

January 21, 2020

FAQs

DESIGN OF DUCTILE IRON PIPE

Here are three common questions on the design of Ductile iron pipe.

[Click here](#) for details of these FAQs.

Q: Is cyclic loading a concern for Ductile iron pipe?

A: No. The design approach found in ANSI/AWWA C150/A21.50 standard for Ductile Iron Pipe wall thickness design eliminates cyclic fatigue as a concern. The design for internal pressure limits wall stress to 21,000 psi before allowances for service and casting are added. When designed in accordance with this standard, Ductile iron pipe can be expected to have an infinite life related to cyclic fatigue.

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Q: Are push-on and mechanical joints rated for the same pressure as the pipe or higher?

A: Section 4.2.2 of ANSI/AWWA C111/A21.11 Standard, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings," states: "The mechanical and push-on joints shall have the same pressure rating as the pipe or fitting of which they are a part." In other words, if the pipe is rated for 150 psi working pressure plus 100 psi surge (250 psi), so is the joint.

Q: What is the purpose of the "service allowance" used in Ductile Iron Pipe wall thickness design?

A: The "service allowance" used in the design of Ductile Iron Pipe is a holdover from the old Gray Iron pipe days. During that early period, it was called a "corrosion allowance" to offset any initial corrosion or minor surface imperfections that might occur.

With the advent of Ductile Iron Pipe and polyethylene encasement for corrosion control, the corrosion allowance was retained for similar general conservatism but renamed as a service allowance.

The addition of a 0.08-inch service allowance, which is unique to Ductile Iron Pipe, ensures that the actual wall thickness will always exceed the design thickness, thereby providing an additional margin of safety and dependability.



Please visit dipra.org for [technical publications](#) on design, application and installation of Ductile iron pipe.

Thank you,
Patrick Hogan
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