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Author : Roger Trett
Title : 87% FOR NOTHING!

How many times have we heard the cry of the disaffected Architect/Engineer/Employer when seeking to evaluate the cost of acceleration measures, 'but all I have got is that that I wanted at the start'.

We continue in this digest on the acceleration theme with the 2nd part of Tony Farrow's three part article on acceleration. The response that we received from the last digest, in particular to Tony's article shows that, as we suspect, acceleration is a subject of great uncertainty and a cause of much concern to numerous people. It is not always cost effective to accelerate, either for the Employer or the Contractor and as for agreeing the costs after the event, the problem is exacerbated by the sheer size of the non-productive element which may not have been properly considered by either party before implementing acceleration measures. The biggest problem in agreeing acceleration costs arises because the Employer believes that he is receiving no more than he originally required, in spite of his additional expenditure.

It is quite clear that Employers should be carefully advised as to the potential costs of such measures before implementation. As previously suggested, however, it is most unwise for a Contractor to enter into a phase of acceleration without a supplementary agreement as to costs. Tony looked at the sufficiency of record keeping to illustrate the losses of efficiency during these phases, but how many times is the record keeping carried out properly? There are very few statistics that can readily be referred to which prove productivity losses but there are statistics that can illustrate the resultant losses that arise from increasing hours worked and resources.

In fact, to calculate the first such loss one does not have to use statistics. The basic calculation from working rule agreements will show that if hours are increased from 39 to 50 per week, on a five day week, then an immediate basic increase in respect of premium time effectively increases the direct cost of each working hour by 11%. If a 60 hour week is worked over a 6 day week, the increase in the direct cost of each hour amounts to 22% depending on which working rule agreement one looks at. These increases, however, cover only the non-productive element from overtime working. When the effect of additional resources on site manning levels, and the productivity loss as a result of the increased hours are added, the costs are further exacerbated. For example, research has shown that site manning levels (ie numbers of operatives) will affect productivity. An increase from say 30 to 60 men can have the effect of reducing productivity by upwards of 10%.

Furthermore, research illustrates that in general, extended working hours will reduce productivity. For example, an increase from a 40 hour week over 5 days to a 60 hour week over 6 days can reduce productivity by upwards of 25%. In fact, research shows that on certain points, greater extended hours are counter-productive since less production is achieved compared to a shorter working week.

If we add these illustrative factors together:-

60 hours per week over 6 days, resources doubled

Paid hours are 73, premium hours being 13.

At a 10% drop in efficiency for site-manning - 6 hours lost in 60.

At a 25% drop in efficiency for extended hours - 15 hours lost in 60.

Therefore, hours achieved are 39 (60-6-15) at a cost of 73 hours ie, an increase cost of 87% per achieved hour (73-39-39).

It is then fairly easy to see how retrospective evaluation becomes difficult to agree.

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Author : Anthony Farrow
Title : Acceleration Part II

ISSUE: 4

AUTHOR: Anthony R Farrow

TITLE: Acceleration Part II

A series of three articles has been prepared on the subject of acceleration the construction process. The first article, which appeared in the last TRETT DIGEST, considered some of the dilemmas facing the Employer and Contractor when contemplating acceleration. The second article, be-low, reviews items to be included in an acceleration agreement and considers how costs can be identified and agreed. The final article, to appear in the next TRETT DIGEST, deals with matters after acceleration is under way and the resultant effects at completion.

PART II

THE AGREEMENT

In agreeing to accelerate the construction works and in agreeing to pay the additional costs, the Contractor and Employer should seek to form a binding agreement that adequately deals with the principal factors. These include:-

Historical Delays. Most accelerations occur because progress on site has fallen behind the contract programme and extra measures must be taken in order to maintain the original completion date. It is in the Contractor's interest to ensure that the acceleration agreement contains a clear statement by the Employer that he will reimburse the Contractor his future extra costs, notwithstanding any liability the Employer may consider the Contractor to have in relation to the delays that have caused programme slippage. If this matter is left open-ended, the Employer may seek to reopen the question of liability for delay at some time in the future and attempt to have the Con-tractor pick up some of his own acceleration costs as a result of him having failed to regularly and diligently progress the works. To the Employer, this can be a rather difficult position to accept but he can at least demand that the Contractor, in agreeing to the acceleration deal, waive his contractual rights to extensions of time for all matters and events that have arisen up to the date of instructing acceleration.

