

## **CHAPTER SEVEN : MEASUREMENT AND FINANCIAL CONTROL**

### **CONTENTS**

- 7.01 Measurement Obligations**
- 7.02 Staffing for Measurement**
- 7.03 Elements of Measurement**
- 7.04 Routine Items**
- 7.05 Extra Work Items**
- 7.06 Prime Cost Sums**
- 7.07 Provisional Sums**
- 7.08 Daywork**
- 7.09 Progressive Measurement; Progress/Measurement Drawings**
- 7.10 Interim Valuation and Certification**
- 7.11 Certificate of Variation of Works; Certificate of Adjustment of Contract Sum.**
- 7.12 Rate Fixing**
- 7.13 Variation of Price {Escalation}**
- 7.14 Claims**
- 7.15 Final Account and Certification**
- 7.16 Budgetary Control**
- 7.17 Mandatory Duties**
- 7.18 The Importance of Independent Control**

---

### **7.01 Measurement obligations**

It was observed in the introductory chapter of this Manual that the financial aspects of supervision work entailed

"ensuring that measurement and payment procedures result in correct payments to the contractor in accordance with the terms of the contract and also that the government's budgetary requirements are met."

The first of these responsibilities the Engineer and his team carry for the Employer and the Contractor alike; as government officers or

agents, the supervision staff have clear obligations to the Department for the second.

The work involved in meeting these obligations is dealt with in the following sections of this chapter under the following headings:

Staffing for Measurement  
Elements of Measurement  
Routine Items  
Extra Work Items  
Prime Cost Sums  
Provisional Sums  
Daywork  
Progressive Measurement  
Interim Valuation and Certification  
Certificates of Variation of Works and Adjustment of Contract Sum  
Rate Fixing  
Variation of Price Claims  
Final Account and Certification  
Budgetary Control

### **7.02 Staffing for Measurement**

In large supervision teams, it is normal and desirable for all measurement matters on site to be handled by a Measurement Engineer or Quantity Surveyor supported by Measurement Technicians, all of whom devote their time solely to those duties. On smaller projects however, the work is likely to be undertaken by the Resident Engineer, with site measurement and computation attended to by technicians engaged primarily on inspection duties and with support from the QS Section of the JKR regional office or HQ, particularly with variation documentation, certification of payments and budgetary control.

Even where the site team has its own separate measurement section, it is important that there is good liaison between the measurement staff and those primarily concerned with construction - Section Engineers, Site Inspectors, etc.

If this is not observed, details of work - particularly "extra work"\* which does not come within

the orbit of routine measurement - may fail to be properly recorded. Accordingly, the duties of Site Inspectors must be defined to include the measurement (or reporting) of "variation" work, whether those Inspectors deal with routine measurement or not.

Resident Engineers, whatever the staffing arrangement for measurement, must themselves exercise control over the activity. They need to ensure, not only that the detailed accounting is accurate, but also that every item included in the measurement is properly payable under the terms of the contract. Most important, however, is the R.E.'s accountability for the work of his subordinate staff. It is easy for error or fraud to creep in and, in order to guard against this, R.E.'s should make it clear that everyone's work will be subject, at the least, to random detailed checks.

\*

*See-Chapter 7.05 for a definition of "extra work" used in this context.*

### **7.03 Elements of Measurement**

Almost all roadworks contracts for the Department have payment systems based on a Bill of Quantities (B of Q) and it is contracts of this type that are dealt with here. Under this system, payments are determined from the following constituents.

- i) Routine items with unit rates included in the original B of Q and detailed in the Drawings and Specification.
- ii) Extra work items for which instructions are issued during the construction period - Site Instructions, APP'S, Supplementary Drawings, etc.
- iii) P.C. Sum items.
- iv) Provisional Sum items.
- v) Daywork.
- vi) Variation of Price Adjustments.
- vii) Advances paid / repaid (Plant, Cash or Materials on-Site).
- viii) Retention withheld / released.
- ix) Other Deductions.

### **7.04 Routine Items**

A standard method of measurement has been adopted by the Department for the preparation

and operation of workworks contracts. It is based largely on the I.C.E. (U.K.) Civil Engineering Standard Method of Measurement (2nd Edition). In the contract documents, the "Method" is formulated in Preambles to each Section of the Bill of Quantities, setting out rules for the way in which each item is to be measured and its quantity calculated for payment. Every member of the supervision team involved in measurement activity must familiarise himself with the Preambles.

Further, it is necessary to determine and agree with the contractor how the actual dimensions of the measurement will be determined: either

- a) by physical measurement on site, or
- b) taken from the Drawings or Specification as standard.

The aim should be to use standard dimensions and measure "from the Drawings" wherever possible. This approach is facilitated by the principle that it is an inspection staff responsibility to ensure that designed dimensions are achieved in construction. If they are not, the routine remedy should be to reject the work, not to measure sub-standard dimensions. If, exceptionally, substandard dimensions are accepted, it is the Inspector's job to see that the details are recorded for payment adjustment. Items may be encountered which quote standard thicknesses with specified tolerances and where volumetric or weight units are quoted - for example, asphaltic bases and surfacings. Clearly these are also cases requiring on-site determination of the "as constructed" quantity involving the inspector.

Centre line chainage, accurately established by site survey, also facilitates "from the Drawings" measurement and is usually adopted for longitudinal dimensions. Non-parallel features (e.g. some drainage runs), of course, require site measurement.

The site-measured or "from-the-Drawings" dimensions should be recorded on forms prepared for the purpose. The Department does not prescribe standard measurement forms and the Resident Engineer or his measurement staff must therefore design forms suitable for each of the items covered by their contract. Each form should accommodate the following.

- i) Form Serial Number.

- ii) B of Q Item No. and Brief Description.
- iii) Date of Measurement.
- iv) Required Dimensions.
- v) Signature of supervision staff member.
- vi) Signature of contractor's representative.

Examples of some typical measurement forms are given in Figures 7A - 7D.

Where computation is simple, the measurement form can also show the extended quantity; otherwise separate calculation sheets must be appended, serially numbered and cross referenced to the measurement form.

Generally, measurement should be a monthly routine with covered-up dimensions recorded during the month as each section is executed and with remaining data obtained during a single joint exercise with the contractor, at a regular date agreed between the Resident Engineer and Site Agent. When the measurement forms and computation endorsed by the contractor are available, they must be summarised for the period for each item. The measurement forms, any calculation sheets and the summaries are then to be filed together and in date order in the Measurement File(s), which should have a separate section for each B of Q item. A record of the work executed and measured should be kept on a set of Progress/Measurement Drawings - see Chapter 7.09.

### **7.05 Extra Work Items**

This term covers work which is not specifically defined in the contract documents but which is specially instructed by the Engineer or his supervision staff on Site Instruction Forms, APP's or one of the other methods outlined in Chapter Six. The instructions may constitute contractual variations as defined in the Conditions of Contract but this is not necessarily so. They may, for example, be clarifications or amplifications covering work originally intended to be included in the contract and for which a B of Q item already exists. (See Chapter 6.03 in connection with authorisations which have to be obtained by the Engineer and his site staff under Circular KPKR 6:88 before instructions for some "Extra" items are given.)

