

**APPENDIX 5.2 CONSULTANTS REMUNERATION – FEES BASED ON A PERCENTAGE BASIS**  
**(Applicable only to certain old ongoing agreements)**

1. BACKGROUND

- 1.1 This Appendix describes the fee adjustment measures promulgated originally in Lands and Works Branch Technical Circular Nos. 9/84 and 2/85 (both subsumed and suitably adapted hereunder), but no longer applicable to new assignments since July 1989.
- 1.2 Fees for the investigation, design and construction stage services in respect of engineering projects under certain old but still ongoing consultancy agreements are calculated as a percentage of the cost of the works according to a fixed scale of percentage charges. The validity of such a scale relies on the assumption that there is a constant relationship between the cost of the works and the cost of the consultant in providing the service. However, the general trend is for the cost of works to rise substantially when the construction industry is booming and to fall dramatically during recession. Set against this, consultants' operating costs tend to rise steadily irrespective of these factors.
- 1.3 This Appendix sets out the measures to counter the effect that large and rapid variations in the level of tender prices have on consultants' fees which are calculated as a percentage of the cost of the works, viz. :-
- (a) a Consultants Remuneration Index (CRI) designed to take account of the overall trend in the level of tender prices and Consulting Engineer's operating costs; and
  - (b) provision to make further adjustments in the cost of the works where Uncharacteristic Tenders are accepted which are lower or higher than the level expected from the prevailing conditions which the Consultants Remuneration Index is designed to counter.
- 1.4 The adjustment of Percentage Scale Fee using CRI has subsequently been replaced by another system of inflation index, as promulgated in L&WB TC No. 9/89 effected on 1 July 1989, by the application of an index known as Civil Engineering Works Index (CEWI) (see **Appendix 5.3**).

2. CONSULTANTS REMUNERATION INDEX

2.1 Introduction

- 2.1.1 The Consultants Remuneration Index (CRI) has been developed as a means of adjusting the cost of works on which consulting engineers fees are calculated. Being a function of the Gross Domestic Product Deflator (GDP Deflator) which reflects the fluctuations in consulting engineer's operating cost from quarter to quarter and the Tender Price Index (TPI) for public building projects which reflects the fluctuations in tender prices from quarter to quarter, it links consulting engineers' fees to the prevailing conditions. A base of 100 points has been selected representing an equitable remuneration to

consulting engineers when the remuneration is based on the scales of fees currently in use. The Secretary, EACSB issues from time to time the CRI to departments who still have such old ongoing consultancy agreements. For information, the index from the 3rd quarter of 1982 to 4th quarter of 1983 are as follows :-

	<u>Period</u>	<u>CRI</u>
1982	3rd quarter	102
	4th quarter	105
1983	1st quarter	118
	2nd quarter	118
	3rd quarter	115
	4th quarter	113

..... 2.1.2 A resume of the basic principles and compilation of the CRI is included at **Annex A** for information.

## 2.2 Application

2.2.1 For those old ongoing engineering Investigation, Design & Construction (IDC) agreements for which the CRI adjustment method [No longer applicable since July 1989] has been adopted, the adjustment is in particular applicable to:

- (a) all new arrangements then in conjunction with anti-inflation measures which provide for design stage fees to be based on the Net Cost of the Works.
- (b) all existing agreements then where the consulting engineers have so requested.

2.2.2 (omitted)

2.2.3 (omitted)

2.2.4 (omitted)

## 2.3 Operation

2.3.1 Where applicable, the CRI is intended to adjust the cost of works of individual contracts for the purpose of fee calculation and shall operate as follows :-

- (a) (omitted)
- (b) on all cost of works as a percentage addition or deduction after all other additions or deductions on the cost of works provided under the agreement have been applied.
- (c) the CRI shall correspond to the quarter during which tenders for the contract have been received.
- (d) no adjustment will be made if the CRI lies between 95 and 105 points. The cost of works shall be adjusted upwards by 1% for every point that the index rises

above 105 points and shall be adjusted downwards by 1% for every point that the index drops below 95 points.

2.3.2 (standard clause omitted)

### 3. UNCHARACTERISTIC TENDERS

3.1 It has been recognized that if an uncharacteristically low tender is to be accepted, consultant's fees might be reduced to a level at which they could no longer provide an adequate service during the Construction Stage.