Revised Programme. A detailed contract programme is usually an optional document in a construction contract. However, it is in both parties interests for the Contractor to draw up a revised programme of work to show how the accelerated completion date can be achieved and have this programme firmly bound into the agreement. The programme can be used by the Contractor to establish the necessary resources he requires at each stage and allow both parties to monitor progress. Inter-trade co-ordination becomes more complex and the Contractor must prepare de-tailed programmes for each of his main sub-contractors so that they can understand their part. The de-sign team need to know when they must provide information to the Con-tractor and so they should expect to see lead-in activities indicating approvals periods, manufacture periods and delivery dates.

Future Delays. The existing contractual relationship between the Employer and Contractor will deal with the rights and obligations of both when events and circumstances lead to delay. For example, where exceptionally adverse weather causes de-lay, the Contractor would be entitled to a compensating extension of time but no additional monies. It is recommended that

the existing contractual machinery for extensions of time be likewise applied to the acceleration agreement. However, it is normal for the Employer, having agreed to pay extra monies to the Contractor for acceleration, to try to further limit the Contractor's entitlement to extensions of time. For example, he may insist that 'the completion date may only be extended in the case of

substantial extra works being instructed and major frustrations being encountered'. It would seem reason-able to expect this to apply to say the payment of a bonus but not the Con-tractor's equitable right to additional time for delays outside his control.

Firm Commitment or Best Efforts. The parties must decide whether the agreement to finish by a specific date is to be a firm contractual obligation on the Contractor or a target date that the Contractor will use his best efforts to achieve. In the former case, it would be normal to maintain the existing liquidated damages clause and the Contractor would forfeit all his accrued entitlements for extensions of time. However, it would seem reasonable for the Contractor to be al-lowed to price the risk of not achieving the date. Not surprisingly, it can be difficult to agree what the risk factor ought to be and so the parties may decide that the acceleration be carried out on a target-only basis, with the Contractor maintaining his accrued entitlement to extensions of time. In these cases, the Contractor would only be liable for damages when he had failed to complete by the original completion date plus the extra time awarded for delays that justified extensions of time.

Stick or Carrot. It is a fact that things usually get done when there is the right incentive. The Employer needs to decide how the Contractor is best motivated; by either the threat of a financial penalty for failure or the re-ward of a financial bonus for succeeding. It is probably true to say that the Contractor will give his greatest efforts if there is some reward at completion. The alternative, of liquidated damages, results in the Contractor not losing out if he succeeds but at the same time he gains nothing. If a bonus is proposed, the Employer should consider a sliding scale of payments, say over a 4 week period. This at least ensures the Contractor's efforts are maintained when he realises that the earliest completion date will not be achieved. The Employer may propose to pay the Contractor a portion of his costs on condition that the completion date is actually achieved and this will obviously produce the same efforts from the Contractor since he is risking his own costs. However, this approach appears to be rather unreasonable on the Contractor.

Completion. Since the reason for acceleration is to achieve an earlier completion date and that some financial incentive or liability may flow from this, it may be wise to restate or re-vise the requirements for achieving completion. There is usually more snagging work associated with an accelerated project and it would be unfortunate if the Contractor suffered financially because the Employer adopted a strict interpretation of the contract with regard to practical completion. It may be that completion of the physical works is important to the Employer and that commissioning and final testing operations would not hinder his own occupation. Similarly, the Employer may only be concerned with, for example, retail areas of a shopping development and that works' behind the scenes' could proceed after the official opening. It would therefore, seem wise for the Contractor to determine the minimum requirements of the Employer and have the acceleration agreement written around these.

Costs. There are two methods for agreeing costs; either a negotiated lump sum or a cost reimbursement based on actual records of expenditure (a third option, may be a composite of both). The lump sum is by far the neatest method since both parties know from day one what the financial package will be. However, this type is the most difficult to negotiate since the parties take opposing views; the Contractor will take the most pessimistic approach, the Employer the most optimistic. The Con-tractor will have to make assumptions with regard to the extra resources he will require and guesstimate the probable extra costs. He will obviously have to build in contingency factors and it is perhaps these that will be considered as excessive and unnecessary by the Employer. However, if a lump sum price is agreed, both parties should ac-knowledge it as a price for achieving a date. The Employer should not monitor the Contractor's expenditure and expect credits if, for example, the amount of

overtime allowed is found to be excessive. Likewise, the Contractor should not expect extra payments should he find that he requires more labour than envisaged.