The procedures for taking and recording measurements for such items are the same as those

outlined for routine items in Chapter 7.04 but, because of the danger that they may be overlooked, it is important that officers raising the Site Instruction Form or A.P.P. warn the appropriate Inspector of the requirement for measurement and ensure that a copy is circulated to the measurement staff as stipulated in Chapter 6.10 (e) and 6.11 (j).

As far as payment is concerned, where the nature of the extra work is the same as that covered by existing items in the B of Q the rate in that original item must be adopted for the new work. If the extra work is not exactly the same, but similar, the original rate should be used as a base and be suitably adjusted. If no similar rate exists in the B of Q it is necessary for the Engineer to agree or fix a new rate - see Chapter 7.12. Alternatively, if there is real difficulty in establishing a new rate, payment can be made on Daywork basis providing the work was instructed at the outset as Daywork - see Chapter 7.08.

There is provision on the prescribed Site Instruction Form (see Chapter 6.10) for identifying the proposed payment method.

Where new B of Q items are required, they should be allocated numbers in the appropriate section of the Bill, following consecutively after the last item in that section in the original Bill and should appear in this sequence in the monthly valuations. Provisional or "Star Rates" may be used to value work under new items pending the fixing of final rates as prescribed in Circular KPKR 6:88. They should be clearly marked as such in the Interim Certificate account.

### **7.06 Prime Cost Sums**

Prime Cost (P.C.) Sums do not feature in roadwork contracts as strongly as in many other of the Department's work contracts, but items do occur which require the specialist input of Nominated sub-Contractors or Suppliers and which call for the inclusion of P.C. Sums. Examples are special piling systems, prestressing, ground anchors, street lighting, traffic signals, road signs and other street furniture, special types of fencing and hydro seeding.

The specification and other technical detail for work executed under P.C. items should be

obtained from the JKR design office or co-ordinator responsible for the project. For values exceeding \$50,000 tenders must be called and the work executed under a formal Nominated Sub-Contract, arrangements for which are normally handled by the appropriate JKR QS office. Advice on the Departmental regulations governing such sub-contracts can be obtained from the same office.

For values less than \$50,000 the Engineer should call for quotations and obtain committee approval for acceptance of the selected offer. Instructions should then be given for the work to be executed under normal variation procedure (subject to Departmental regulations for approval, etc) without resorting to formal sub-contract arrangements.

Payment for work executed under Nominated Sub-Contracts is made through the main contractor's interim and final certificates but the Engineer is required to inform the Nominated Sub-Contractor or supplier of the amounts paid. Contract Sum adjustment is necessary for P.C. items by issuing a Certificate of Adjustment of Contract Sum (see Chapter 7.11), omitting the Bill of Quantities P.C. Sum and substituting the value of executed work.

Contractual provisions for P.C. items are contained in Clause 30 of the 203A Conditions of Contract and Clauses 58 & 59 of the 203 CEWI and I.C.B. forms. The term is not used in the FIDIC forms but Clause 59 covers the subject of Nominated Sub-Contractors. Regardless of the Conditions of Contract form used, no expenditure should be incurred under P.C. items except by express instruction of the Engineer.

### **7.07 Provisional Sums**

Provisional sums are included in the Bill of Quantities for work which at the time of tender, is of uncertain necessity, magnitude, definition, or detail, but which is regarded as being within the capability of the main contractor, without recourse to specialist Nominated SubContractors, or Suppliers. All Conditions of Contract forms stipulate that Provisional Sums are to be expended only if, and as instructed by, the Engineer. Written instructions (i.e. Site Instruction and/or A.P.P.) should therefore be

raised for work to be charged against Provisional Sums, but the instructions do not need to be regarded as variations subject to the approval procedures set out in Circular KPKR 6:88 unless the estimated, or actual incurred cost, exceeds the value of the charged Provisional Sum, as recorded in the original Bill of Quantities. Payment is made after measurement in the normal way through the interim and final certificates and the Contract Sum is eventually adjusted by issuing a Certificate of Adjustment of Contract Sum (see Chapter 7.11e) omitting the original Provisional Sum and substituting the actual incurred cost.

Contractual provisions are contained in Clause 30 of the 203A Conditions of Contract form and in Clause 58 of the 203 CEWI and FIDIC/I.C.B. "Conditions".

Provisional sums should not be confused with items marked as having Provisional Quantities. The latter form an important element of roadworks contracts executed under 203A Conditions of Contract, which stipulate that all original quantities not marked "Provisional" are to be entered in the account without re-measurement.

### **7.08 Daywork**

Daywork is work instructed and paid for on the basis of the cost of plant, labour and materials actually used, plus an allowance for overhead and profit. Daywork instructions cannot be given for work covered by unit rates in the original Bill of Quantities but can (subject to the reservation in the following paragraph), be used for extra work items for which no B of Q rates already exist, or for work covered by Prime Cost or Provisional Sum items.

Whilst Dayworks are useful for work for which it is difficult to establish a unit rate, they should only be used as a last resort. Wherever possible, ordinary work instructions should be given and unit rates determined - see Chapter 7.12

If it is decided that work is to be undertaken on a Daywork basis, special conditions apply both to supervision of the operation and its measurement. First, site staff must exercise control over the type and numbers of plant used and generally ensure that the operation is conducted eco-

nominically. Second, they must carefully record and agree with the contractor the working period of the plant and labour actually devoted to the operation and the quantities of any materials used. Rules for the recording of Dayworks data are given in Clause 52 (3) or (4) of the Form 203 CEWI/FIDIC/ICB versions of the Conditions of Contract and Clause 25 (d) of Form 203A. A copy of a model Daywork Form is given as Figure 7E.

The quantities obtained from the recorded data are extended by the appropriate rates contained in the contract Daywork Schedule to produce the developed cost of the operation. These are charged against new items, Provisional Sums or Daywork Section sums provided in the original B of Q.

### **7.09 Progressive Measurement; Progress/Measurement Drawings**

The Measurement Files, in addition to the sheets mentioned in Chapter 7.04 must contain a cumulative record of quantities updated month by month, so that when completion is reached, total quantity figures are available. However, the figures obtained from progressive measurement must be re-computed in a final measurement exercise for the whole completed works for all work items, where this is practicable. The exercise should be based either on site measurement or the "As Built Drawings", depending on the items involved (See Chapter 7.15).

In order to assist the progressive measurement of the works, a comprehensive set of Progress/Measurement drawings should be maintained in the site office. These are prepared on paper prints of the road layout and structural general arrangement drawings. Several sets are required to accommodate the various items although colour coding can enable several similar items to be recorded on the same sheet (e.g. subbase and base together and binder and wearing course together). The boundaries of each month's completed work are edged in colour and the month and measurement sheet reference are marked. The use of these plans eliminates the risk of duplication or omission of sections of completed work in the measurement.

