

# Methods of Payments for the Injection Contractor

by John Trout

On most construction applications it is fairly simple to prepare a specification which assures that the contractor is paid only for what he completes in a satisfactory manner and leaves little room for misunderstandings.

However, since quantities on an injection project vary often and dramatically, flexibility in contract provisions is essential to avoid costly renegotiations. Factors such as disappointing results, results more promising than anticipating, discovery of additional deterioration, realization that designated cracks are in fact uninjectable spalls, loss of funds, etc. affect injection quantities. With owner and contractor acting in good faith it is often difficult to resolve quantity changes. At the hands of an unscrupulous contractor, the owner is precariously and unnecessarily vulnerable. It is important to select a payment method which protects the owner yet assures the contractor of full compensation for his work. This flexibility can be provided by unit prices but there are pitfalls if the specifier is not careful.

## Methods of payment to contractors for injection work have included:

1. **Lump sum.** Contractor views overall project and submits a firm quotation to complete the job. This option appears to be the most attractive and if it is possible to identify the exact cracks and footage to be included, the lump sum works. However, such specific knowledge is seldom available and problems result. For example, if a closer inspection from scaffolding reveals additional cracks which require injection, how is the contractor to be compensated for the additional work? In other instances cracks which appeared to be injectable were, under closer inspection, found to be spalls which are not injectable. In either instance negotiations must follow as the lump sum number becomes moot.
2. **Per liter.** Contractor is paid a unit price per liter of resin consumed. The per liter option is probably the most fraught with difficulty for the owner and the responsible contractor. If payment is based upon per liter of "resin" used it will no doubt be interpreted by the contractor as including the paste for capping the crack. This interpretation will often result in the use of excessive paste for the seal, leaving the wall plastered with epoxy at great expense to the owner. Though the paste may be specifically excluded, problems remain. Is compensation for resin "used" or resin "injected" into the fault. Much resin can be "used" in the course of frequent clean-up, ratio checks, purging of lines to bring up fresh material, etc. If payment is limited to resin actually injected into the crack, the unit price quoted per liter will be very high. An unscrupulous contractor would have to be constantly observed to prevent deliberate waste. This is seldom easy. The unit price per liter may work very well with a responsible contractor in place, but the responsible contractor will seldom be low bidder on such a project since he cannot depend upon waste to pad his quantities.
3. **Per linear meter.** Cracks are simply measured for payment as the work progresses. It eliminates anxieties regarding resin consumption. This system works very nicely so long as the estimated quantities are close to reality. However, if the estimated amount vary dramatically from the amount of work actually required, the owner or contractor will be seeking adjustments.
4. **Mobilization + linear meter** is a refinement of the straight linear meter approach. It simply obviates any need for adjustments should quantities vary in either direction no matter the amount. The contractor's cost of mobilizing is separate and is not amortized over this unit quantities. An adjustment is not appropriate.
5. **Time + material.** This approach is used too often. Unit prices can be developed to anticipate most conditions. Be reluctant to use time + material with any other than a most reputable contractor.

Approach #4, mobilization + linear meter is recommended wherever possible for the best contractor / owner relations. Using this method of payment and a strong quality control program based upon frequent coring, the owner is assured that he will pay for only what he gets and get the quality which he has paid for.