

The Grout Line

Paolo Gazzorini

At the ASCE Geo-Frontiers Conference in Austin, Texas, in January 2005, I met Lynn Pugh and John Gadsby of BiTech – publishers of Geotechnical News. Jim Warner, author of the Practical Handbook of Grouting and one of the “gurus” of North America grouting was visiting at BiTech’s booth.

As we were enjoying BiTech’s well-prepared Italian Espresso (and I can appreciate it... thanks John), James Warner proposed the idea of a department or section in Geotechnical News devoted to grouting; similar to John Dunicliff’s Geotechnical Instrumentation News. We present this new section related to pressure grouting, and the baptism of “The Grout Line”. As “father” of this new section of the magazine, Jim agreed to prepare the following introduction.



Paolo Gazzorini

Pressure Grouting

Jim Warner

Pressure Grouting is a specialized construction process that most geo-professionals will come in contact with at least a few times in their career, but few will be involved with it frequently. This results in many not being equipped to handle such work confidently, making them subject to misinformation and intimidation by less than principled

grouters. An educational forum pertaining to grouting is thus badly needed. Some years back I read an ASFE Case History in *Geotechnical News* involving grouting to improve some inadequately compacted backfill over a new sewer. The project was a disaster and lack of input from the firms “grouting expert” due to being tied up on another

job given as the reason. Amongst other problems, the grout holes were placed directly over the pipe, and many penetrated it with subsequent injection filling it with grout, until the line backed up. From the article, it was clear that none of the involved professionals had a clue as to what they were doing, and although penetrating the pipe with grout

holes took the blame, it was evident that many other inappropriate things occurred as well.

The review reminded me once again, of the importance for engineers to understand the basics of grouting and having a place to get valid information; Wouldn't it be great to have a regular feature similar to John Dunicliff's GIN, which could serve as an educational forum for grouting, *The Grout Line*. Thoroughly embroiled in writing the Practical Handbook of Grouting at the time, I had no time to follow through, and so the idea remained dormant until Paolo Gazzarrini stepped forward recently and agreed to make it happen.

When I first fell into the grouting industry in 1952, what little technology existed was antiquated and failed to recognize either the available material science or established laws of physics, although some well established though incorrect notions were firmly entrenched. And the few operating specialty contractors presented the procedure as *black magic*, which of course, only they could perform. Fortunately, I was ignorant of the state of practice and the many misconceptions of the time, but being somewhat aware of concrete technology, went my own way with a unyielding desire to understand the mechanisms involved.

The state of understanding today is of course much advanced as is the breadth of grouting application. But much confusion continues and though there are many exceptional operators, a few *magicians* remain and practice what might best be defined as *high tech black magic*. Far too much incorrect information is promulgated and the term *proprietary* greatly overused. The fact is grouting has become a well developed technology, and there is very little if any knowledge, not readily available. Though seminars on grouting and ground modification are common, the week long short course *Grouting Fundamentals and Current Practice* now sponsored by the Colorado School of Mines and held annually since 1978, provides an intensive understanding of all facets of the practice. But such intense education is beyond the interest of

many practicing engineers who do nonetheless need a reliable source of information.

It is hoped *The Grout Line* will fill the void and become an active forum for sharing knowledge, not only by experienced practitioners, but all interested parties including the novice. Discussion of experiences, both good and bad, questions, answers, and discussion of any grouting related topic as well as news of the industry will be provided. This will greatly improve the grouting knowledge of all. Quoting from the very last paragraph in the Practical Handbook of Grouting:

Above all, as grouting professionals, we must apply our knowledge, to ensure that all grouting work is performed in a rational, technical correct manner, and in conformance with sound engineering principals. Grouting is not magic or a black art but rather a well-established science, and those of us that are true professionals must abide by the highest standards. We must not hesitate to call the bluff of those amongst us that choose to hide behind a veil of magic, for only by sharing fundamentals of the technology with other professionals, and following through with the highest quality performance will the role of the grouter shine. Let us all shine and excel in our progress!

The Grout Line can be an extraordinary tool for broadening our knowledge, but only if we make it a true forum. Let us all share our questions, answers, new ideas or discussion of the old. No inquiry should be too considered too simplistic or advanced. If one needs an answer let's get it out, and for those things that are controversial, have enthusiastic debate, as this will improve the understanding of us all. In short, let's bury Paolo with material to be published!

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Coordinating Editor's Comments

Yes, of course, I would like to be buried with material to be published! This de-

pends on you, the readers of this new section.

I would like to add to Jim's introduction that this section will be focused on grouting, specifically related to:

- Grouting (permeation) in rock
- Grouting (permeation) in soil
- Compaction grouting in soil
- Jet- Grouting
- Soil mixing
- All other types of grouting
- Others ideas?

We need articles on experiences, both good and bad (but preferably bad because it is from the failures that we learn more), questions and answers on grouting equipment, material, theories, quality control. Grouting technology and the increased understanding of grouting parameters through the expanding use of computers and grouting control in real time will be the heart of "The Grout Line".

To repeat Jim's words "Grouting is not magic or a black art" (or more accurately, is not anymore), with newly engineered grouting theories and the increasing use of real time computer monitoring, we will have the possibility of interesting discussions and constructive dialog about our industry.

Send your contributions to: *The Grout Line, Paolo Gazzorini, 12 - 2242 Folkestone Way, West Vancouver, BC V7S 2X7, Tel: 604-913-1022, Fax: 604-913-0106, email: paolo@paologaz.com.*

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