### **7.10 Interim valuations and Certification**

All Conditions of Contract provide for the contractor to be paid progressively for the value of work done and materials on site during the progress of the work. Such payments are necessary to provide the contractor with the necessary cash-flow to finance his operations.

Although corrections and adjustments can be made in subsequent certificates, all interim valuations should be as accurate as possible. Overpayment resulting from an excessive valuation may be impossible to recover in the event of bankruptcy or default of the contractor. On the other hand, underpayment may affect the contractor's cash flow to such extent that it delays the progress of the project.

The Form 203A Conditions of Contract require the S.O. to value completed work on a monthly basis. The 203 CEWI Conditions allow for the contractor to present a statement of completed work value at the end of each month whilst the FIDIC Conditions provide for the contractor to attend for measurement and valuation, as and when required by the Engineer. However, regardless of which "Conditions" apply, it is normal for interim measurement activities to be undertaken jointly with the contractor.

After joint measurement and agreement of completed quantities, a statement is prepared, signed and presented by the contractor, usually on a monthly basis. This must be checked against the agreed recorded quantities and signed by the R.E. or member of the site team responsible for measurement. The contractor should be informed of any amendments or deletions made to the statement at this stage. An Interim Payment Certificate is then to be prepared by the Resident Engineer for signature by the Engineer, or other officer authorised to issue payment certificates. Certificates are to be prepared on JKR Form 66, a copy of which is given in Figure 7F. Before being presented to the issuing officer for signature, they should be endorsed as correct by the officer actually responsible for preparing or checking the valuation. Full supporting details of the statement should be appended.

Contractual requirements- for the preparation of the statements and certificates are set down in

Clause 47 of Form 203A Conditions of Contract and in Clause 60 (8) and (9) of the 203 CEWI Conditions. In the FIDIC Conditions, Clause 60 and the Part II Conditions carry the details whilst in the ICB version final payment arrangements are dealt with in Clause 60 (10) and (11). In addition to the value of complete work executed under the main contract, JKR Form 66 provides for the following.

Payment/repayment of Plant or Cash Advances, Payment of Advances for Materials on site Nominated Sub-Contractors/Suppliers Accounts Variation of Price Adjustment  
Deduction for Retention Various other Deductions

The following further points should be noted in connection with the preparation of interim certificates.

- (a) Procedures for establishing the value of Plant Advances are dealt with in Chapter 4.04 (f). Repayment terms for these Advances are prescribed in the Conditions of Contract. The amounts of Cash Advances, if they are a feature of the contract, and the repayment terms are also both established in the Conditions of Contract.
- (b) Advances for Materials on Site are paid in the interim certificates against claims presented by the contractor. The claims must be checked by the supervision measurement staff to ensure that they are in accord with material actually existing on site and not incorporated in the works at the effective end-date of the certificate period. Clause 60 (6) of Form 203 CEWI and I.C.B. Conditions of Contract and Clause 47 (c) of Form 203A "Conditions" set out the terms under which Plant Advances are to be made - both forms allow for payment of 75% of the accrued value. Under FIDIC contracts provision is made in Part II of the "Conditions" under Clause 60.  
If materials are delivered to site substantially in advance of their incorporation into the works and are admitted for inclusion in the Advance Payments, periodic

checks should be made to ensure that they remain on site and have not deteriorated in quality before successive certificated payments are authorised.

- (c) Payment to Nominated Sub-Contractors/Suppliers is dealt with in Chapter 7.06.
- (d) No retention is held on contracts which are subject to Form 203A Conditions of Contract but deductions for retention must be made in accordance with 203 CEWI and I.C.B. "Conditions" (Clause 60.9), the percentage and limiting amounts being quoted in the Appendix to the Form of Tender. In the case of FIDIC contracts, retention requirements are detailed in Part II of the "Conditions".
- (e) In cases where assignment arrangements have been made for direct payment to Pernas Trading Sdn Bhd for materials (cement and reinforcing steel) supplied to the contractor by that company, deductions of the same amount must be allowed for in the certificate. Details of the arrangement are given in Treasury Circular 11:1983 which contains copies of the standard forms to be used. Similar arrangements are provided in Treasury Circular 5:1986 for the supply of cement to roadwork projects by manufacturing companies. In either case, the provisions are usually contained in the Conditions of Contract (or Special Provisions).
- (f) Payments may be included on an interim basis for work executed as a variation before the Certificate of Variation is issued, provided the work has been authorised by the Engineer (on a Form A.P.P.) after approval as required by Circular KPKR 6:88 (see Chapter 7.11). If new rates are required, provisional or 'Star' rates can be determined by the Engineer for valuation of the work pending approval of unit rates under the Circular KPKR 6:88 rules.  
However, care should be taken to ensure that no payment is included for variation work undertaken on the contractor's initiative, without formal instruction.
- (g) It is necessary to determine how the

general or preliminary items in the Bill of Quantities are to be paid - what proportion and at what time. Unless the details are already specified in the contract documents, the break down into initial, periodic and final elements, or any other appropriate arrangements, should be agreed with the contractor, if possible before the first interim certificate is prepared. Many items can be paid month by month in the proportion of permanent work completed. Other items however, such as those covering insurance premiums, can be paid in full - at the time and to the extent that costs are met by the contractor.

- (h) If a Certificate of Non-Completion has been issued (see Chapter 8.15) deductions must be made for Liquidated and Ascertained Damages in accordance with the amounts set out in the contract - in the Appendix to the Conditions of Contract in the case of Form 203A Conditions, and in the Appendix to the Form of Tender for Form 203 CEWI, and FIDIC and I.C.B. "Conditions."
- (j) Minimum payment values are stipulated for interim certificates issued under Form 203A and 203 CEWI Conditions of Contract (see Clauses 47(a) and 60 g). If such provisions are entered in FIDIC contracts, they are usually contained in the Part II Conditions, and the minimum value for I.C.B. contracts is given in the Appendix to the Form of Tender. In all cases, if the valuation of the interim payment covering value of work executed and materials on site does not reach the stipulated minimum, payment is held over until the next interim certificate is due or requested, as the case may be.
- (k) Resident Engineers should consult the Engineer or their Project Co-ordinator as to the distribution of copies of interim certificates and supporting data. In all cases, however, one copy is to be forwarded to the contractor together with a copy of the amended detailed statement.
- (1) All certificates must be typewritten. Print-outs are acceptable for supporting

statements. Any corrections must be signed by the issuing officer and in no case is correcting fluid to be used.

