

TO: All Design Section Staff

FROM: Bijan Khaleghi

DATE: June 1, 2010

SUBJECT: Unit weight of Concrete

This memorandum defines the unit weight of concretes for dead load and modulus of elasticity calculations.

For normal weight concrete:

Member Types	Concrete Unit Weights (pcf)	
	Modulus of Elasticity (plain concrete)	Dead Load (with reinforcement)
Precast pretensioned or post-tensioned spliced girders	155	165
All other concretes	150	155

The unit weight of light weight aggregate concrete will vary on a per project basis depending on the source of the light weight aggregates. Controlled density mixes shall be used for light weight aggregates concretes.

BACKGROUND

The unit weight of concrete is primarily affected by the unit weight of the aggregate, which varies by geographical location and increases with concrete compressive strength depending on the added pozzolans. The unit weight of reinforced concrete is generally taken as 5 pcf greater than the unit weight of plain concrete. The unit weight of precast concrete girders is generally taken as 10 pcf greater than the unit weight of plain concrete due to the weight of reinforcement and strands. The unit weight of lightweight aggregate concretes may vary depending on the source of light weight aggregate materials. Controlled density mixes are commonly used by the manufacturers of lightweight aggregate.

If you have any questions regarding this issue, please contact Bijan Khaleghi at 705-7181.

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