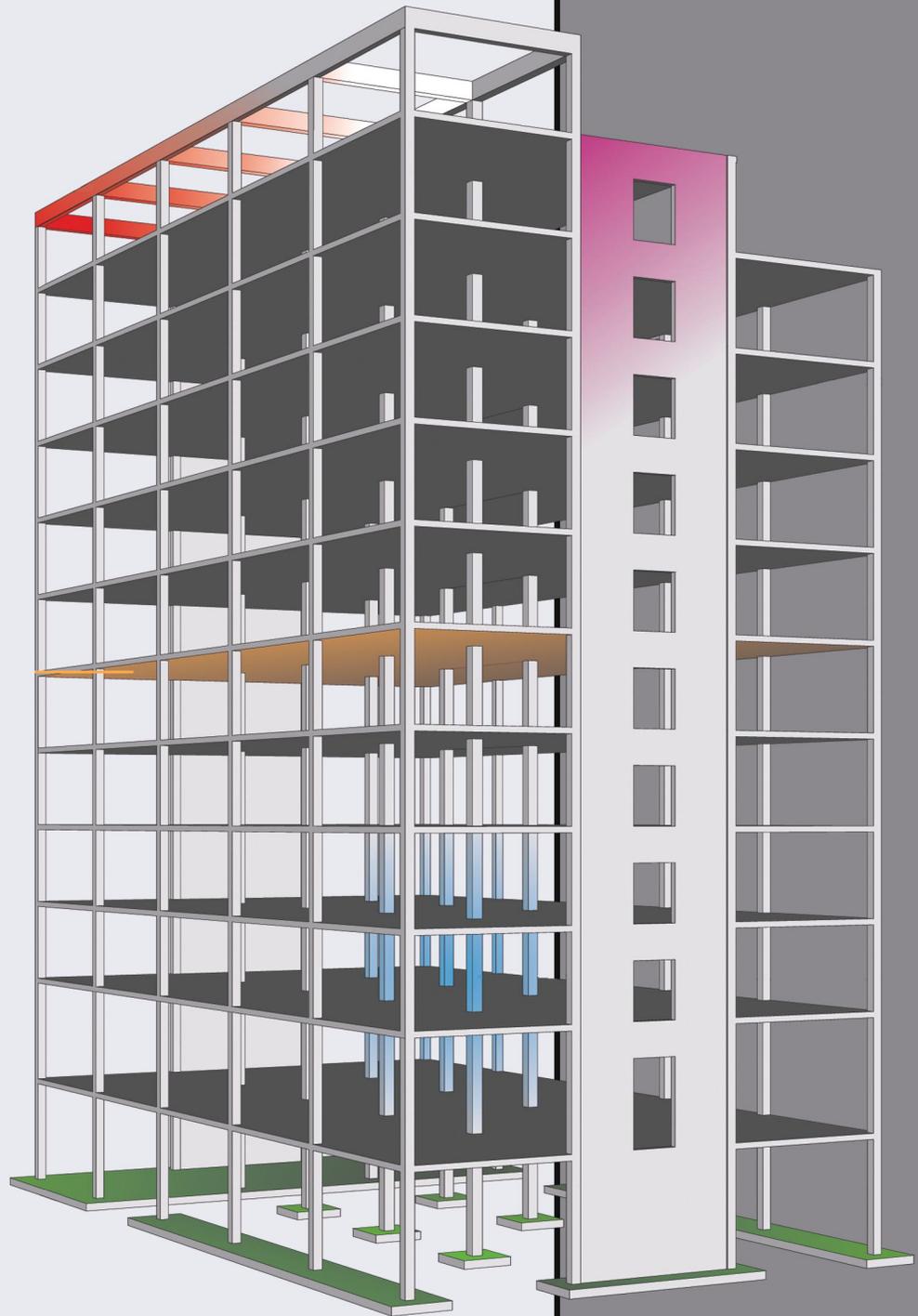# ACI 318-25 Code Revisions

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ACI 318-25 Code Revisions

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General Themes & Summary

ACI 318-25 continues to clarify and simplify the code provisions that were modified in ACI 318-19. The changes with software impact pertain to the design of beams, slabs, columns, foundations, and walls.

Some of the significant changes are:

- Deflection provisions restored actual modulus of rupture value for f_y exceeding 80,000 psi

- Effective slab width, b_{slab}, calculations are simplified and now aligns with ACI 318-14

- Stricter transverse reinforcement requirements for integrity reinforcement are imposed for perimeter beams

- Shear provisions for pile supported foundations are simplified for closely spaced piles

- Plain concrete deep foundation members are now permitted under specific conditions

- The value of the ϕ factor is limited in a region where $0.1f'_c\, A_g \leq P_n \leq P_{n,bal}$

- One-way shear calculations are substantially revised

Chapter 8: Two-Way Slabs

1. **Requirement for reduced modulus of rupture for f_y exceeding 80,000 psi in nonprestressed slabs is removed**

   ACI 318-25, 8.3.3.1 removes the requirement to assume a reduced modulus of rupture for f_y exceeding 80,000 psi.

   This change leads to more economical designs by relaxing conservatism in deflection calculations introduced in ACI 318-19 for two-way slabs with f_y exceeding 80,000 psi.

2. **Minimum thickness of nonprestressed two-way slabs without interior beams**

   ACI 318-25, Table 8.3.1.1 provides minimum thickness values for f_y up to 80,000 psi and the table cannot be extrapolated to obtain values for f_y exceeding 80,000 psi.

