

**(Ref. Page no.49-64 as per Standard Tender Document)**

**2. Price Variation Clause [Clause 46A of (GCC)]**

**Price Variation Clause (PVC):**

**(i) Applicability:** Price Variation Clause (PVC) shall be applicable only in tender having advertised value above **Rs. 2 Crores**. Provided further that, in a contract where PVC is applicable, following shall be outside the purview of price adjustments (i.e. shall be excluded from the gross value of the work for the purpose of price variation) :

- a) Materials supplied by Railway to the Contractors, either free or at fixed rate;
- b) Any extra item(s) included in subsequent variation falling outside the purview of the Bill(s) of Quantities of tender, under clause 39. (1)(b) of these Standard General Conditions, unless applicability of PVC and 'Base Month' has been specially agreed, while fixing the rates of such extra item(s).

**(ii) Base Month:** The Base Month for 'Price Variation Clause' shall be taken as the one month prior to closing of tender, unless otherwise stated elsewhere. The quarter for applicability of PVC shall commence from the month following the Base month. The Price Variation shall be based on the average Price Index of the quarter under consideration.

**(iii) Validity:**

Rates accepted by Railway Administration shall hold good till completion of work and no additional individual claim shall be admissible except:

- (a)** Payment/recovery for increase/decrease in GST on works contract or imposition/removal of any tax/cess on Works Contract as per Clause 37,
- (b)** Payment/recovery for overall market situation as per Price Variation Clause given hereunder.
  - (i)** Components of various items in a contract on which variation in prices be admissible, shall be steel, cement, ferrous material, non-ferrous material, insulators, zinc and other materials, labour, plant & machinery, fuel, explosives, detonators etc. Adjustment for variation in prices of these items shall be determined in the manner prescribed.
  - (ii)** No price variation shall be admissible for fixed components.
- (iii)** The percentages of various components in various type of works shall be as specified for all item (s)/ Bill(s) of Quantities in tender document and the same shall be fixed as per table & classifications given below:

**(I). For Civil Engineering Works**

S N	Classification		1A, 2 & 3A	4A	5A	6A	7	8A	9A	1B, 3B, 4B, 5B, 6B 8B & 9B	1C, 3C, 4C, 5C, 6C, 8C & 9C	3D, 4D, 5D, 6D, 8D & 9D	3E, 4E, 5E, 6E, 8E & 9E
	Components												
1	Fixed	*	15	15	15	15	15	15	15	15	15	15	15
2	Labour	L <sub>c</sub>	20	25	30	20	50	20	20	0	0	10	25
3	Steel	S <sub>c</sub>	0	0	0	0	0	0	0	85	0	50	0
4	Cement	C <sub>c</sub>	0	0	15	0	0	0	0	0	85	0	0
5	Plant Machinery & Spares	PM <sub>c</sub>	30	15	5	20	15	20	30	0	0	10	30
6	Fuel & Lubricants	F <sub>c</sub>	25	15	5	15	35 15	20	15	0	0	10	20
7	Other materials	M <sub>c</sub>	10	15	30	30	5	25	20	0	0	5	10
8	Detonators & Explosive	E <sub>c</sub>	0	15	0	0	0	0	0	0	0	0	0
Total			100	100	100	100	100	100	100	100	100	100	100

\* It shall not be considered for any price variation.

The classification mentioned in the table above represents following type of item(s) in the work(s) –

**1 Earthwork in Formation**

1A All Item(s) excluding 1B or/and 1C

1B Item(s) for supply of Steel

1C Item(s) for supply of Cement

**2 Ballast Supply Works****3 Tunnelling Works (Without Explosives)**

3A All Item(s) excluding 3B or/and 3C or/and 3D or/and 3E

3B Item(s) for supply of Steel

3C Item(s) for supply of Cement or/and Grout

3D Item(s) for Fabrication & Erection of Structures including supply of Steel

3E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

**4 Tunnelling Works (With explosives)**

4A All Item(s) excluding 4B or/and 4C or/and 4D or/and 4E

4B Item(s) for supply of Steel

4C Item(s) for supply of Cement or/and Grout

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- 4D Item(s) for Fabrication & Erection of Structures including supply of Steel
- 4E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

## **5 Building Works**

- 5A All Item(s) excluding 5B or/and 5C or/and 5D or/and 5E
- 5B Item(s) for supply of Steel
- 5C Item(s) for supply of Cement
- 5D Item(s) for Fabrication & Erection of Structures including supply of Steel
- 5E Item(s) for Fabrication & Erection of Structures excluding supply of Steel.

