

**STANDARD PROCEDURE  
AND  
FORMULA FOR PRICE ADJUSTMENT**

**(Second Edition)**

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**PAKISTAN ENGINEERING COUNCIL  
ISLAMABAD**

## **DOCUMENT CONTROL**

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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. 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, FIDIC Conditions of Contract MDB-2010.
- 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 PEC Standard Bidding Documents Committee-2021 (PSBDC) for drafting this document.

Procuring Agencies/Engineering Organizations and Departments shall use this document for calculating price adjustment in contracts.

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## **ACKNOWLEDGMENT**

Pakistan Engineering Council (PEC) is grateful for the valuable contribution made by the experts, who helped compile this important document. This document is a reflection of the excellent team work of a number of engineers, who have worked diligently to materialize this document, using the best of their abilities and professional expertise.

While it is not possible to acknowledge everyone's efforts here individually, it is in the fitness of things to list down the members of Working Committee – 2009 (Annex-1), who have prepared the original document. The document was first revised by Working Committee of 2018 (Annex-2). The present version has been revised by the PSBDC of 2021; the member of which are mentioned below:

### **PEC Standard Bidding Documents Committee - 2021**

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| 9.  | Engr. M. Mazhar ul Islam<br><i>(CEO M/s Techno Legal Consultants)</i>                   | Member   |
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## **INSTRUCTIONS TO USERS**

### **A. 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 in equitable and just manner. Prices of goods and labor are highly variable due to fluctuations in the currency market. Construction experts, therefore, think 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 (OMs), Pak-PWD periodically prepared graphs on escalation related with 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. This document is a review of previous document which catered for the new development(s) as per instructions of Planning Commission, GoP.

### **B. 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:

1. Make price adjustment (as a reasonable compensation against variation in prices of the selected materials and inputs) as close as possible to the actual.
2. Set out a simple procedure.
3. Minimize ambiguities.
4. Make the contract more equitable.

### **C. 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.

## **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.
2. 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.
3. In the event the completion of contract exceeds the original scheduled period:
  - 3.1 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.
  - 3.2 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.
4. 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.
5. Formula for Price Adjustment provided herein will be applicable for all the contracts such as Civil, Electrical, Mechanical, etc.
  - 5.1 A list of commonly known elements subject to Price Adjustment is provided under Section 3 (Elements of Price Adjustment) under Part-2 hereof.
  - 5.2 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, with respect to rate analysis of the Engineer's Estimate/ expected cost of work.
6. 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.

7. 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).
8. This document will be applicable to all contracts including Item Rate Contracts, Lump Sum Contracts and %age over Schedule Contracts.
9. 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.
10. For imported plant/ equipment and materials quoted in local currency (Pak. Rs.), foreign currency, exchange rates shall be fixed at the respective interbank currency exchange rates, 28 days prior to the tender opening date. The change in foreign currency exchange rate will be applicable to the foreign currency component stated in the Letter of Credit established by the Contractor or his Vendor.

## **B. PARAMETERS**

### **1. Weightages of Specified Items**

Each of the cost elements, having cost impact of three (03) percent or higher can be selected for adjustment.

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

- 1.1 Base Date Price alone of an element based on market rate shall be considered excluding cost of construction/ installation, overheads and profit.
- 1.2 Engineer's Estimate shall be prepared for complete project.
- 1.3 Appropriate Rate Analysis of the Engineer's Estimate shall be made to determine costs of the basic elements.
- 1.4 For such cost elements having various types of a particular element, individual cost of such family of the element used in the project 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 and 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.
- 1.5 Each cost element determined as above, shall be divided by the total amount of Engineer's Estimate to determine various weightages.

- 1.6 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.
- 1.7 Price Adjustment shall be applicable to the cost elements of both the cast in-situ and precast work items.

## **2. Weightage of Fixed Portion, “A”**

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

- 2.1 First the weightages of all the cost elements having value of 3 percent or more to be added up to see whether the total is 75 percent or less. In that case the total is to be subtracted from one (01) to determine the weightage of the fixed portion, “A”.
- 2.2 In case total weightage of the cost elements including HSD and labour exceeds 75 percent, the element(s) having lowest weightage(s) other than HSD and labour, shall be excluded in considering the adjustable costs elements.
- 2.3 Fixed portion shall be 25 percent and in case the fixed portion exceeds 25 percent it shall be supported by calculations attached with the bidding documents.
- 2.4 Sum of fixed portion, “A” and weightages b, c, d, ....etc., of the adjustable portion shall always be one (01).