The alternative approach is to identify the heads of cost and agree how to calculate extra resources and evaluate their individual expense. For example, the Contractor can submit his daily labour returns to identify the overtime hours worked and the Employer can check the premium time and costs from the relevant WRA. Similarly, the Contractor can supply additional engineering staff and demonstrate their employment costs from the company's payroll. This method of reimbursement creates the least incentive for the Contractor since he is paid all that he expends; he can be as uneconomic as he wishes. The Employer is also in a vulnerable position since his financial liability is unknown until completion. However, some accelerations are so uncertain in terms of what has to be done in order to save time that the cost reimbursement method is the only realistic means of establishing the Contractor's compensation.

In either case, the following cost factors need considering:

Labour

Premium Time. Arising from a longer working week, non-productive overtime payments will be incurred in accordance with the relevant WRA. Some of the employment on costs (NHI, travel etc) also attach to the NPO, though many are fixed, irrespective of worked hours. An on-cost of 15% on to the basic hourly rate is not an uncommon addition.

Importation Costs. Average labour costs will increase if it is necessary to recruit labour from further afield. This will initially include travel costs and travel time but eventually cover board and lodgings.

Productivity. If the works are carried out at a quicker pace by, for example, increasing the labour force, by working longer hours and by changing the method of working and programme sequence, the productive output of site labour will diminish and it is not uncommon to have productivity levels fall by up to 50%. This will obviously increase labour costs by a similar amount. If the Contractor maintains a system for monitoring labour output, it should be possible to provide contemporaneous records to demonstrate how productivity has been effected during a period of acceleration.

However, only a minority of Con-tractors keep such records. Further-more, if the parties wish to predetermine the acceleration costs, negotiations will have to take place to pre-agree the likely productivity effects. Records and statistics are in short supply but recent research has pulled together UK and USA data on acceleration and productivity effects on labour.

Supervision. The level of supervision varies according to the number of operatives and the complexities of the works. However, it is normally expected that the level of supervision should be more than proportionally increased during acceleration.

Bonus Incentives. Greater output and hence faster construction may arise if some sort of incentive bonus is provided to the workforce, When an incentive bonus system is in operation before acceleration, it is not uncommon for bonus levels to diminish during acceleration because the methods of working have to be revised and this may not allow labour to earn bonus; labour will expect to be compensated for this. It may even be necessary to pay a bonus to maintain a site labour force in a buoyant market let alone to encourage more operatives to join the ranks. Acceleration usually involves holiday working and it may be necessary to pay above the standard WRA rates to encourage the labour force to work.

The Contractor must thoroughly plan out how he is going to deal with all these matters and include any possible costs in his acceleration proposals.

PRELIMINARIES

The Contractor must identify the extra resources he will re-quire and some of these were mentioned in Part I. The difficulty comes in recruitment since it is not easy to obtain staff at short notice, perhaps for a relatively short period. Rates of pay will therefore be higher than average. Existing staff will need to work overtime and where this is paid, additional costs will be incurred. But who should obtain the benefit of worked but unpaid overtime, so common to construction staff.

Plant and Tools. Associated with a larger labour force, more equipment and consumables are needed. Cabin and associated office costs need reviewing.

Sub-contractors and Suppliers. They will incur the same costs as the Contractor and require individual consideration. Where manufacture has to be expedited, priority payments are not uncommon.

Overheads and Profit. A major acceleration will tie-up key resources and will require a greater commitment from head office staff. It would therefore, seem reasonable for the Contractor to be reimbursed an adequate margin that is probably greater than that acknowledged for pricing variations.

Contingency. In view of the uncertainty of what may arise during the acceleration, the Employer would be well advised to provide a significant contingency sum.

Payment. Having agreed with a fixed price or a method of ascertaining extra costs, the parties will need to consider the method of payment. An agreed fixed price can be divided by the planned period of acceleration to give an average monthly cost. A cost reimbursement method usually takes at least two months to produce firmed-up figures. In these cases, it is usual to agree a series of monthly budget payments and substitute actual costs when finalised. The Con-tractor should also consider asking for advanced payments since the greater part of expense is labour related and most of these will be paid weekly, well before monthly interim certificates are paid.

In conclusion, an acceleration agreement requires some very de-tailed thought, covering both the contractual implications of the deal and the possible effects of the execution of the works and its practical and financial repercussions. Part Ill of this series will consider matters whilst acceleration is in progress and at completion.