

Subject: Civil Engineering

Topic: Development Length for Hooked Bars in Lightweight Concrete According to ACI Code

Given:

The question asks for the modification factor used in the development of hooked bars in tension for lightweight concrete according to the ACI code.

Solution:

Step 1: Introduction to Development Length and Hooked Bars in Lightweight Concrete

The American Concrete Institute (ACI) provides guidelines and code requirements for various aspects of concrete construction. The development length for reinforcement bars in concrete is an important concept, particularly when designing for lightweight concrete. The ACI code specifies modification factors for different conditions.

Explanation: This step introduces the topic and provides an overview of the aspect being questioned in the context of ACI code requirements.

Step 2: ACI Code Reference

According to the ACI 318 (Building Code Requirements for Structural Concrete), the modification factor (λ) used in the development length calculations for lightweight concrete is typically accounted for in the design.

For lightweight concrete, the λ -factor is generally set to 0.75 unless otherwise specified.

Supporting Statement: For lightweight concrete modifications, the ACI code typically recommends a specific λ -factor value.

Step 3: Identifying the Correct Modification Factor

From the given options, the correct modification factor according to the ACI code for the development length of hooked bars in tension for lightweight concrete is $\lambda = 0.75$.

Explanation: Based on the given ACI code guidelines, the provided options need consideration to identify the factor applicable to lightweight concrete.

Final Solution:

The value of the modification factor used for the development of hooked bars in tension for lightweight concrete according to the ACI code is **0.75**.

Explanation: The ACI code guideline specifies a modification factor of 0.75 for lightweight concrete, making this the correct choice among the provided options.

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