   This change implies that the deflections cannot be determined through **_Table 8.3.1.1_** and are required to be calculated by **_8.3.2_** for f_y exceeding 80,000 psi.

3. **Effective slab width, b_{slab}, determination is simplified**

   ACI 318-25 removes **_Table 8.4.2.2.3_** and replaces it with a single descriptive expression defining b_{slab} as the width of the column, capital, or shear cap plus $1.5h$ of slab (slabs w/o drop panels) and $1.5h$ of slab plus drop panel (slabs w/ drop panel) on each side.

   This change eliminates separate tabulated edge-distance criteria and aligns the treatment of such systems back with ACI 318-14.

Chapter 9: Beams

1. Spacing limits of transverse reinforcement enclosing integrity reinforcement for spandrel beams

**ACI 318-25, 9.7.7.1 (c)** introduces spacing limits of transverse reinforcement that enclose longitudinal integrity reinforcement by closed stirrups or hoops for beams along the perimeter of the structure. Also, it requires stricter spacing requirements over a length of at least $2h$ from the face of the support at each supported end of the beam.

This change intends to allow beams to accommodate the rotational demands associated with large vertical displacements that occur after the unintended loss of a vertical-load carrying member. In design practice, perimeter beams under ACI 318-25 shall end up with more closely spaced stirrups than under ACI 318-19 even when shear demand is low.

Chapter 13: Foundations

1. One-way and two-way shear strength are increased for closely spaced piles

ACI 318-25 introduces a special shear strength provision for:

- Pile caps with pile spacing ≤ 4 pile diameters

- Mat foundations with pile spacing ≤ 5 pile diameters

If the conditions outlined above are satisfied, then, an enhanced one-way shear strength with factor 2 can be utilized. For two-way (punching) shear strength calculation, the size-effect factor, λ_s, can be taken as 1.0.

This new clause eliminates the size effect reduction for these members and recognizes that closely spaced piles develop arching action, leading to higher shear capacity than predicted by the general shear equations.

Chapter 14: Plain Concrete

1. Cast-in-place concrete deep foundation members are permitted as plain concrete

ACI 318-25 now permits cast-in place concrete deep foundation members to be designed as plain concrete.

This change qualifies the drilled piers and piles to be designed as plain concrete members if:

- The unsupported height of member does not exceed three times the least horizontal dimension of the member, and

- The member is not required to resist lateral loads

This clause explicitly permits certain drilled piers and piles to be designed without minimum longitudinal reinforcement when axial compression governs and stability demands are limited. This recognizes that short, compression-controlled deep foundation members that are not subjected to lateral demands can behave adequately as plain concrete members.

2. Length of cast-in-place deep foundations can be taken as zero if laterally supported

In **_ACI 318-25 Eq. (14.5.3.1)_**, for cast-in-place deep foundation members, l_c is permitted to be zero if the soil is capable of providing lateral support against buckling. This applies to piles, drilled piers, and caissons.

This provision explicitly recognizes the bracing effect of surrounding soil and allows buckling effects to be neglected when adequate lateral restraint is present. However, combined axial load and flexure must still be considered where applicable, and this simplification is not permitted in SDC D, E, or F.

Chapter 21: Strength Reduction Factors

1. Maximum limit on ϕ factor is introduced in the transition and tension-controlled regions

ACI 318-25 introduces a maximum limit on ϕ factor computed from **_Table 21.2.2_** in a region where $0.1f'_c A_g \leq P_n \leq P_{n,bal}$ per **_21.2.2.3_** and **_Fig. R21.2.2c_**. In this region, ϕ computed from **_Table 21.2.2_** shall not exceed the value obtained by linear interpolation between 0.90 at $0.1f'_c A_g$ and ϕ_{cc} at $P_{n,bal}$.

This provision prevents ϕP_n in the transition and tension-controlled regions from exceeding $\phi_{cc}P_{n,bal}$, which could occur for certain flanged or asymmetrically reinforced sections under ACI 318-19, and becoming unconservative in some cases.

For some sections, the transition in **_Fig. R21.2.2c_** can result in lower axial and flexural design strengths than those calculated with ACI 318-19.

Chapter 22: Sectional Strength

1. Clarification to ρ_w calculation in one-way shear

ACI 318-25 removes the commentary language in ACI 318-19 that permitted A_s, used in calculating ρ_w for **Table 22.5.5.1**, to be taken as the sum of longitudinal bars located more than two-thirds of the overall member depth away from the extreme compression fiber.

With this removal, the Code no longer provides support for the "two-thirds depth" simplification when determining ρ_w for one-way shear calculations.

As a result, ρ_w should be determined directly in accordance with the Code definitions without relying on the previously suggested approximation. Designs based on the ACI 318-19 commentary guidance may need to be revisited for consistency with the 2025 edition.

2. Lower-bound limit for V_c is established

ACI 318-25 establishes a lower-bound limit for V_c to address unintended reductions in concrete shear strength resulting from the combined effect of the size-effect factor, λ_s, and longitudinal reinforcement ratio, ρ_w, in **Eq. 22.5.5.1c**.

Specifically, V_c need not be taken less than, $\lambda\sqrt{f_c'}b_wd$ except for members subjected to net axial tension or where **18.6.5.2** or **18.7.6.2.1** apply.

This provision restores a minimum shear strength level consistent with ACI 318-14 and prevents V_c from approaching zero in large, lightly reinforced concrete members.