

CAPITAL GROUTING VS INJECTION PRE-REHABILITATION GROUTING – WHAT IS THE DIFFERENCE?

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NASSCO's Infiltration Control Grouting Committee (ICGC) released two new sewer specifications, replacing the 2014 Suggested Standard Specification for Pressure Testing and Grouting of Sewer Joints, Laterals, and Lateral Connections Using the Packer Method with Solution Grouts. Shortly after its release seven years ago, the suggested standards for grouting quickly became the choice document for engineers and municipalities who wished to include grouting in their projects. Used as a basis to standardize the execution of testing and sealing mainline and lateral joints, and their mainline intersections through the packer injection method across the industry, the specification provided direction as to the calculation of the gel times to be used, how to address pipe preparation, quality control for the final product, and a description of typical bid items.

The traditional practices as described in the 2014 document focused grouting efforts on reducing the infiltration within the pipeline and sealing pipe joints that had failed the joint test criteria and/or sealing the annular space between liners and host pipes at lateral connections. By placing a minimum amount of grout in the gasket space and immediately outside the defect, it produced the desired decrease in infiltration by forming an

impermeable seal called a grout/soil matrix on the exterior or into the annular space.

Many of those involved in the original writing of the 2014 document remained active in ICGC efforts over the past seven years to define the difference between grouting methods to aid in the installation of other rehabilitation products, and the use of grouting for the purpose of long-term infiltration elimination and pipe stabilization. This resulted in the offering of two separate specifications, one for Pre-Rehabilitation Grouting and a second for what is now known as Capital Grouting.

Early in the discussions of the new specs, it was determined that to differentiate between the two distinct methods, testing would be needed to truly define the proper grouting means for either situation. Through the efforts of ICGC, an above ground, full-scale model of a sewer trench and pipe defects was constructed which allowed for the observation of injection behaviors and the ensuing grout formations in different bedding materials using various gel times. These findings provided the physical evidence of the ability of grout to create a pipe cradle within the sewer trench, supporting and providing pipe stabilization while effectively sealing the defects. ICGC plans to release the data and subsequent analysis of the Test Cell studies in a full whitepaper in early 2022.

When choosing between the two NASSCO grouting specifications, one must first realize the desired results to be achieved. If this is a project that includes another rehabilitation technology such as CIPP, the easy choice would be the Pre-Rehabilitation methods spec for the purpose of merely stopping the infiltration of water. Capital grouting methods would be used primarily when pipes are in good shape and therefore the goal would be to lengthen the overall life cycle of the system by creating the stabilization cradle, filling the void space underneath the pipe, and to remove the influx of excess water.

The original 2014 document has been enhanced and renamed *Pipeline Packer Injection Pre-Rehabilitation Grouting V2.10*. While focusing on the placement of grout to ensure the proper installation of other rehabilitation products, pre-rehabilitation grouting embraces the traditional methods previously described. As a complementary technology, these specifications also cover the installation of grout to stop infiltration post-rehab from annular spaces accessible from the mainline/lateral interface.

The second specification, *Pipeline Packer Injection Capital Grouting*, was developed to address grouting needs by creating cradle-like pipe stability in the bedding and a volumetrically significant, long-term seal outside the pipe. Installed per these new industry standards, the final product has an anticipated service life of 25 years or more, eliminating all groundwater and rainfall-induced infiltration entering a defect or leaking joint. New items in the 1.0 version

include Equipment and Chemical Control Tests, Grout Preparation, Volume Goals/Gel Times, Quality Verification Testing, and Warranty Testing requirements. Longitudinal Fracture Defect Grouting, only recently achieved, has never been included until now. A new grout gelation time calculation formula has also been introduced and takes into account the various bedding types, pumping rates, and grouting material goals.



Both NASSCO specifications have been prepared as a master specification using the Construction Institute's MasterFormat® organization and numbering system. They also contain multiple Notes to Specifier (NTS) when clarification or elaboration is needed. The specifications are available to be downloaded for free from the NASSCO web site at nassco.org/resources/nassco-specification-guidelines.

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