

**NCDOT Prestress Standard Repair Procedure for Non-Conformance Report (NCR)
SRP-01: Vertical Cracks – 04/05/2022**

**1078-12 VERTICAL CRACKS IN PRESTRESSED CONCRETE GIRDERS BEFORE
DETENSIONING**

This section addresses prestressed concrete members that have vertical casting cracks before strand detensioning. Certain types of these cracks have been determined by the Department to render the girders unacceptable.

Unacceptable cracked members are those with 2 or more vertical cracks spaced at a distance less than the member depth (Member Depth=Height of the girder, i.e. 72", 54") which extend into the bottom flange. Such members are not serviceable and will be rejected.

Members with 2 or more vertical cracks spaced at a distance less than the member depth (Member Depth=Height of the girder, i.e. 72", 54") but do not extend into the bottom flange are subject to an engineering assessment. Such members may not be serviceable and may be rejected.

Members with one or more vertical cracks that extend into the bottom flange and are spaced at a distance greater than the member depth (Member Depth=Height of the girder, i.e. 72", 54") are subject to an engineering assessment to determine their acceptability.

If this engineering assessment is required, submit, at no additional cost to the Department, a proposal for repairing the member and a structural evaluation of the member prepared by an engineer licensed by the State of North Carolina. In the structural evaluation, consider the stresses under full service loads had the member not cracked and the effects of localized loss of prestress at the crack as determined by methods acceptable to the Department.

All members, except those defined as unacceptable, which exhibit vertical cracks before detensioning, shall receive a 7 day water cure as directed by the Engineer.

The water cure shall begin within 4 hours after detensioning the prestressing strands and shall be at least 3ft beyond the region exhibiting vertical cracks.

The Department has the final determination regarding acceptability of any members in question.

Note: Prestressed Concrete Members with more than 3 vertical cracks shall require an engineering assessment prior to acceptance by the Department.

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Structures Management Unit Comments

The NCDOT Structures Management Unit recommends that the following standard procedure be followed for all girders, cored slabs, and box beams in which vertical cracks have been observed:

- Section 1078–12 of the NC Standard Specifications shall be followed for all prestressed members exhibiting vertical cracks prior to detensioning.
- If the member, according to section 1078–12, is deemed unacceptable, or is subject to an engineering assessment, then SMU requires to be consulted on the NCR.
- If the vertical cracks do not close up after detensioning, then SMU requires to be consulted on the NCR.
- If the member, according to section 1078–12, is to receive a seven–day water cure only, then SMU does not need to be consulted on the NCR. This will apply to all girders, cored slabs, and box beams.
- Perform repair operations in the presence of and to the satisfaction of the NCDOT on-site inspector.

There shall be an NCR written and saved in the project file for future reference. The NCR will not be required to be submitted to SMU providing that the procedures outlined above are strictly followed.

If for any reason the above requirements cannot be met a NCR submittal will be required for review.

If you have any questions or comments about this procedure, please contact James L. Bolden, Jr., PE at (919)707–6408 or Madonna Rorie, PE at (919)707-6508 or by email at srmcentire@ncdot.gov.

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