

**STANDARD PROCEDURE  
AND  
FORMULA FOR PRICE ADJUSTMENT**

(First Edition)

March, 2009



**PAKISTAN ENGINEERING COUNCIL  
ISLAMABAD**

## **ACKNOWLEDGMENT**

Pakistan Engineering Council extends deep appreciations and acknowledges the tremendous contribution in developing and finalizing this document by the following members of the Pakistan Engineering Council (PEC):

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## **PREFACE**

Pakistan Engineering Council the Statutory Regulatory body entrusted to regulate the engineering profession of Pakistan has undertaken among others, the standardization of "Country specific" documents to regulate and streamline the hiring of engineering consultancy services and procurement of works. Standard Procedure and Formula for Price Adjustment is one such document prepared by a team of experts comprising Employers, Constructors and Consultants in line with the instruction of Planning Commission in 1996. It is expected that use of this document will provide a reasonable basis for calculating price adjustment for construction contracts.

The following documents have been referred to in preparation of this document:

- FIDIC Conditions of Contract - 1999
- Ministry of Housing and Works, Government of Pakistan - Proposal for Escalation, 1996
- O.M. No.F 3(9)-R-12/75 dated 30<sup>th</sup> September 1975.

Pakistan Engineering Council wishes to place on record its deep appreciation for the tremendous work done by the Standards and Quality Committee, PEC and Gaya Construction Company, Karachi, for drafting this document.

Various Engineering Organizations and Departments are requested to use this document for calculating price adjustment in contracts. Any suggestions to improve this document are welcome which may please be addressed to:

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## **INSTRUCTIONS TO USERS**

### **Background:**

The provisions of Price Adjustment on account of increase or decrease in costs of goods and services in construction contracts are practiced world over to have more realistic competitive bids and execution of contracts on equitable and just 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.

In Pakistan, Finance Division has given the procedure and formula for calculating Price Adjustment through Office Memorandums (OM's), Pak-PWD periodically prepared graphs for escalation for typical Civil, Mechanical and Electrical projects for compensation to the contractors. Similarly in 1996, Government of Pakistan (GoP) also issued a consolidated formula to simplify computation of Price Adjustment. Internationally reputed consultants continued to use provisions of FIDIC. However, keeping in view all the methods and practices, PEC prepared the document - "Standard Procedure and Formula for Price Adjustment", primarily on the basis of rate analysis of various elements in a contract. This document when debated, felt the necessity to discuss the issue with the stakeholders involving constructors, consultants, GoP officials and financial experts. Accordingly, a two days National Workshop was arranged in PEC HQs on March 30 & 31, 2000 where the basic criteria for adopting the formula method in line with FIDIC was decided. The 1st Edition of this document was thus based on the recommendations of the said workshop. Again, two one-day National Workshops were arranged in PEC HQ, Islamabad on June 30 and August 9, 2008, wherein the document was debated keeping in view the abrupt price hike in the prices of construction inputs, among others. This document (1st Edition, Revision 1) is based on the recommendations of the latter workshop.

### **Objectives:**

It is not in the best interest of the Employer to ask tenderers to quote firm prices with no provision of adjustments, especially for long-term contracts. In bidding documents having provisions for price adjustment, the Employer is expected to receive more competitive offers from reputable parties and will have to meet the net variations in cost as may actually occur.

This document is intended to make reasonable price adjustment in the billed amount, which by virtue of its being restricted to listed adjustable elements, is an approximation. The objectives of this document are to:

- (a) *Make price adjustment (as a reasonable compensation against variation in prices of the selected materials and inputs) as close as possible to the actual;*
- (b) *Set out a simple procedure;*
- (c) *Minimize ambiguities; and*

*Standard Procedure and Formula for Price Adjustment*

*(d) Make the contract more equitable.*

**How to Use:**

1. The user of this document is not to change any provision hereof unless otherwise stated in these Instructions.
2. No method, other than given in this document, is acceptable to compute the price adjustment.
3. This Procedure is to assist the users for the preparation of provisions for price adjustment in their bidding/contract documents.

