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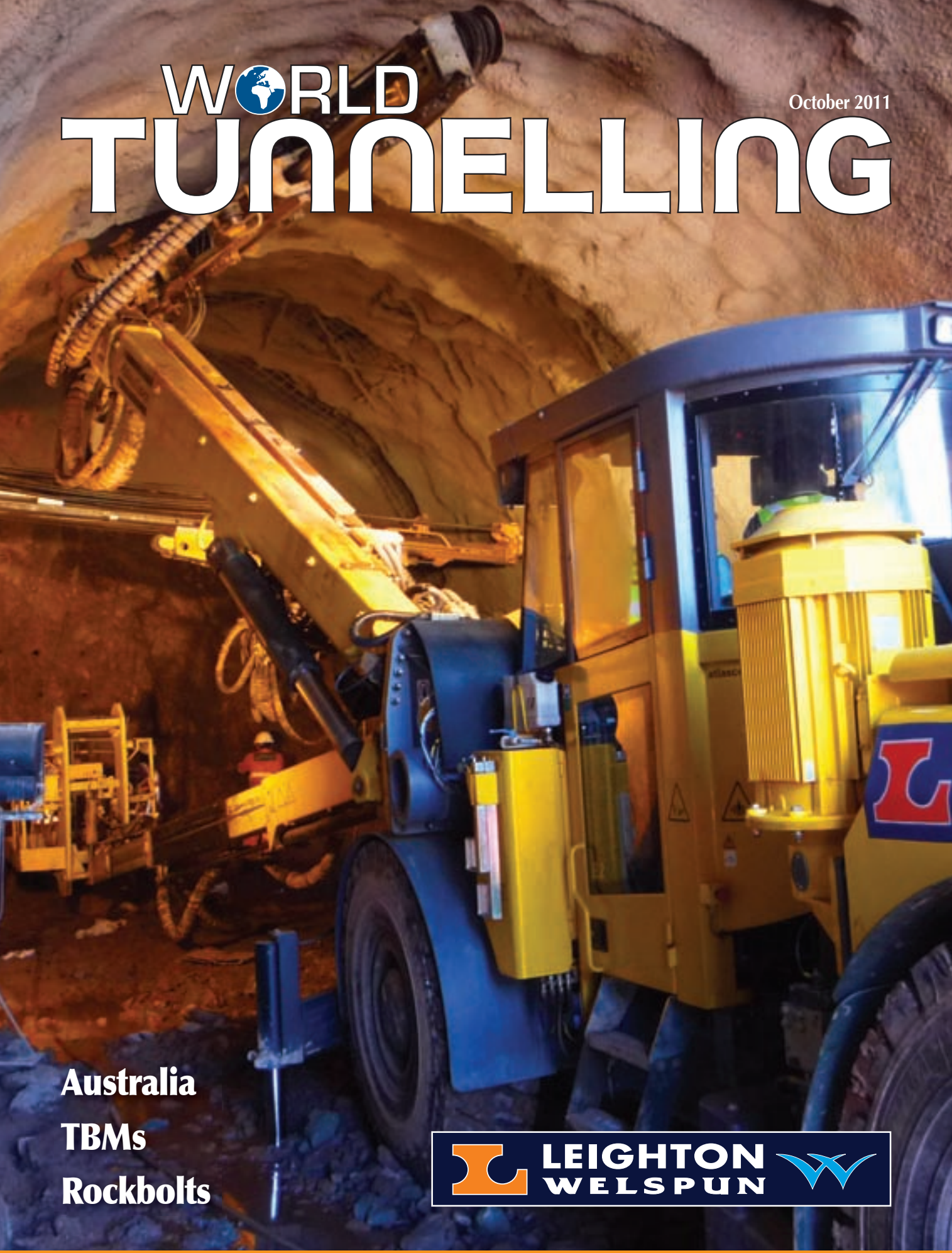

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False claims, unjustified denials

Peter Tarkoy looks at the potential problems and legal wranglings caused by boulders

DIFFERING site condition (DSC) claims are based on the DSC clause in all public, and some private, contracts. Claims are part of the contract by the very presence of the differing site condition clause.

Although many claims for unanticipated boulders are legitimate, many fail when put to the test of the six standard elements (Tarkoy, 2010) required to prove entitlement in a differing site condition claim. These elements are:

1 There must be a difference between reasonable anticipated (indicated) and documented encountered conditions;
2 There must be a difference between reasonable anticipated and documented encountered construction performance;
3 A cause-and-effect relationship must be demonstrable between differences in conditions and differences in construction performance;
4 An impact on time and/or costs must be demonstrable;
5 Contract conditions must be fulfilled, such as
- Reliance;
- Notice;
- Mitigation; and

6 No other factors (self-inflicted) may have caused the increased time and costs.

In other cases, owners unjustly deny claims for boulders, even though they have a sound basis and are legitimate.

