

4001704 – CONCRETE STRUCTURES
COMMENTS FROM INDUSTRY REVIEW

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Comments:

additional edit in red

400-17.4 Alternate Procedure: As an alternate procedure, in lieu of the time delay periods set forth in 400-17.1 and 400-17.3, test ~~beams~~ *cylinders* may be cast from representative concrete and ~~cure them~~ *cured* identically with the concrete in the corresponding structural component.

Make Test the test ~~beams~~ *cylinders* in accordance with ASTM C 31 and *test the cylinders in accordance with* ASTM C 78 ~~39~~. When the test results indicate a ~~flexural~~ *compressive* strength of ~~550~~ *4500* psi or more, concrete bridge decks and culverts may be opened to traffic and the superstructure and beams placed on caps.

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Comments:

spec 4001704 of 400-17.4 says this...

WHEN THE TEST RESULTS INDICATE A COMPRESSIVE STRENGTH OF 4500 PSI OR MORE, CONCRETE BRIDGE DECKS AND CULVERTS MAY BE OPENED TO TRAFFIC (GOES ON THE SAY) AND THE SUPERSTRUCTURE AND BEAMS PLACED ON CAPS. but it should read like this.... WHEN THE TEST RESULTS INDICATE A COMPRESSIVE STRENGTH OF 4500 PSI OR MORE, CONCRETE BRIDGE DECKS, CULVERTS WITH BEAMS PLACED ON CAPS AND SUPERSTUCTURE COMPLETE THEN IT CAN BE OPENED TO TRAFFIC. Pardon me but the way you have it written it sounds like you are opening to traffic when only the piling and caps are complete? Respond to me if I am wrong?

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Comments:

The comment is regarding the 4500 psi. If the bridge deck has a F'_c of 5500 psi, is it a good idea to open the deck to concrete redi-mix trucks and pum trucks at 4500 psi? Whatever compressive strength Structures Design correlates 550 psi flexure strength with, we will have a more accurate and simple test with cylinders instead of beams.

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Comments:

The proposed change from flexural strength to compressive strength for loading of a structure although simpler may not be in the best interests of the Department and/or the contractor. Early loading of structures is most often the result of subsequent construction activities, not loading by traffic. Additionally, construction loading is often very different in characteristics than the final traffic loading. It is often more concentrated and asymmetrical than the final traffic loading. Even with construction loads, it is unlikely that the compressive strength of the concrete will be approached or exceeded. Conversely the unbalanced loading often applied during construction, may cause the flexural strength limit of the concrete to be approached. Therefore the use of FIELD cured flexural beams should be maintained as the criteria for early loading of structures.