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## **PART-1: PROCEDURE**

### **A. APPLICABILITY**

1. The provisions for Price Adjustment shall be applicable to the projects to be executed. For the ongoing contracts, the existing provisions provided in the contract shall continue to apply, until and unless a mutually agreed amendment to the contract is signed by the parties to the contract, thereby incorporating a Price Adjustment clause, provided the Federal Government has issued such Notification from time to time for those contracts having no Price Adjustment provisions.
2. The Price Adjustment shall be applicable only for the contracts having contract price exceeding financial limit of PEC Contractors Registration Category C-5 as amended from time to time. Contracts having value equal to or less than this limit will be considered as fixed price contracts.
3. Construction schedule should be provided by the contractor as required in the Contract. Price Adjustment shall be applicable as payable in full for the original scheduled completion period.
4. In the event the completion of contract exceeds the original scheduled period:
  - (i) In case of default on the part of the contractor causing delay in original scheduled completion, the rate of Price Adjustment will be frozen at the original scheduled date of completion; however Price Adjustment will be applicable till actual completion. While computing Price Adjustment beyond the scheduled completion period, in the event the rate is reduced, then that reduced rate will be applied.
  - (ii) The Price Adjustment will be payable in full for the extended period if the contractor has been granted an extension of time for no fault on the part of the contractor, duly approved by the Employer.
5. Unless specifically stated otherwise in the contract, the basis for compensation will be only those elements, which are specifically listed as specified items in the tender documents. This list will specify the elements for Civil, Electrical, Mechanical, Sanitary, HVAC, etc., separately.
6. Formula for Price Adjustment provided herein will be applicable for all the contracts such as civil, electrical, mechanical, etc.
- 6.1 A list of commonly known elements subject to Price Adjustment is provided below:
  - (i) Cement;
  - (ii) Steel;
  - (iii) POL (HSD);
  - (iv) Labour Unskilled;

- (v) Bricks; and
- (vi) Bitumen.

Users of the formula may add, substitute or delete any element as deemed appropriate. They would then decide on the weightages or coefficients for the elements.

7. Financial compensation for the elements classified as above shall not be considered again due to provision of Subsequent Legislation, if separately specified in the contract.
8. There shall be no Price Adjustment for the elements which the Employer has either supplied free of cost or at fixed prices as well as for those elements for which an umbrella exgratia or escalation cover is provided by the Government through an Executive Order or Statutory Regulatory Order (SRO).
9. This document will be applicable to all contracts including Item Rate Contracts, Lump Sum Contracts and %age over Schedule Contracts but excluding fixed price contract.
10. This document will be applicable only for Price Adjustment in local currency (Pak. Rs.). Price Adjustment in foreign currency is not in purview of this document which, if applicable, is to be finalized with mutual agreement among the parties prior to the award of Contract.

## **B. PARAMETERS**

### 1. Weightages of Specified Items

Each of the cost elements, having cost impact of five (05) percent or higher can be selected for adjustment. Cost elements of HSD and labour shall be included in the Price Adjustment formula irrespective of their percentage determined for a particular project, if these are applicable for that project.

In determining the weightages, the following procedure shall be adopted:

- (a) Base Date Price alone of an element based on market rate shall be considered excluding cost of construction/ installation, overheads and profit.
- (b) Engineer's Estimate shall be prepared for complete project.
- (c) Appropriate Rate Analysis of the Engineer's Estimate shall be made to determine costs of the basic elements.
- (d) For such elements having various types of a particular element, individual cost of such family of the element to be determined and added to work out the element cost. For example, in a particular project various types of steel such as sheet steel, Grade-40 & Grade-60 steel

are used. In such a case, respective base prices of all three types of steel are to be considered and added up to come out with the single steel cost component. Similar case may be for different types of cement used, etc.

- (e) Each cost element determined as above, shall be divided by the total amount of Engineer's Estimate to determine various weightages.
- (f) It is clarified that while computing Price Adjustment, base and current prices of the representative elements have to be used in the same way as they are mentioned in the PEC bidding documents. For example Grade-40 half inch dia Steel is the representative cost element for all types of steel; similarly un-skilled labour is the representative cost element for all types of labour etc.

Weightage of fixed portion (Non-adjustable portion of the estimated cost of the contract), "A" shall be determined as under:

- (i) First the weightages of all the cost elements having value of **5** percent or more (HSD and Labour to be included irrespective of their weightages) to be added up to see whether the total is 65 percent or less. In that case the total is to be subtracted from one to determine the weightage of the fixed portion, "A"
- (ii) In case total weightage of the cost elements including HSD and labour exceeds 65 percent, the element(s) having lowest weightage(s) other than HSD and labour, shall be excluded in considering the adjustable costs elements.
- (iii) Fixed portion shall never be less than 35 percent and the adjustable portion shall never be more than 65 percent of the Engineer's Estimate.
- (iv) Sum of fixed portion, "A" and weightages a, b, c, d, ....etc., of the adjustable portion shall always be one (01).

## 2. Base Date Price

The base date price (or base date index) of any element shall be the price of the element which was prevalent twenty eight (28) days prior to the date of submission of the tender.

## 3. Current Date Price

The current date price (or current date index) of any element shall be the price of the element which was prevalent twenty eight (28) days prior to the start of

the execution month to which a particular monthly statement is related. The unit of time shall be a calendar month.

