

## Variations (Clause 60)

Consider the following changes in a construction site:

- (1) The ER requested and the Contractor changed its agent.
- (2) The Contract specifies Borrow Area A for earth materials but later only Borrow Area B was available.
- (3) Add “or as directed by the Engineer” to the following Notes in the drawing:  
Class I lining where  $F(A)$  greater or equal 1.0  
Class II lining where  $F(A)$  less than 1.0
- (4) The site circumstances require the Contractor changed its method of construction.
- (5) The Contractor has prepared traffic scheme A based on earlier decision of Traffic Management Liaison Group (TMLG) but later TMLG changed its earlier decision due to change in traffic conditions.

## Variation (Clause 60)

1. What is variation?
2. Engineer's power to order
  - (a) Changes/additions – some changes are not variation, why?
  - (b) Omission
  - (c) Work shown on drawings but not in BQ
3. Effect of variation
  - (a) Cost implication – What is the essential cost?
  - (b) Time implication -
4. What is the pitfall of specifying levels and/or gradient?
  - (a) In cut slopes
  - (b) In pile toe levels
  - (c) In drainage plans

## Variation (Clause 60)

- (1) Necessary for completion of the Works
- (2) Power to order any variation that for any other reason shall in his opinion be desirable for or to achieve the satisfactory completion and functioning of the Works

Variation may include

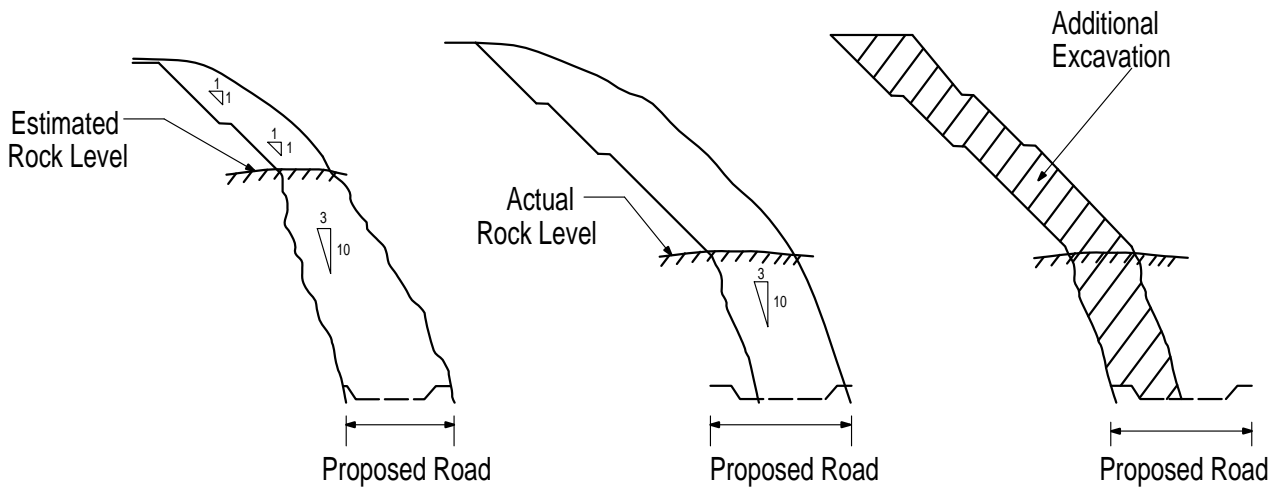
- (a) Additions, omission...changes in quality, form, character...
- (b) Changes to any sequence, method or timing specified in the contract
- (c) Changes to the Site or entrance to and exit from the Site.

## Variation (Clause 60)

- (a) Piling changed into spread footing because of shallow rock level
- (b) Part of the abutment modified to save time necessary for watermain diversion
- (c) The Contractor proposed to change the size of reinforcement to facilitate concreting
- (d) The ER approved the use of parapet which was subsequently found not complying with specification
- (e) In (d), what is the position after the issue of maintenance certificate

Consider the contractual positions e.g time, cost etc of the above situations.

## Variation (Clause 60)



## Valuation

### Clause 61 (1)

- (a) Item of works omitted valued at rate set out in Contract
- (b) Any work of same or similar character under same or similar condition valued at rates set out in Contract
- (c) Any work not of the same or similar character nor carried out under same or similar condition, based on rate so far as may be reasonable

### Proviso

If the nature or extent of VO shall be such that in the opinion of the Engineer, any rate in any item of work is by reason of such variation rendered unreasonable or inapplicable than a new rate shall be fixed by the Engineer, using contract rate as the basis.

Comparison with Clause 63(b) – Disruption to the progress of the Works.

## Clause 60 – Variation

### For Design and Build Contract

- (1) The Supervising Officer may order in writing any Variation that is necessary for the completion of the Works or is in his opinion desirable for or to achieve satisfactory completion and functioning of the Works.....Provided that no Variation shall require significant alteration or modification in the design already checked under Clause 23 (2) without the consent of the Contractor which consent shall not be unreasonably delayed or withheld.
  - “Variation” means a change in the Employer’s Requirement which makes necessary the alteration or modification of the design, quality or quantity of Works.....
- (3) Any Variation ordered by the Supervisor may include a requirement for the Contractor to prepare and submit within 14 days.... a lump sum quotation in writing for complying.....
- (4) The Contractor may propose a Variation by submitting in writing .....a proposal together with sufficient details....to show
  - (i) the time construction of the Works can be reduced;
  - (iii) the quality of design and/or construction of the Works can be enhanced;
  - (iv) the Contract Sum can be reduced by the amount of the lump sum reduction that the Contractor can offer to the Employer;

## Bill of Quantities (Clause 59)

- (1) The Bill of Quantities shall be deemed to have been prepared and measurements shall be made according to the procedures... in the Method of Measurement
- (2) The quantities... in the Bill of Quantities are estimated quantities...
- (3) Any error in description in BQ or items omitted...Engineer shall correct any such error or omission...shall certify
- (4)(b) Actual quantity of units...be substantially greater or less than that stated in the BQ...
  - in the opinion of Engineer
  - such increase or decrease itself
  - shall render the rate for such item unreasonable or not applicable
  - the Engineer shall determine an appropriate increase or decrease of rate

## Bill of Quantities (Clause 59)

- (1) What triggers re-rating
  - (a) Method of construction changed
  - (b) Economics of construction changed
- (2) Which is the Key word?

## Bill of Quantities (Clause 59)

Example

<u>Quantity in Bill of Quantities</u>	<u>Rate</u>
500,000m <sup>3</sup>	100m <sup>3</sup>
<u>Actual Quantity</u>	?
300,000m <sup>3</sup>	

- (a) What are included in the rate?
  - (i) labour
  - (ii) plant
  - (iii) Overhead
- (b) What is the result of less quantities?