### **7.11 Certificate of Variation of Works; Certificate of Adjustment of Contract Sum**

Certificates of Variation must be raised for the following:

- 1) Work instructed on Site instruction Forms or A.P.P.'s (or by any of the other methods noted in Chapter 6.04) and which is not explicitly or implicitly included in the works indicated in the contract documents.
- 2) Changes-in 'rate or price-consequent upon change in quantity or total Contract Sum, such as is provided under Clause 25(b) of the 203A Form Conditions of contract, or Clause 52(2) & (3) of the 203 CEWI and FIDIC versions, or in Clause 52 (2) of the I.C.B. "Conditions".

Although Certificates of Variation incorporate formal confirmation of instructions, they are less concerned with instruction than with authorisation and it is important to realise that two authorisation aspects are involved. First is contractual authorisation which legitimises variation under provisions contained in the Conditions of Contract; second is financial authorisation by Government which enables it to control and predict expenditure on the project.

The Engineer's powers for varying the works are given in Clauses 5 and 24 of the Form 203A Conditions of Contract and in Clause 51 of the Form 203 CEWI, FIDIC and I.C.B. versions. The Engineer has no authority to order variation except as these clauses provide. Further detail and comment on these powers is given in Section D 3 etc., of Table APP/3.

The regulations governing financial authority for ordering and valuing variations are contained in Departmental Circular KPKR 6:88. The Circular's requirements, particularly those for approval by committee, must be understood and complied with when Certificates of Variation of Works are prepared and issued.

Both aspects of authorisation, contractual and financial, must, of course, be observed when the instruction is first contemplated on site, long

before the certificate is issued.

Points to note in connection with the preparation and issuing of Certificates of Variation of Works are as follows.

- a) The Certificates must be prepared (type written) on form JKR 203V - Pin 4/83 - Certificate of Variation of Works. An example of a completed Certificate is given in Figure 7G on Pages 7/22--24.
- b) The forms are to be consecutively numbered for each contract and where appropriate should quote the number(s) of the A.P.P.(s) on which they are based - they can aggregate up to three separate originating instructions.
- c) The forms must be signed by the Engineer and are to be acknowledged by the contractor on the last page. Although the Engineer signs the Certificates, he must observe the requirements for obtaining authorisation and the financial limits, all contained in Circular KPKR 6:88.
- d) The Certificates value the work and show the effect on the Contract Sum but do not quote the New Contract Sum.  
The valuation of variations is based either on estimated or completed work quantities and on existing or agreed new\* unit rates as appropriate. Rules for the application of existing rates, or the adoption of new rates, are given in Clause 25 of the form 203A Conditions of Contract and Clause 52 of the 203 CEWI, FIDIC and I.C.B. versions.  
For the purpose of interim payment, provisional or "Star" rates determined by the Engineer can be used, providing the variation has been authorised in accordance with Circular KPKR 6:88 and pending the approval of finally adopted rates, also in accordance with the Circular.
- e) The Resident Engineer or other officer preparing the Certificate of Variation of Works is also required to prepare and attach a Certificate of Adjustment of Contract Sum (P.P.J.H.K.). When completed, the form indicates the original Contract Sum, the total net value of all

previous adjustments, the value of the current variation and thus the New Contract Sum. A copy of a blank form is given in Figure 7H on Pages 7/25 - 26 and regulations governing its use are contained in Circular KPKR 9:88.

- f) Copies of originating instructions e.g. Site Instruction Forms, A.P.P.'s, etc., should be attached to the Certificate.
- g) The Certificate should be dated the day of signature by the Engineer.
- h) The form should contain no typing or other corrections - in particular correcting fluid should not be used.

It has already been noted that Certificates of Adjustment of Contract Sum have to be attached to Certificates of Variation of works. Certificates of Adjustment of Contract Sum are also used for other arrangements which give rise to a change in Contract Sum including,

- (i) work which is included in the original contract but for which no unit rate is given; eg. work chargeable to original Daywork, P.C. or Provisional Sum items,
- (ii) changes in quantities between those quoted in the B of Q and those actually required which do not arise as a result of variation instructions noted in 1) on page 7/19,
- (iii) awards made in response to contractors' claims and (iv) final measurement determining the Final Contract Sum to be paid.

As previously noted Certificates of Adjustment of Contract Sum are prepared on standard forms (PPJHK) a blank copy of which is given in Figure 7H on pages 7/25-26 and regulations governing its use are contained in Circular KPKR 9:88.

In connection with item (ii) above, it may be noted that Clause 51(2) of the FIDIC Conditions of Contract, exempts simple changes in quantity from the requirement for written variation instruction. However, whilst this is the contractual position, the requirements of governmental financial control demand that the changes must be formalised and this is done on a Certificate of Adjustment of Contract Sum. Strictly speaking, it is not necessary to prepare the certificate until the-executed quantities exceed the Billed quan-



ties, but from a practical point of view, it is desirable to do so as soon as it is clear that the Billed quantities will eventually be exceeded. Whichever Conditions of Contract form is used, approval under the Circular KPKR 6:88 regulations is not required for simple changes in quantity which do not otherwise constitute a variation.

Once the Certificate of Adjustment has been duly authorised, signed, issued and endorsed by the contractor, the New Contract Sum indicated on the form can be regarded as formally adopted. It should be quoted in place of the original Contract Sum on payment certificates and used for the determination of progress data, etc.

### **7.12 Rate Fixing**

For work executed as Variations and for which no applicable unit rate exists in the original B of Q, it is necessary for the Engineer to agree or fix new rates (unless Daywork is instructed).

Except in the case of large contracts which have their own Measurement Engineer or QS and supporting staff, rate fixing work is likely to be prepared for the Engineer by the QS Section of the JKR regional office, or HQ. However, the following notes are provided for the benefit of site staff who may be involved in any rate fixing activity.

Unless rates for nearly similar work exists in the B of Q, which can be adapted for the new item, it is usual to prepare a new rate valuation from first principles, as a first step. The make up of rates is based on the cost of:

- Plant,
- Labour,
- Materials, and
- Overheads and Profit.

For plant, it is necessary to establish the hourly output of individual machines and the normal number of operational hours achieved per annum. Annual owning and operating costs are determined and the plant cost per unit quantity arrived at. Plant manufacturer's handbooks, sales organisations and standard reference works should be consulted for the data involved.

For labour, contractor's payrolls can be consulted for rates actually paid, which should be checked against data released by government

labour offices. The payroll rates are subject to additions to allow for EPF, SOCSO, insurances, annual leave, sick leave, bonus, overtime and severance benefits. The all-in hourly rate is then applied to the estimated output to arrive at the labour element of cost per unit quantity of the item.

For materials which contribute significantly to the makeup of the rate, the Resident Engineer should obtain at least two quotations together with the contractor's actual invoices, all of which should preferably include delivery to site and which must show the trade discounts obtained. To these prices must be added allowances for unloading, handling and reasonable wastage.

To the total of the three main elements of cost dealt with above must be added overhead and profit. The contract itself may specifically quote a percentage figure for this, or it may be indicated in figures required as oncosts to P.C. Sums. Generally speaking, the figure should range between 15-25% depending on the nature of the project and the risks involved.