3.2 In certain agreements where such an uncharacteristically low tender has been accepted, an upward adjustment to the cost of works for the purpose of fee calculation might have been negotiated.

3.3 On rare occasions, Government might have accepted a tender which is uncharacteristically high (e.g. when time pressures precluded re-tendering). In such an instance, consultants might be over-remunerated for the effort they put into the works and a downward adjustment to the cost of works for the purpose of fee calculation might have been negotiated.

3.4 (standard clause omitted)

### 3.5 Procedures for dealing with uncharacteristically low tenders

#### 3.5.1 Application

3.5.1(a) For the purpose of fee calculation, upward adjustments to the cost of works of uncharacteristically low tenders might be applicable to contracts as approved by the EACSB and signed on or after 1st July 1982 [No longer applicable since July 1989].

#### 3.5.2 Operation

3.5.2(a) When a consultant considers that the accepted tender is uncharacteristically low, he may submit his justification to the Director's Representative for an initial upward adjustment in the cost of the works for the purpose of calculating interim fee. The justification shall be fully argued in the consultant's submission. For guidance, the following criteria (which are not exhaustive) may be used singularly or collectively :-

- (i) by the statistical analysis at **Annex B**,
- (ii) by visual inspection of a graph of all tenders received for the contract as at **Annex C**,
- (iii) from a comparison with the Engineer's estimate.

3.5.2(b) The upward adjustment of the tender price will establish a "floor value" for the contract and should be determined through methods described in paragraph 3.5.2(a) above and be submitted to the EACSB for approval. If an upward adjustment is approved by the

EACSB the difference between the accepted tender and the approved "floor value" should be expressed as a percentage increase and interim fees for the design stage should be based on the estimated final contract sum enhanced by the percentage. Similarly, interim fees for the construction stage should be based on the cost of the completed works to date enhanced by the same percentage. However, as the contract proceeds the validity of the original assessment of the "floor value" should be checked in the light of variations or any other changes and if considered necessary a revised "floor value" and percentage adjustment should be submitted to the EACSB for approval.

3.5.2(c) On completion of the contract when all claims have been assessed and the final contract sum is known, the Director's Representative should review whether the final cost is valid for the purpose of calculating final fees. If the final contract sum is not considered uncharacteristically low for the works executed, the final fees shall be based on the actual cost of the works in accordance with the provisions of the agreement. If the final contract sum is still considered uncharacteristically low and warrants an upward adjustment for the purpose of calculating final fees, a further submission shall be made to the EACSB reassessing the "floor value" in line with para. 3.5.2(a) above. (It should be noted that where the cost of the works exceeds the tendered sum as a result of increased quantities on remeasurement or variations priced at rates comparable with tendered rates, the original "floor value" and percentage adjustment will remain valid.)

3.5.2(d) Attention is drawn to the fact that contracts initially assessed as being uncharacteristically low are likely to give rise to legalistic claims and pressure to agree high rates for extra works. In reviewing the validity of the "floor value" for the purpose of calculating interim or final fees, the Director's Representative should take account of the magnitude of the claims settlement and the cost of extra works in relation to the resources expended by the consultant in dealing with these matters. (i.e. The payment to the contractor may be large while the Consultant's effort is small and vice versa).

### 3.6 Procedures for dealing with uncharacteristically high tenders

#### 3.6.1 Application

3.6.1(a) Similar to those for dealing with uncharacteristically low tenders, downward adjustments to the cost of works of uncharacteristically high tenders might be applicable to contracts as approved by the EACSB and signed on or after 1st July 1982.

#### 3.6.2 Operation

3.6.2(a) On the rare occasion when an uncharacteristically high tender has to be accepted, the Director's Representative shall have initiated action with the consultants to agree on a downward adjustment to the cost of works for the purpose of calculating fees. The adjustment shall operate on similar lines to those outlined in para. 3.5 for dealing with uncharacteristically low tenders. The arrangements negotiated with the consultants shall be submitted to the EACSB for approval.

4. ADJUSTMENT FOR BOTH CRI AND UNCHARACTERISTIC TENDERS

- 4.1. In cases where adjustment is to be made for both circumstances, the percentage adjustment in respect of the uncharacteristic tender must be made first as agreed by the EACSB, after which the agreed price will be further adjusted in respect of the rise or fall of the Consultants Remuneration Index.
- 4.2 It follows that the total adjustment finally to be applied to the tendered price is the product, and not the sum, of the two percentage adjustments.