4. Source of Prices

The prices of elements subject to Price Adjustment shall be to the extent possible as given in the Statistical Bulletins published by Federal Bureau of Statistics (FBS), Statistical Division Government of Pakistan. Statutory notifications and official price from public sector organizations, where available, may be used at the option of the Employer. The source for prices of High Speed Diesel (HSD) shall be either Statistical Bulletins or Pakistan State Oil (PSO). However, for a particular adjustable element, the same source should be used throughout the currency of contract as also stipulated in the tender documents before issuing the tender documents.

**C. PROCEDURE**

1. The billed amount of the Works for each calendar month will be obtained from the checked bills submitted by the Contractor. In case the billed amount is for more than one month, the amount of the bill shall be segregated for actual work done in each month.
2. The Base Date Prices and the Current Date Prices shall be as per procedure B2 and B3 provided hereinbefore.
3. The Source of Prices will be as per procedure B4 provided hereinbefore.
4. The Price Adjustment in the billed amount will then be calculated for the month under consideration in accordance with Formula for Price Adjustment.
5. Except labour and POL, if any other adjustable item(s) is not used in a particular billing period then the ratio of current date price and base date price for that particular adjustable item(s) shall be considered as one.

## **PART-2: FORMULA**

### 1. Formula for Price Adjustment

The formula mentioned below is in its generalized form. The Employer/user shall at the time of preparation of their bidding/tender documents shall determine the proportions of A, b, c, d, ..... by appropriate rate analysis following the procedure enumerated herein below:

#### **Formula for Price Adjustment:**

$$P_n = A + b \frac{L_n}{L_o} + c \frac{M_n}{M_o} + d \frac{E_n}{E_o} + \dots$$

where,

“ $P_n$ ” is the Price Adjustment factor for the work carried out in the period “n”.

“A” is a constant or the Non-Adjustable Portion of the Price Adjustment Factor to be specified in Appendix-C to Bid, representing the Non-Adjustable Portion of the Contract Price.

“b, c, d.....” are Coefficients or weightages of the order of 0.xx (i.e., fractions having two significant digits) for each specified element of adjustment in the Contract. The sum of A, b, c, d, etc., shall be one.

“ $L_o, M_o, E_o$ .....” are the Base Date Indices for the specified (adjustable) elements.

“ $L_n, M_n, E_n$ .....” are the Current Date Indices of the specified (adjustable) elements for the period “n”.

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  $P_n * P$ .

### 2. Base and Current Dates Prices

The base date and Current date prices of the specified elements shall be obtained from the sources specified in the contract.

### 3. Elements for Price Adjustment

Specified Elements are subjected to Price Adjustment.

The specific elements for highway and bridge construction would typically be:

- (i) POL (HSD);

- (ii) Labour Unskilled;
- (iii) Cement;
- (iv) Steel;
- (v) Bitumen; and
- (vi) Other major elements depending on the nature of the project.

Similarly, the specified elements for building construction would typically be:

- (i) POL (HSD);
- (ii) Labour Unskilled;
- (iii) Cement;
- (iv) Steel;
- (v) Bricks; and
- (vi) Other major elements depending upon the nature of the project.

Similarly, major specified elements for other types of projects can be specified in the contract in addition to or instead of the specified elements as enumerated above.

#### 4. Co-efficient or Weightages

The co-efficient for each specified element shall be calculated and given in the bidding/tender documents. The co-efficient for each specified adjustable element shall be determined by the user proportionate to its ratio in the total amount of the Engineer's Estimate, in accordance with the procedure B-1 given under Part 1. The sum of these co-efficients shall form the adjustable portion of the Contract, which shall not exceed 0.65.

#### 5. Adjustable Portion of the Contract

The adjustable portion of the Contract shall be computed as provided in forgoing Procedures.

#### 6. Source of Price

Source of Base Date and Current Date Prices shall be as stipulated at item B-4 under Part 1. If any other source is used, it must be clearly stated in the tender documents before issuing the tender documents.

#### 7. Price Adjustment for Lump sum Contract.

Formula of Price Adjustment provided at Item-1 above shall be used in determining Price Adjustment for contracts having detailed breakdown of cost. However, when a contract is assigned on lump sum basis without detailed breakdown of quantities and cost, Price Adjustment for the specified elements in the contract will be computed on simple derivation, increase/decrease in cost = Current Date Price - Base Date Price.

$$\text{Base Date Price}$$

If the resulting Price Adjustment Factor is positive (+ve), the price should be added to

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the contractor's payable amount. If the result is negative (-ve), the price should be subtracted from the payable amount.

The executed quantities of the elements subject to Price Adjustment can be obtained from the actual measurement or from certified invoice of the contractor or any other mode agreed between the parties which shall be stipulated in the contract.