For further detailed guidance that may be required on the subject of first-principle rate fixing, site staff should consult the QS Section of the JKR regional office or JKR HQ.

It is widely acknowledged that first-principle methods tend to provide rates which are higher than those resulting from competitive tender. The calculated rate should therefore be checked against any similar rates found in other JKR contracts undertaken in the same area.

### **7.13 Variation of Price (Escalation)**

Some roadwork contracts, particularly those of protracted duration, contain Variation of Price (V.O.P.) provisions to allow for increases or decreases in the prices of materials etc., from those ruling at the time the tender was prepared. If such allowance is made, it is contained in special Provisions annexed to the Conditions of Contract in the case of Form 203A and 203 CEWI contracts, and in the case of FIDIC and I.C.B. contracts in Part II of the "Conditions". It is important that all staff responsible for assessing V.O.P. payment should carefully study the provisions for their particular contract and ensure that only payments in accord with those

provisions are processed.

The provisions usually concern the submission, checking and recording of data, the limitation of quantities by scheduled estimates in the contract and the computation of the V.O.P. sum due to the contractor.

V.O.P. practice adopted by the Department for roadwork contracts uses the base rate method as opposed to index systems, and materials to which V.O.P. provisions apply are normally limited to:

- (i) mild steel and high tensile steel reinforcing bars,
- (ii) cement,
- (iii) diesel and fuel oil, and
- (iv) bitumen

V.O.P. adjustments are not admissible on any materials not specifically included in the contract provisions.

Current rates for all materials quoted in (i)-(iv) are published in the Statistic Department's Special Release No. 1 (for Civil Engineering Works). The V.O.P. adjustment to the contract price is usually determined on a monthly basis and generally computed as the product of the quantity of material delivered to the site multiplied by the difference between the Special Release rate for the month in which the tender closed and the Special Release rate for the month of delivery.

V.O.P. adjustments are usually evaluated by the Engineer and checked by the JKR regional office or HQ QS Section, but the member of the site supervision team responsible for measurement work must obtain the required monthly returns, invoices and delivery notes from the contractor and verify them by site checking, or other appropriate means.

V.O.P. payment adjustments are made in interim certificates but overall checks should be applied periodically, and ultimately for the Final Account, against measured work items etc, with suitable allowances for wastage and temporary work - all, of course, subject to the limits established in the V.O.P. regulations contained in the Supplementary Provisions or Part II Conditions. Staff responsible for measurement work should bear in mind that prices can go either up or down, so that it may be appropriate to certify

deductions for V.O.P. They should therefore ensure that the contractor submits regular returns for the operating hours and fuel consumption of plant and for the procurement of materials, even though he is making no claim for V.O.P. payments.

### **7.14 Claims**

Although the careful preparation of contract documents and effective site supervision can do much to reduce the number and value of contractors' claims, it is unlikely that they will ever be entirely eliminated. Much of the work involved in the assessment and settlement of claims is handled, not by site staff, but by specialist officers working in regional JKR offices or JKR HQ.

However, there are a number of essential steps which need to be taken by site staff when the contractor notifies his intention to claim, or when it becomes obvious that a claim situation is developing. The more important of these are listed below.

- a) Keeping comprehensive records of claim events and circumstances.
- b) Recording relevant data e.g. dates, times, weather and plant, labour, materials and overhead items involved.
- c) Checking records presented by the contractor and refuting any found to be erroneous or inaccurate.
- d) Deciding on any steps that will mitigate the on-going effects of claim situations.
- e) Reporting to superiors on the submission of claims or situations arising.
- f) Assisting with the preparation of evaluation reports.

Guidance on all these points is given in a separate Appendix to this manual - "Dealing with Claims under Roadwork Contracts". Additionally, the Appendix contains information in connection with grounds for claims, their contractual basis, procedures to be adopted and the principles of, and detailed approach to, the evaluation of various classifications of claims.

Settlement of the agreed values of claims is effected by issuing a certificate of Adjustment of Contract Sum (see Chapter 7.11e) for the amount on Form 203V. The whole process of

determination and payment is subject to the approval requirements, etc., contained in Circular KPKR 6:88 and these must be carefully observed by all officers involved in the process. Site staff should make no commitment as to acceptance of a claim or its evaluation until approval under the terms of Circular KPKR 6:88 has been given nor should they make any prior provision for interim payment, or adjustment of quantities, or sums, in connection with claims presented by the contractor.

### **7.15 Final Account and Certification**

Although progressive measurement throughout the construction period, together with comprehensive and accurate interim valuation is encouraged, it remains necessary to undertake a thorough and separate final measurement exercise for the whole completed works, under which the total quantity for each item is re-examined and re-computed. The exercise should be based on actual site measurement or the As Built Drawings. When taking measurements from As Built Drawings, it should be remembered that they may show dimensions constructed in excess of those indicated on the original Drawings, or subsequent instructions, and that the excess quantity should not be paid for by the Employer.

The procedure for preparation of the Final Account varies, according to which Conditions of Contract form is used, the most important difference being the fact that the form 203A Conditions have no requirement for the holding of retention as in the case of the 203 CEWI, FIDIC and ICB versions.

Provisions covering the Final Certificate in the Form 203A Conditions are contained in Clause 48 of the document. The clause requires the contractor to submit his final statement together with all supporting documentation not later than 3 months after the date of Practical Completion. The Engineer is required to issue the Final Certificate within three months of the date of expiry of the Defects Liability Period, or of the date of the Certificate of Making Good Defects whichever is the later. There is also a requirement for a declaration or certification confirming that all wages and statutory contributions

have been paid to, or for, the contractor's workmen. The Final Certificate must not be issued before the end of the Defects Maintenance Period nor before the date of the Certificate of Making Good Defects, but the penultimate or prior payment certificate may be issued as soon as possible after the submission of the Contractor's final account. Any such certificate should be subject to adjustment for any outstanding, defective (or potentially defective) work at the time it is issued.

In the 203 CEWI and T.C.B. Conditions final certification and payment arrangements are dealt with in Clause 60 (10) and (11). They allow for release of one half of the retention money when the Certificate of Completion for the whole of the works is issued and subject to confirmation of payment of wages and statutory contributions to workmen. The contractor may apply for full release of retention at this stage in exchange for the provision of a bank guarantee. Within four months of the date of the Certificate of Completion, the contractor is required to submit a complete and detailed Final Account and the Engineer prepares a Final Certificate releasing the outstanding half of the retention (or the Retention Guarantee) when the Maintenance Certificate is issued.

In the case of the FIDIC Conditions, final certification and payment arrangements are set out in Part II of the Conditions (Clause 60), covering retention release and the period for issuing the Final Certificate after submission of the contractor's Final Account. It should be noted that in the FIDIC case, the release of the outstanding retention at the end of the Maintenance Period is not conditional upon the granting of the Maintenance Certificate - see Clause 62(l).

