



# INDIANA DEPARTMENT OF TRANSPORTATION

## Design Memo No. 24-02

January 09, 2024

TO: All Design Personnel and Consultants

FROM: /s/ Stephanie Wagner  
Stephanie Wagner  
Director of Bridge Engineering

SUBJECT: Lightweight Concrete, Threaded Tie Bar Assemblies, and Concrete Cover

REVISES: *Indiana Design Manual* Sections 405-2.07(06) (new), 405-3.13 (deleted), and Figures 405-1A, 405-2C, 405-2AA, 405-3E

EFFECTIVE: As Noted

### **Lightweight Concrete**

The Standards Committee approved recurring special provision 704-B-325, Lightweight Concrete for Floor Slabs, at the November 2023 Standards Committee meeting. The provision will appear on the February 2024 RSP Menu and is effective for contracts letting on or after June 1, 2024. Use of the provision requires approval from the Director of Bridge Engineering. Lightweight concrete may be justified in specific applications where the reduced weight has significant benefits, but other aspects such as material availability, increased material costs, and additional construction time for trial batch testing should be considered on a case-by-case basis.

IDM [Chapter 405](#), Figure 405-1A, Concrete Material Properties, has been revised to include lightweight concrete and to indicate that its use requires approval from the Director of Bridge Engineering.

### **Threaded Tie Bar Assemblies**

Threaded tie bar assemblies are paid for as each, in accordance with *Standard Specifications* 703.08, but the bar size and length of the assembly required to satisfy AASHTO *LRFD Bridge Design Specifications* lap splice requirements must be shown on the plans. Threaded tie bar assemblies should be epoxy coated when lapping/splicing with epoxy coated reinforcing bars. As this is an existing expectation, an effective date does not apply.

IDM Section [405-2.07\(06\)](#) has been added and Figure 405-2AA, Bending Diagram Examples, has been revised to provide guidance on threaded tie bar assemblies.

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## **Concrete Cover**

The Department has observed concrete consolidation and spalling issues on the bottom of some reinforced concrete slab superstructures. Increasing the bottom concrete cover from 1 inch to 2 inches is intended to mitigate these risks. Stage 3 submittals on or after May 1, 2024, should incorporate these revisions. Projects with a Stage 3 submittal prior to this date should incorporate these revisions where practicable.

IDM [Chapter 405](#), Figure 405-2C, Minimum Concrete Cover for Design and Detailing, and Figure 405-3E, Integral Caps at Slab Superstructure (Half Longitudinal Section), have been revised to reflect the increased minimum concrete cover requirement for the bottom bars in reinforced concrete slab superstructures. Section 405-3.13, Transverse Shrinkage and Temperature Reinforcement in the Top of the Slab at the Bent Caps has been deleted.

For questions related to this design memo, please contact the Bridge Engineering Division at [Bridgedesignoffice@indot.in.gov](mailto:Bridgedesignoffice@indot.in.gov).