



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758 CM
Indianapolis, Indiana 46204

PHONE: (317) 232-5502
FAX: (317) 232-5551

Eric Holcomb, Governor
Joe McGuinness, Commissioner

September 9, 2021

CONSTRUCTION MEMORANDUM 21-11

TO: District Deputy Commissioners
Technical Service Directors
District Construction Engineers
District Testing Engineers
District Area Engineers
Project Engineers/Supervisors
Division of Materials and Tests

FROM: Greg Pankow, Chief Engineer of Construction
Division of Construction Management and District Support

SUBJECT: Optimized Aggregate Gradations in Concrete, aka “Tarantula Curve”

Optimized aggregate gradations in concrete, specifically those that comply with the “tarantula” curve per ITM 226, provide numerous benefits to concrete performance. INDOT worked with Industry members to develop specification changes that would provide optimized aggregate gradations, which are set to take effect for lettings after September 1, 2021.

In early July, Industry members raised several concerns regarding the implementation of this specification. These concerns included the pumpability of concrete with large amounts of +1 in. aggregate, as well as simply market forces that are beyond INDOT’s control that could result in supply issues.

Because of the late discovery of these issues, INDOT is implementing the following changes:

- INDOT is suspending the requirement to use an optimized aggregate gradation as was previously defined in ITM 226 for 502, 506, and 702 concrete. The contractor may use it at their option in concrete supplied in accordance with these specification sections. Refer to revisions made to ITM 226 for clarification.
- CMDS in accordance with Sections 502, 506, and 702 will not be required to meet the tarantula curve. However, blending an intermediate aggregate is now allowable to encourage meeting the curve. Per recent revisions to ITM

226, coarse aggregates meeting an Indiana No. 8 or an AASHTO No. 57 specification will be acceptable for use.

- CMDS in accordance with Sections 501 **will be** required to meet the tarantula curve. Blending intermediate aggregates will be allowable, and any coarse aggregate gradation will be allowable.
 - For coarse aggregates with AP freeze-thaw expansion results greater than 0.030, this will be limited to 5% or less retained on the 1 in. sieve.

INDOT will continue to work with Industry to find ways to encourage the use of optimized mixtures and will work towards a future specification requirement.

Any questions should be directed to the Director of Materials and Tests, Matt Beeson (mbeeson@indot.in.gov) or State Materials Engineer, Jim Reilman (jreilman@indot.in.gov).

GGP/jer