For 203 CEWI, ICB and FIDIC contracts, penultimate certificates should be prepared as soon as possible after receipt of the contractor's Final Account. The certificate should be based on the Engineer's "estimated final sum" allowing for all payments and deductions due but, (if necessary) excluding all unsettled or disputed contractor's claims.

### **7.16 Budgetary Control**

Certificates of Variation of Works and

Certificates of Adjustment of Contract Sum provide financial authorisation and control by establishing the New Contract Sum. However, because preparation (involving, as it often does, rate evaluation) may be protracted, and because non-variation increases in quantity may not be dealt with until the original quantities are actually exceeded, they do not provide a very current or accurate projection of ultimate cost, which both the Department and the Treasury require. Accordingly, the Resident Engineer for every roadwork contract must prepare at the end of each month, a Schedule of Predicted Final Cost. The Schedule must show, in the sequence indicated:

- a) the New Contract Sum recorded in the P.P.J.H.K. Form attached to the last previously issued Variation Order (See Chapter 7.11),
- b) the estimated value of each Site Instruction Form or APP involving increased or decreased cost not already covered by a Variation order,
- c) the value of any other anticipated increase or decrease in quantities,
- d) the estimated net value of any other anticipated variation, and thus:
- e) the Predicted Final Cost.

The Schedule of Predicted Final Cost is to be presented in the Resident Engineer's Two Monthly Progress Report for the appropriate month (see Chapter 9.07).

The Schedule of Predicted Cost is concerned only with construction cost but Standard Detailed Abstract returns are made by the Department which additionally cover items such as land acquisition, consultancy service and utilities costs. The revisions to the standard Detailed Abstracts which become necessary from time to time may be dealt with off-site but the Resident Engineer should consult the Engineer, Project Co-ordinator, or other superior officer to determine whether or not he is required to undertake the revision or provide data for it.

### **7.17 Mandatory Duties**

Measurement and Financial Control. duties as described in this chapter which are mandatory for the Resident Engineer, or which he must

ensure are undertaken by his staff, are as follows:

- i) Familiarisation with the B of Q and its Preambles.
- ii) Routine monthly on-site and "from-the-Drawings" measurement.
- iii) Special "Extra Work Item" measurement.
- iv) Preparation of standard measurement/computation forms.
- v) Recording of measurement/computation on standard forms.
- vi) The keeping of progressive measurement files.
- vii) The keeping of Progress/Measurement Drawings.
- viii) Final Measurement computation.
- ix) The recording and agreeing of Daywork data.
- x) The checking of V.O.P. accounts.
- xi) Preparation of Interim Certificates\*.
- xii) Preparation of Certificates of Variation of Works/Adjustment of Contract Sum or separate Certificates of Adjustment of Contract Sum.
- xiii) Fixing of unit rates\*.
- xiv) Preparation of Schedule of Predicted Final Cost.

\* -----

Unless taken over by the QS in the JKR regional or HQ office.

### **7.18 The Importance of Independent Control**

As a conclusion to this chapter, it is necessary to stress an important point of principle. It is customary for the contractor to be strongly involved in measurement matters. He collects and presents physical measurement data, produces Daywork records, prepares accounts and valuations and probably contributes to rate fixing exercises. Most of these activities are the ultimate responsibility of the Engineer and his staff, or are at least intended to be undertaken jointly. It is vital that the role of the supervision team in measurement does not become one of simply "rubber stamping" work done by the contractor and that the Resident Engineer and his staff exercise full and careful control and checking of all the processes leading to payment..

*\* Unless taken over by the QS in the JKR regional or HQ office.*

FIGURE 7A

JABATAN KERJA RAYA, CAWANGAN JALAN

SITE MEASUREMENT FORM

NO: /

CONTRACT NO: / /

.....

ITEM NO	DESCRIPTION	LOCATION	DATE MEASUREMENT
---------	-------------	----------	------------------

FOR CONTRACTOR:	FOR JABATAN KERJA RAYA
.....DATE.....	.....DATE.....
.....DATE.....	.....DATE.....
SITE AGENT	RESIDET ENGINEER

NO: 4 /

CONTRACT NO:        /        /

[illegible]

**FOR JABATAN KERJA RAYA**

.....DATE..... DATE.....

**RESIDENT ENGINEER**

JABATAN KERJA RAYA, CAWANGAN JALAN SITE MEASUREMENT FORM NO: 4 /

.....

[illegible]

**FOR JABATAN KERJA RAYA**

.....DATE.....DATE.....

**RESIDENT ENGINEER**

FIGURE 7D

JABATAN KERJA RAYA, CAWANGAN JALAN				SITE MEASUREMENT FORM				No: 3/	
CONTRACT No:    /    /									
ITEM No: 3/		DESCRIPTION: Pipe Culvert			LOCATION:			DATE MEASURED:	

  

Ch.	Culvert Size (DIA)	Type	Length (M)	Structure Type		Inlet Invert Level (H)	Outlet Invert Level (H)	Profile Level (M)	
				Inlet	Outlet			Line.....	Line.....

  

N	660mm
P	150mm
t	50mm

SECTION A - A

(CONCRETE SURROUND)

FOR CONTRACTOR :  <div style="text-align: right;">DATE .....</div> <div style="text-align: right;">DATE .....</div> SITE AGENT	FOR JABATAN KERJA RAYA :  <div style="text-align: right;">DATE .....</div> <div style="text-align: right;">DATE .....</div> RESIDENT ENGINEER
--	---



FIGURE 7E

JABATAN KERJA RAYA, CAWANGAN JALAN CONTRACT No:     /     /					<b>DAYWORK RECORD</b>			No:	
WORK DESCRIPTION :					LOCATION :		DATE STARTED : COMPLETED :		
DATE	PLANT			PLANT HOURS	DATE	LABOUR			MAN DAYS
	TYPE	No.	TIME OF WORKING			TYPE	No.	TIME OF WORKING	
MATERIALS :									
FOR CONTRACTOR :					FOR JABATAN KERJA RAYA :				
..... DATE .....					..... DATE .....				
..... DATE .....					..... DATE .....				
SITE AGENT					RESIDENT ENGINEER				