## CONSULTANTS REMUNERATION INDEX

### 1. Basic principles and assumptions

For certain old existing consultancies, consulting engineers are to be remunerated through scales of fees for provision of service in respect of design and supervision of projects. The underlying assumption of those scales is that there is a relationship between the cost of construction of the works and the consulting engineers' cost for designing and supervising works. In the situation where the cost of works fluctuates widely in relation to the cost of design and supervision, an adjustment to the cost of works through a Consultants Remuneration Index (CRI), which is basically a ratio of relative changes to the cost of design and supervision and relative changes to the cost of construction of works, will be necessary. The CRI adjustment attempts to take account of the movements of tender prices due to boom and recession conditions.

### 2. Compliance

The CRI is derived from the factor of  $\frac{(\text{Gross Domestic Product Deflator})}{(\text{Tender Price Index})}$  expressed

as a percentage and normalised to a base of 100 points. For those agreements concerned, the Gross Domestic Product Deflator (GDP Deflator) published by the Census & Statistics Department is considered a good indicator of the cost of operating a consulting engineer's office for provision of service in respect of engineering projects. The Tender Price Index (TPI) for public building projects published in the Quarterly Economic Report of the Economic Services Branch is considered to reflect reasonably well the trend in the cost of engineering construction. The average of CRI over the 32 quarters from 3rd quarter of 1975 to 2nd quarter of 1983 has been taken as the datum of 100 points.

The Consultants Remuneration Index is compiled as follows :

- An Apparent CRI is obtained by expressing the factor  $\frac{(\text{GDP Deflator})}{(\text{TPI})}$  as a percentage.

APPARENT CRI

<u>YEAR</u>	<u>1ST QUARTER</u>	<u>2ND QUARTER</u>	<u>3RD QUARTER</u>	<u>4TH QUARTER</u>
1975	-	-	85	84
1976	79	80	83	84
1977	77	74	71	64
1978	65	64	60	59
1979	56	53	53	50
1980	50	49	49	47
1981	48	48	53	53
1982	57	57	65	67
1983	75	75	(73)	(72)

Number of Index	32
Sum of Index	2034
Average of Index	63.56

(73) & (72) - These figures not included in the calculation of the datum.

- The Apparent CRI is then normalised taking the average of the 32 quarters (63.56) as the datum at 100 points.

CONSULTANTS REMUNERATION INDEX

<u>YEAR</u>	<u>1ST QUARTER</u>	<u>2ND QUARTER</u>	<u>3RD QUARTER</u>	<u>4TH QUARTER</u>
1975	-	-	134	132
1976	124	126	131	132
1977	121	116	112	101
1978	102	101	94	93
1979	88	83	83	79
1980	79	77	77	74
1981	76	76	83	83
1982	90	90	102	105
1983	118	118	(115)	(113)

Number of Index	32
Average of Index	100

(115) & (113) - These figures not included in the calculation of the datum.

At each step of calculation, the figures are rounded off to the nearest integer.

### STATISTICAL EVALUATION OF UNCHARACTERISTICALLY LOW TENDERS

An initial evaluation of whether a low tender is considered uncharacteristically low may be performed by carrying out the following statistical analysis.

- (i) Determine the arithmetic mean  $\bar{x}$  of all tenders received.

$$\bar{x} = \frac{\sum x_i}{n}$$

Where n is the number of tenders and  $x_i$  is the individual tender price for which  $i = 1$  to n.

- (ii) Determine the standard deviation  $\bar{\sigma}$  of all tenders received.

$$\bar{\sigma} = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}$$

- (iii) Determine the Characteristic Factor (CF) for the accepted tender at a price p.

$$CF = \frac{\bar{x} - p}{\bar{\sigma}}$$

An uncharacteristically low tender can initially be identified as one having a CF greater than 1.3 but other considerations may influence the final decision regarding whether any adjustment is required for fee calculation purposes.

By similar reasoning, an initial "floor value" for the contract can be determined through the expression :-

Initial "floor value" of the contract =  $(\bar{x} - 1.36)$

GRAPHIC ANALYSIS OF ALL TENDERS  
RECEIVED FOR THE CONTRACT