FALSE BOULDER CLAIMS

The most common methods used to present untenable boulder claims are as follows:

A The contractor, having ignored indications of boulders, subsequently presents a claim for unanticipated boulders;
B The contractor (more commonly his consultants), assigns boulder impact on a tunnel length substantially in excess of the actual boulder-related occurrence and, typically, without supporting evidence.

TYPE A CLAIM

It is common for overly optimistic contractors to ignore indications of boulders. Subsequent instances result in claims that can be easily denied and disproven because the indications of cobbles and boulders had been ignored; the contractor cannot establish reliance on contract and associated documents.

In one case (EG Project), five of seven borings showed boulders in the tunnel envelope and, overall, eight indications of boulders were found in only seven borings in total. The indicated ground conditions consisted of sand, gravel, cobbles and boulders above the watertable.

Figure 1: TBM with flood doors

Figure 2: sinkhole

This ground type had a high probability for running ground. The contractor attempted to excavate the 300m tunnel using a 3.3m-diameter TBM with flood doors (figure 1). Every time the doors were opened to remove a boulder, the ground ran and chimneyed to the surface. The entire tunnel alignment was replete with sinkholes, as illustrated in figure 2.

The contractor guessed they would anticipate between six and 55 boulders. The contractor's consultant calculated (after the fact) that the anticipated boulders could number as many as 335. The lucky contractor encountered only 155 of them. The contractor further undermined his claim by leaving the job site for nine months. Needless to say, the jury denied the contractor's claim and made an award in favour of the owner.

TYPE B CLAIM

This is generally used when the claimed amount is considerably higher than what can be proven by any legitimate means. The underlying data is quite covert, consisting of opinions rather than facts, and nothing can be checked. It is all highly misleading, with even the minimal quantitative evidence being inconsistent with reality.

An example of a Type A claim was the EV Project, where a 3.45m-diameter TBM was used for excavation. Whenever a single boulder was encountered, the entire length of tunnel mined during that shift (sometimes as much as 20m), was claimed to be adversely affected. However, on closer examination, these long tunnel sections containing a single boulder were mined at much higher rates than those without boulders, as illustrated in figure 3.

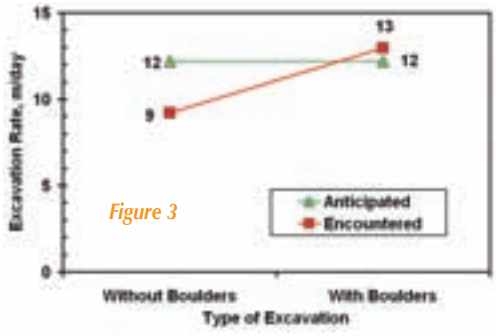


Figure 3

Overall, mining productivity was higher when boulders were present. Naturally, the exact quantitative impact remained mysteriously undefined by factual data (merely comprising unfounded assertions), and was an attempt at covert trickery. In the end, the contractor settled for the amount that was justified and which he deserved for other legitimate claims on the project.

In a more recent case (NSRI Project), the consultant claimed that unanticipated boulders (bogus claim type A) caused cutter wear, which purportedly affected an extensive tunnel length (bogus claim type B), despite the fact that:

- DSC entitlement was not demonstrated;
- There was no tangible evidence of cutter wear;
- There was no evidence of impact over any length of tunnel; and
- The wrong cutterhead was chosen by the manufacturer for the indicated bedrock, mixed-face and boulder conditions.

Figure 4: purported boulder

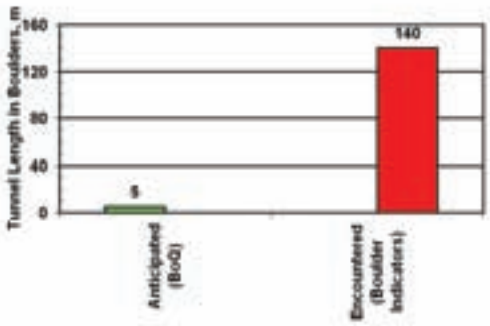


Figure 5: boulders anticipated and encountered

The contractor's geotechnical and micro-tunnelling experts, as well as testing laboratories, failed to distinguish between hard, crystalline glacial boulders and rock blocks loosened from the local, calcareous bedrock. A purported boulder (figure 4) shows a partial, micro-tunnel cut in the limestone rock block with a core from the cut face. However, the chain of evidence failed to link this block with the actual test results, rock type and that it was unanticipated.

The contractor's geotechnical consultant lacked any experience in microtunnelling or assessing entitlement for a DSC claim. One of the purported 'microtunnelling' experts had no experience in estimating project costs, or any practical experience concerning the methodology and its consequences. This expert additionally provided information that was at considerable odds with industry realities.

The scheduling and cost expert had extreme misconceptions about and miscalculations of the performance of microtunnelling equipment; consequently, his entire scheduling analysis was a fraud. The entire claim consisted of narrative rather than fact, innuendo rather than well-grounded conclusions, and none of the puzzle pieces fitted. In fact, the contractor's own experts made a fairly good case against its own client, the contractor.