7/12

FIGURE 7F

<p>KERAJAAN Malaysia JABATAN KERJA RAYA PERAKUAN BAYARAN INTERIM NO.....</p>	<p>JKR 66(Sem. 1988)</p>
<p>ANGGARAN PEMBANGUNAN 19                      KEPALA:                      PECAHAN KEPALA:</p> <p>TAJUK KERJA                      :</p>	
<p>NAMA &amp; ALAMAT KONTRAKTOR:</p>	
<p>NO. KONTRAK</p>	
<p>JUMLAH HARGA ASAL KONTRAK:</p>	<p>\$</p>
<p>PELARASAN KEPADA JUMLAH HARGA ASAL KONTRAK:</p>	
<p>Tambahan seperti di P.P.J.H.K. No :</p>	<p>\$</p>
<p>Potongan seperti di P.P.J.H.K. No.:</p>	<p>\$</p>
<p>Tambahan/Potongan</p>	<p>\$</p>
<p>HARGA BARU KONTRAK:</p>	<p>\$</p>
<p>=====</p>	
<p>NO PENILAIAN INTERIM: _____</p>	
<p>TARIKH PENILAIAN                      : _____</p>	
<p>NILAI KERJA DILAKSANAKAN DAN BAHAN-BAHAN DAN BARANG-BARANG TEKPASANG</p>	
<p>1. Kontraktor Utama</p>	
<p>(a) Nilai kerja yang dilaksanakan.....</p>	<p>\$</p>
<p>(b) 75 % dari nilai bahan-bahan dan barang-barang takpasang.....</p>	<p>\$</p>
<p>2. Subkontraktor-subkontraktor Dinamakan (Jumlah b/h dari Lampiran A1-Jumlah Ruangan 4).....</p>	
<p>3. Pembekal-pembekal Dinamakan (Jumlah b/h dari Lampiran A2-Jumlah Ruangan 4).....</p>	
<p>PELARASAN TURUN NAIK HARGA</p>	
<p>Kenaikan/penurunan harga bahan-bahan (Sila lihat Lampiran B* untuk keterangan lebih lanjut)</p>	<p>\$</p>
<p>KURANGKAN</p>	
<p>1. Wang Tahanan (jika berkenaan)</p>	
<p>(a) Kontraktor Utama.....</p>	<p>\$</p>
<p>(b) Subkontraktor-subkontraktor Dinamakan (Jumlah b/h dari *Lampiran A1-Jumlah Ruangan 5).....</p>	<p>\$</p>
<p>(c) Pembekal-pembekal Dinamakan (Jumlah b/h dari Lampiran A2-Jumlah Ruangan 5).....</p>	<p>\$</p>
<p>2. Bayaran Interim yang terdahulu.....</p>	
<p style="text-align: right;">Dibawa Ke hadapan:</p>	
<p style="text-align: right;">\$</p>	
<p>-----</p>	
<p>*Masukkan lampiran yang berkaitan sama ada untuk kontrak bangunan atau kejuruteraan awam.</p>	
<p>S.P. KPKR.....</p>	
<p>Muka 1</p>	

FIGURE 7F  
continued

		JKR.66 (Sem. 1988) (Samb.)	
		Dibawa dari muka surat 1 :	\$
<b>TOLAK</b>			
1. Bayaran balik wang pendahuluan ke atas Kontrak/bayaran sementara ke atas Peralatan dan Loji Berjentera (Jika berkenaan)*			
(a)	Kontraktor Utama.....	\$	
(b)	Subkontraktor-subkontraktor Dinamakan (Jumlah b/h dari Lampiran A1-Jumlah Ruangan 6).....	\$	
2. Ganti Rugi Tertentu dan Ditetapkan @ \$.....tiap-tiap satu.....dari .....			
	.....ke.....	\$	
3. Premium insurans dan caruman PERKESO yang dibayar oleh Kerajaan.....			
		\$	
4. Gaji pekerja yang dibayar oleh Kerajaan.....			
		\$	
5. Kos kepada Kerajaan akibat kegagalan Kontraktor mematuhi arahan P.P.....			
		\$	
6. Potongan-potongan lain yang dibenarkan			
(a)	Penahanan untuk cukai (jika berkenaan)	\$	
(b)		\$	
(c)		\$	
		\$	\$
<b>BAYARAN DISYORKAN KENA DIBAYAR</b>		\$	=====
..... (Juru Ukur Bahan/Pegawai Pengesyor).			
<b>Bayaran diperakukan</b>			
(a)	Kepada Kontraktor Utama.....	\$	
(b)	Kepada Subkontraktor-subkontraktor Dinamakan (Jumlah b/h dari Lampiran A1-Jumlah Ruangan 10) ...	\$	
(c)	Kepada Pembekal-pembekal Dinamakan (Jumlah b/h dari Lampiran A2-Jumlah Ruangan 9) ...	\$	
(d)	Kepada Penerima Hak-Penerima Hak yang diluluskan (Jumlah b/h dari Lampiran A3-Jumlah Ruangan 9). ...	\$	
		\$	=====
(Ringgit:.....)			
Tarikh:..... (Pegawai yang Diberi Kuasa untuk Memperakukan)			
<b>NOTA</b>			
1. Jumlah amaun yang dibayar di bawah Perakuan ini ialah \$..... (Untuk diisi oleh pegawai yang menyediakan baucer. Sesalanan Perakuan hendaklah dikembalikan kepada Juru Ukur Bahan/Pegawai Pengesyor).			
2. Bayaran wang pendahuluan yang telah dibuat sehingga ke tarikh ini ialah \$..... (untuk diisi oleh Juru Ukur Bahan/Pegawai Pengesyor).			
* Potong jika tidak berkaitan.			
Muka 2			

FIGURE 76

(JKR.203V-Pin. 4/83)

MALAYSIA  
KERAJAAN .....

JABATAN KERJA RAYA

Kepala Perbelanjaan ..... Tahun .....

Pecahan Kepala .....

PERAKUAN PERUBAHAN KERJA NO. .... SATU ..... (\*Tambahan/Ketenggahan)  
Certificate of Variation of Works No. .... (\*Addition/Omission)

TAMBAHAN (1.35%)

Pejabat: JURUTERA PENGUASA KANAN,  
JKR Unit FELDA, Pahang,  
.....  
28007 Temerloh  
.....

Tarikh: 26 JAN 1988

Kepada KEN CONSTRUCTION & TRADING SDN. BHD.,  
.....  
125 M, SS 21/37, Damansara Utama,  
.....  
47400 Petaling Jaya.  
.....  
(Kontraktor)

KONTRAK NO. JKR/PERS/IP/JR/8/85 .....

KONTRAK UNTUK Pembinaan dan Penyiapan Jambatan  
.....  
Menyeberangi Sg. Tersang, Raub, Pahang.  
.....

JUMLAH HARGA KONTRAK ASAL: M\$ 494,229.90 .....

Berikutan Arahan Pegawai Penguasa No. 2 ..... bertarikh 9/7/86  
By virtue of Superintending Officer's Instruction No. .... dated .....

tuan telah diarah membuat perubahan kepada Kontrak seperti berikut:  
you have been instructed to carry out variation to the Contract as follows:

(a) Pembinaan sebuah "Retaining wall" tambahan.  
.....  
.....

(b) Membekal dan memasang braket paip air pada jambatan.  
.....  
.....

FIGURE 7G  
continued

(c) .....  
.....