## **3. Base Date Price**

The base date price (or base date index) of any element shall be the price of the element for the month on the day falling 28 days prior to the latest day for submission of bids.

## **4. Current Date Price**

The current date price (or current date index) of any element shall be the price of the element for the month falling on the day 28 days prior to the last day of the period to which the particular Payment Certificate relates

## **5. Sources 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) or Oil and Gas Regulatory Authority (OGRA). 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. WORK PROCESS**

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 B3 and B4 provided hereinbefore.
3. The Source of Prices will be as per procedure B5 provided hereinbefore.
4. The Price Adjustment in the billed amount will then be calculated for the month under consideration in accordance with Formula as laid down in Part – 2.

## 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:

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

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 rounded off to two decimals) 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 Prices/Indices for the specified (adjustable) elements.

“ $L_n, M_n, E_n$ .....” are the Current Date Prices/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  $P_n * P$ .

For the purpose of calculating  $P_n$ , the coefficient for each element shall be used irrespective of the actual constituents of the work performed during the billing period.

### 2. Base Date Prices and Current Date Prices

The Base Date Prices 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 ;
- (iii) Cement;
- (iv) Steel;
- (v) Bitumen;
- (vi) Aggregate ; and
- (vii) 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 ;
- (iii) Cement;
- (iv) Steel;
- (v) Bricks;
- (vi) Tiles;
- (vii) Cables;
- (viii) Conduits (all types);
- (ix) Pipes (all types);
- (x) Steel Sheet (all types);
- (xi) Steel Sections (all types);
- (xii) Aluminum Sections (all types);
- (xiii) Electric Switch Gears; and
- (xiv) 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. Coefficient or Weightages**

The coefficient for each specified element shall be calculated and given in the bidding/tender documents. The coefficient 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 coefficients shall form the adjustable portion of the Contract, which shall not exceed 0.75.

#### **5. Adjustable Portion of the Contract**

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

#### **6. Sources of Prices**

Sources of Base Date Prices and Current Date Prices shall be as stipulated at item B-5

under Part-1. If other sources are used, these must be clearly stated in the tender documents before issuance thereof.

## **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 as follows:

$$\text{Increase/ Decrease in Cost (Price Adjustment Factor)} = \frac{\text{Current Date Price} - \text{Base Date Price}}{\text{Base Date Price}}$$

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

# **ANNEXES**

**Annex-1**

**Working Committee - 2009**

- |     |  |          |
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| 1.  | Engr. M. Mazhar-ul Islam<br><i>(CEO, Techno Legal Consultants, Lahore)</i>   | Convener |
| 2.  | Engr Shehryar Khan<br><i>(Joint Technology Adviser, Ministry of Science &amp; Technology)</i>                                  | Member   |
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| 6.  | Engr Arif Kasam<br><i>(Honorary Secretary, ACEP, Karachi)</i>  | Member   |
| 7.  | Engr Ayaz Mirza<br><i>(Deputy General manager, KESC, Karachi)</i>  | Member   |
| 8.  | Engr. Shamshair Dad Khan<br><i>(Chief Engineer, WAPDA, Karachi)</i>  | Expert   |
| 9.  | Engr. Ejaz A . Khan<br><i>(Partner, NDC, Lahore)</i>   | Expert   |
| 10. | Engr Tafseer Ahmad Khan<br><i>(Director (Electrical), Pakistan Standards &amp; Quality Control Authority (PSQCA), Karachi)</i> | Expert   |
| 11. | Engr Mushtaq Mahmood<br><i>(Senior Adviser, ERRA, Islamabad)</i>   | Expert   |

**Annex-2**

**Working Committee - 2018**

**PEC Bidding Documents Committee**

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3.	Engr. Waseem Asghar, <i>(President (ACEP), Karachi)</i>	Member
4.	Engr. Akber Sheikh, <i>(Ex-Chairman (CAP), Lahore)</i>	Member
5.	Engr. Abdul Rasheed Bhutto, <i>(Executive Engineer, PHED, Karachi)</i>	Member
6.	Engr. Ashkar Dawar, <i>(DG, Sindh Building Control Authority, Karachi)</i>	Member
7.	Engr. Prof. Dr. Bashir Alam, <i>(Civil Engineering Department, UET, Peshawar)</i>	Member
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