1. ICTAD SBD-2 Formula for Price Fluctuations

Construction projects are often carried out over a considerable amount of time, ranging from several months to several years. As a result, there is a good chance that the cost of labor and materials may occasionally change, either more or less, over the course of the project. Depending on how they view the risk and how well they can manage it, different parties attempt to manage it through mitigation, incorporation, or transfer. Therefore, there should be a clause in the building contract that allows for price changes and a proper, precise, and quick way to recoup the actual changes. The ICTAD formula method is the most well-liked and frequently employed method in the Sri Lankan construction sector due to its high level of standardization, rapidity, and data availability. Under a contract of this type, price indices are utilized to determine whether construction expenses will increase or decrease. For contracts between Rs. 5 million and Rs. 500 million as well as contracts with a maximum value of Rs. 5 million, there are two different formulas. To account for variations in local expenses, the formula below must be used.

$$F = \frac{0.966(V - Vna)}{100} \Sigma \frac{Px(Ixc - Ixb)}{Ixb}$$

Where;

Value of work done: $(V - Vna)$ The Fluctuation index: $\Sigma \frac{Px(Ixc-Ixb)}{Ixb}$

F : Price adjustment for the period

V : Valuation of work done during the period concerned

Vna : Value of non-adjustable element

Px : Percentage cost contribution of input x

Ixc : Current index for input$x$, published by ICTAD

Ixb : Base index for input$x$, published by ICTAD

The formula's end result is the overall price adjustment for the time period, and the computation can be used to value work that has been done. As a result, the non-adjustable things can be specifically written out, added to the non-adjustable portion of the formula, and subtracted from the work done's worth. To determine the overall price adjustment, divide the difference between the base cost index and the current cost index by the base cost index. These indices must be the monthly indices for various inputs that ICTAD publishes. The index for a certain input that is now in effect is the one that ICTAD released for that input for the month in question, one month after the prior valuation was completed. The fixed Goods and Services Tax allowance coefficient is 0.966. For contacts up to 5 million, use the above formula.

2. FIDIC 1999 Formula for Price Fluctuations

The Price Adjustment on account of increase or decrease in costs of goods, labour and services in construction contracts are practiced internationally with the use of FIDIC –1999 formulae for price adjustment in order to execution of contracts on equitable and economically reasonable manner. Prices of goods and labour are highly variable due to fluctuations in the currency market. Construction experts, therefore, thought it prudent to compute the cost of contracts on present price, keeping provisions of Price Adjustment for probable fluctuations. The FIDIC –1999 formula, introduced for that purpose is mentioned below in its generalized form.

$$\boldsymbol{P}n = a + b\frac{\boldsymbol{L}n}{\boldsymbol{L}o} + c\frac{\boldsymbol{E}n}{\boldsymbol{E}o} + d\frac{\boldsymbol{M}n}{\boldsymbol{M}o} + \ ....$$

Where:

$\boldsymbol{P}n$ The adjustment multiplier to be applied to the estimated contract value in the relevant currency of the work carried out in period „n" (Period „n" being a month unless otherwise stated in the Appendix to tender)

a Fixed coefficient, representing the non adjustable portion in contractual payments which stated in the relevant table of adjustment data

b, c, d ... Coefficients representing the estimated portion of each cost element related to the execution of the works as stated in the relevant table of adjustment data

$\boldsymbol{L}n$
$\boldsymbol{E}n$
$\boldsymbol{M}n$

Current cost indices or reference prices for period „n" expressed in relevant currency or payment each of which is applicable to the relevant tabulated cost element on the date 49 days prior to the last day of the period

$\boldsymbol{L}o$ Base cost indices or reference prices expressed in the relevant currency of payment $\boldsymbol{E}o$ each of which is applicable to the relevant tabulated cost elements on the base date

Mo The user shall determine the proportions of $a, b, c, d \ldots$ by appropriate rate analysis at the time of preparation of their bidding/tender documents. If „P" is the amount payable (prior to adjustment) at the rates entered in the Price Schedule of the work carried out in period "n" then, Adjusted amount payable to the Contractor for the work carried out in the period "n" shall be equal to $Pn * P$

3. Major Differences between ICTAD SBD-2 and FIDIC 1999 Formulas for Price Fluctuations

ICTAD SBD-2	FIDIC 1999
Answer of the formula	
Output of the formula (F) **represents price adjustment** for the period concerned only. Estimated contract value (excluding the adjustment for price escalations) shall be added to the bill separately.	Output of the formula (Pn) is an **adjustment multiplier** to be applied to the estimated contract value in the relevant currency of the work carried out in the period "n".
Multiplier of the product of coefficients and indices	
Valuation of work done for the period (excluding the value of non adjustable elements i.e: **V-V_{na}**) is considered as the multiplier	**Estimated contract value** for the period is used as the multiplier of the product of coefficients and indices
Non adjustable elements	
Value of non adjustable elements for the period concerned (day works and other works done under current prices) is deducted from total value of work done for the period (V-V_{na}). This **amount of non adjustable elements changes from one month to another.**	A fixed coefficient (a) as stated in the relevant table of adjustment data is added in formula to represent the non-adjustable portion in contractual payments. This **coefficient for non adjustable elements does not change during the course of the Contract unless otherwise changed under last paragraph of sub-clause 13.8**
Clearly listed out the non adjustable elements which shall be included in the value of non adjustable portion in the formula under section (c) of sub-clause 13.7	3rd paragraph of sub-clause 13.8 mentions that "*No adjustment is to be applied to work valued on the basis of Cost or current prices*". **Not clear to which exact items this provision is intended**.

Profit and overhead	
In theory, no adjustment for the profit and overhead of the Contractor shall be given under this provision. **Coefficient of 0.966 is built into the formula in order to address this issue.** 15% P&OH has been considered when developing the formula.	There is **no in built coefficient** to disallow the Contractor from gaining price adjustments for his P&OH.

ICTAD SBD-2	FIDIC 1999
Price Indices	
Normally, monthly indices published in the **ICTAD Bulletin of Construction Statistics** are used. If there are doubts on the sources of indices, no provision is given in SBD 2 price fluctuation for the Engineer to determine the source.	The cost **indices or reference prices stated in the table of adjustment data** shall be used. If their source is in doubt, it shall be determined by the Engineer.
No provision is allowed to state any provisional index if the required index is not published	FIDIC 1999 state that, until current cost index is available the engineer shall determine a **provisional index** for the issue of IPCs. When a current cost index is available, the adjustment shall be recalculated accordingly.
Source and title/definition should not be stated as there is no such requirement	When providing the indices for each index, the source and title shall be stated in each table.
The current index of a particular input shall be the index published by the ICTAD for the **one month after the previous valuation done is applicable**.	The current cost index is applicable to the relevant tabulated cost element on the date **49 days prior to the last day** of the period (to which the particular Payment Certificate relates).
Price adjustments after the due date of completion	

If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price: whichever is more favourable to the Employer.	If the contractor fails to complete the work within the Time for Completion prescribed under the Sub-clause 8.2 [*Time for Completion*] and Subclause 8.4 [*Extension of Time for Completion*] price adjustment for work perform after the due date of the completion using these current indices prevailed of the due date of completion.
In built allowance for G.S.T. (Goods and Services Tax)	
There is a **fixed coefficient of 0.966 as an allowance** for Goods and Services Tax	**No allowance** for Goods and Service Tax.
Currency of Payment	
Conversion of indices due to currency changes are not discussed	Necessary to convert indices from the currency of index" to the "currency of payment" at the selling rate if these currencies are not the same