It is notable that, after filing the original DSC claim, the attorney for the contractor elevated the claim to a 'cardinal change' and 'fraud'. The 'cardinal change' was thrown out by the appeal court and the contractor dropped the 'fraud' issue to avoid further delay of the trial. However, the case was settled, based on what was acknowledged and owed to the contractor, including interest, and a sum to avoid the cost and risk of continuing the lawsuit. The settlement was less than 25% of the total claim, including the 'cardinal change' and 'fraud'.

The machine manufacturer had ignored the geological conditions and recommended microtunnelling machines that were incapable of dealing with the indicated project conditions. When the contractor looked to the manufacturer to correct the ineffectiveness of the latter's recommended equipment, the manufacturer convinced the contractor to make a DSC claim against the owner. It should be noted that this manufacturer has used this tactic, not always successfully, to avoid responsibility and liability on no less than four different projects.

Common indicators of bogus claims:

- Misrepresentations of data, unavailability of data, complete lack of records;
- Differences in geotechnical conditions that have no relevance, effect or impact on construction performance;
- Redefinition of what is what, what is relevant, what is self-evident;
- Incomplete definition of the project in time and space – many pieces do not fit together;
- Failure to prove entitlement; and
- Personal attacks, emotional outbursts and unnecessary acrimony, generally courtesy of the attorneys on the side of the bogus case.

UNJUST DENIALS OF CLAIMS

The bill of quantities for the 325m CRC project using a 1.8m-diameter microtunnelling machine called for 5m of tunnel in ground containing boulders. Based on mechanical variables, the sounds at the face and cutterhead, and collected samples from the separation plant, the crossing encountered over 200m of tunnel alignment containing boulders.

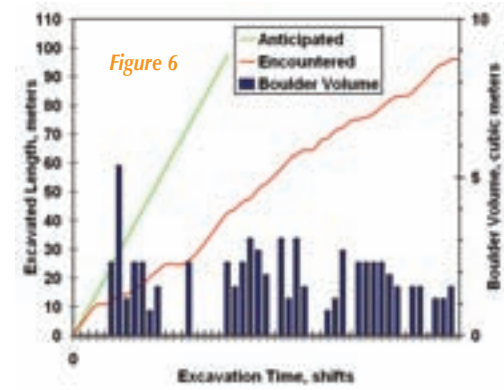
The difference between the anticipated and encountered tunnel length with boulders was based on the foregoing indicators (figure 5). On this information, the contractor could have claimed a windfall profit; however, he was reasonable and negotiated an amount consistent with his costs, based on the various data collected during tunnelling.

On the NCHD project, a total of 195m of 2m-diameter pipe (OD) was installed by pipejacking, grout, stabilisation and hand excavation. The pipejacking is significant since the relatively open face is amenable for easy boulder removal. However, in this case, the required time for boulder removal destabilised the face and therefore required unanticipated grout stabilisation ahead of the excavation. The grout stabilisation from the excavated face at the end of the mining shift resulted in slower progress overall (figure 6).

For the DI project, 50m of steel casing was to be installed by auger boring. No borings or other geotechnical information was provided.

The contractor was cautioned "....with respect to the completeness of such reports" and required that "steel casing shall be installed by means of the boring method", with "auger and cuttinghead", and "cuttinghead arrangement shall be removable from within the pipe in the event an obstruction is encountered".

Figure 7: boulders at pipejack face



Launch-pit excavation revealed a continuum of large boulders and auguring was impossible in a face with 75% boulders (figure 7). Hand-mining the boulders caused considerable delay. The case was resolved between the prime contractor and the pipejacking sub-contractor.

In this age of microtunnelling, pipejacking should not be excluded for shorter tunnels in ground containing boulders. Pipejacking may be more practical, more economical and less risky than microtunnelling. Should the construction occur in unstable ground, sodium silicate grouting can be used during the night shift to stabilise the ground for day-shift excavation. Alternative methods of excavation can maintain a stabilised face with mechanical breasting plates.

Indicators of unjust claim denials are varied. They lack rigorous analysis, conclusions grounded in fact or simple common sense, and reflect psychological denial.

CONCLUSION

Boulders in excavations of up to 3.5m diameter seem to be a popular topic for DSC claims, even when indicated in the contract documents. One contractor with a main office and doing most of its underground excavation work in a glaciated part of the country has a history of dubious claims on nearly all its projects.

In the matter of differing site condition claims regarding boulders, the required analyses, presentations and adjudications must be quite rigorous to be fair to both parties. Superficial analyses that fail to address the six elements required to prove entitlement (Tarkoy 2010) are inadequate for unearthing the real facts necessary for a fair and honest resolution of differing site condition claims.

Ineffective analyses only confuse the issues and promote an ongoing adversary and acrimonious atmosphere.

Tarkoy, PJ (2010), 'Established Standards for Differing Site Condition Entitlement', 36th ITA-AITES 2010 World Tunnel Congress, May 14-20, 2010.

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