[Salinan fotostat Arahan P.P. No. ...<sup>2</sup>..... (Borang JKR. 203U/82) dikepikan bersama-sama ini]  
[Photostat copy of S.O.'s Instruction No ..... (Form JKR. 203U/82) is attached herewith]

2. Perubahan-perubahan tersebut akan menjadi \*tambahan kepada/~~ketiadaan~~ ~~daripada~~ Kontrak  
The above variations shall constitute an \*addition to/~~omission from~~ the Contract

dan telah dinilai mengikut Klausu 25 Syarat-Syarat Kontrak sebanyak : Ringgit .....  
and has been valued in accordance with Clause 25 of the Conditions of Contract for:

Enam Ratus Lapan Puluh Dan Sen Lapan Puluh (M\$ 6,680.81  
Satu Sahaja:.....)

Jumlah wang ini akan \*ditambah kepada/dipotong dari Jumlah Harga Kontrak.  
This sum shall be \*added to/deducted from the Contract Sum.

3. Penyata ukuran dan penilaian perubahan tersebut \*dikembarkan/tidak dikembarkan bersama-sama ini  
Statement of measurement and valuation of the said variation \*is/is not attached herewith.

4. Sila akui penerimaan perakuan ini dan mengembalikan semua salinannya (kecuali satu salinan  
Please acknowledge receipt of this certificate and return all copies thereof (except one copy  
untuk simpanan tuan sendiri) kepada P.P., setelah ditandatangani dan saksikan dengan sepenuhnya.  
for your own retention) to the S.O., duly signed and witnessed.

n. IR. LONG SEA SEUM  
JURUTERA KERJA (T/K)  
JKR UNIT LKTP,  
PHG. BARAT, BENTONG.

t.t. Ir. A. Narayanan  
Jurutera Penguasa Kanan  
JKR Unit Felda Pahang  
Temerloh.

Tandatangan Pegawai Penguasa  
Signature of Superintending Officer

(Nama penuh .....)  
Name in full

Disemak oleh

.....  
Jurutera Bahan  
JKR Unit Felda Pahang  
Temerloh. *Dull*

Jawatan .....  
Designation

FIGURE 7G  
continued

\*Saya/kami yang menandatangani di bawah ini mengaku iaitu \*saya/kami bersetuju dengan penilaian  
 \*I/We the undersigned hereby acknowledge that \*I/we agree to the valuation

seperti ditunjuk di atas dan menerima penyelarasan kepada Jumlah Harga Kontrak seperti tersebut.  
 as shown above and accept the adjustment to the Contract Sum as stated.

Tandatangan Saksi  
 Signature of Witness

Tandatangan Kontraktor  
 Signature of Contractor

(Nama penuh . . . LEE SAI PAN . . .)  
 Name in full  
**KEN CONSTRUCTION & TRADING SDN. BHD.**  
 No. 6A & B, Jalan Datuk Sulaiman  
 Alamat . . . Taman Tun Dr. Ismail . . .  
 Address . . . 60000 Kuala Lumpur . . .  
 Tel: 03-7179933  
 Telex: MA 37982 KENCON

(Nama penuh . . . TAN BOON KANG . . .)  
 Name in full  
**KEN CONSTRUCTION & TRADING SDN. BHD.**  
 No. 6A & B, Jalan Datuk Sulaiman  
 Taman Tun Dr Ismail  
 . . . 60000 Kuala Lumpur . . .  
 Cap Kontraktor Tel: 03-7179933  
 Contractor's Stamp MA 37982 KENCON

Tarikh . . . 18<sup>th</sup> JAN 1988 . . .  
 Date

Tarikh . . . 18<sup>th</sup> JAN 1988 . . .  
 Date

s.k. Ketua Audit Negara

- Pengarah Cawangan . . . . .  
 Ibu Pejabat JKR, Kuala Lumpur
- Pengarah Cawangan Ukur Bahan  
 Ibu Pejabat JKR, Kuala Lumpur
- Pengarah JKR Negeri . . . . .
- Jurutera Daerah/Projek . . . . .
- Bank/Syarikat Insurans. . . . .  
 (yang menjamin pelaksanaan kontrak)

\* Potong dimana tidak berkenaan.  
 Delete where not applicable.

L—J.P.N., K.L.

FIGURE 7H

KERAJAAN .....

JABATAN KERJA RAYA.

Kepala Perbelanjaan ..... 19 ..... Pecahan Kepala .....

PERAKUAN PELARASAN JUMLAH HARGA KONTRAK  
PELARASAN JUMLAH HARGA KONTRAK NO. .... ( ) \*

Rujukan: ..... Pejabat:.....  
.....  
.....

Tarikh:.....

Kepada: .....  
.....  
.....  
( Kontraktor )

KONTRAK NO: .....

KONTRAK UNTUK:.....  
.....

JUMLAH HARGA ASAL KONTRAK: M\$.....

Menurut klausa-klausa yang berkecualan dalam Syarat-syarat Kontrak,  
sejumlah wang Ringgit + .....  
(M\$.....) sahaja adalah ditambah kepada/dipotong  
daripada Jumlah Harga Kontrak seperti berikut:

Klausa	Sebab **	Jumlah (\$)	
		Tambahan	Potongan
a.			
b.			
c.			
d.			
Jumlah -			
Jumlah Bersih - -			

\* Isi "Tambahan" atau "Potongan" dimana berkecualan dalam kurungan.

+ Isikan Jumlah Bersih. - -

\*\* Catatkan NO. PPK yang berkecualan bagi kerja perubahan.

...2/-

FIGURE 7H  
continued

-2-

2. Butir-butir pelarasan adalah dikembalikan bersama-sama ini.

3. Dengan jumlah tambahan/potongan diatas, Harga Baru Kontrak sehingga dan termasuk Perakuan ini adalah seperti berikut:-

Harga Asal Kontrak	\$
Tambahan/Potongan * sehingga P.P.H.J.K. No:	\$
Tambahan/Potongan * melalui P.P.J.H.K. ini:	\$..... \$.....
Harga Baru Kontrak	\$ .....

4. Sila aku terima Perakuan ini dan mengembalikan semua salinannya (kecuali satu salinan untuk simpanan tuan sendiri) kepada Pegawai Penguasa, setelah ditandatangani dan disaksikan dengan sempurnanya.

.....  
Tandatangan Pegawai Penguasa.

Nama: .....

Jawatan:.....

Saya/kami yang menandatangani di bawah ini mengaku iaitu saya/kami \* bersetuju dengan dan menerima pelarasan kepada Jumlah Harga Kontrak seperti ditunjuk di perenggan 3 diatas.

..... Tandatangan Saksi	..... Tandatangan Kontraktor
Nama:.....	Nama:.....
Alamat: .....	..... Cop Kontraktor
.....	
Tarikh:.....	Tarikh:.....

s.k. Ketua Audit Negara.

Pegarah Cawangan .....

Pegarah Cawangan Ukur Bahan.

Pegarah JKR. negeri .....

Jurutera Daerah/Projek .....

Bank/Syarikat Insurans .....

\* Potong dimana tidak berkaatan.