## **6 Bridges & Protection work**

- 6A All Item(s) excluding 6B or/and 6C or/and 6D or/and 6E
- 6B Item(s) for supply of Steel
- 6C Item(s) for supply of Cement
- 6D Item(s) for Fabrication, Assembly, Erection& Launching of Girders including supply of Steel
- 6E Item(s) for Fabrication, Assembly, Erection & Launching of Girders excluding supply of Steel

## **7 Permanent Way linking**

## **8 Platform, Passenger Amenities**

- 8A All Item(s) excluding 8B or/and 8C or/and 8D or/and 8E
- 8B Item(s) for supply of Steel item/fittings
- 8C Item(s) for supply of Cement Item
- 8D Item(s) for Fabrication & Erection of Structures including supply of Steel
- 8E Item(s) for Fabrication & Erection of Structures excluding supply of Steel

## 9 Any Other Works not covered in Classification 1 to 8

9A All Item(s) excluding 9B or/and 9C or/and 9D or/and 9E

9B Item(s) for supply of Steel

9C Item(s) for supply of Cement or/and Grout

9D Item(s) for Fabrication & Erection of Structures including supply of Steel

9E Item(s) for Fabrication & Erection of Structures excluding supply of Steel

**vii Formulae:** The Amount of variation in prices in various components (labour, material etc.) shall be worked out by the following formulae:

$$\begin{aligned}
 \text{(i) } L &= \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (L_Q - L_B) \times L_C}{L_B \times 100} \\
 \text{(ii) } M &= \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (M_Q - M_B) \times M_C}{M_B \times 100} \\
 \text{(iii) } F &= \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (F_Q - F_B) \times F_C}{F_B \times 100} \\
 \text{(iv) } E &= \frac{(W) \times (E_Q - E_B) \times E_C}{E_B \times 100} \\
 \text{(v) } PM &= \frac{(W \text{ or } W_{SF} \text{ or } W_F \text{ or } W_{SFL} \text{ or } W_{FL}) \times (PM_Q - PM_B) \times PM_C}{PM_B \times 100} \\
 \text{(vi) } S &= \frac{(W \text{ or } W_S \text{ or } W_{SF}) \times (S_Q - S_B) \times S_C}{S_B \times 100} \\
 \text{(vii) } C &= \frac{(W \text{ or } W_C) \times (C_Q - C_B) \times C_C}{C_B \times 100}
 \end{aligned}$$

### **For Railway Electrification Works:**

$$\begin{aligned}
 \text{(viii) } T &= [0.4136 \times (C_Q - C_B) / C_B] \times 85 \\
 \text{(ix) } R &= [0.94 \times (R_T - R_O) / R_O + 0.06 \times (Z_T - Z_O) / Z_O] \times 85 \\
 \text{(x) } N &= [(P_T - P_O) / P_O] \times 85 \\
 \text{(xi) } I &= [(I_T - I_O) / I_O] \times 85 \\
 \text{(x) } G &= [(M_Q - M_B) / M_B] \times 85 \\
 \text{(xi) } Er &= [(L_Q - L_B) / L_B] \times 85
 \end{aligned}$$

Where,

L	Amount of price variation in Labour
M	Amount of price variation in Materials
F	Amount of price variation in Fuel
E	Amount of price variation in Explosives
PM	Amount of price variation in Plant, Machinery and Spares
S	Amount of price variation in Steel Supply Item
C	Amount of price variation in Cement Supply Item

T	Percentage variation payable on the gross value of bill of Concreting (Bill(s) of Quantities for concrete items)
R	Percentage variation payable on the gross value of bill of Ferrous Items (Bill(s) of Quantities for ferrous items)
N	Percentage variation payable on the gross value of bill of Non-Ferrous Items (Bill(s) of Quantities for non-ferrous items)
I	Percentage variation payable on the gross value of bill of Insulator (Bill(s) of Quantities for Insulator items)
G	Percentage variation payable on the gross value of bill of General Works (Bill(s) of Quantities for General items)
Er	Percentage variation payable on the gross value of erection (Bill(s) of Quantities for Erection Item)
L <sub>C</sub>	% of Labour Component in the item(s)
M <sub>C</sub>	% of Material Component in the item(s)
F <sub>C</sub>	% of Fuel Component in the item(s)
E <sub>C</sub>	% of Explosive Component in the item(s)
PM <sub>C</sub>	% of Plant, Machinery and Spares Component in the item(s)
S <sub>C</sub>	% of Steel Supply item Component in the item(s)
C <sub>C</sub>	% of Cement Supply item Component in the item(s)
W	Gross value of work done by Contractor as per on-account bill(s) excluding the Gross value of work under W <sub>S</sub> or/and W <sub>C</sub> or/and W <sub>SF</sub> or/and W <sub>F</sub> or/and W <sub>SFL</sub> or/and W <sub>FL</sub> and cost of materials supplied by Railway either free or at fixed rate,
W <sub>S</sub>	Gross value of work done by Contractor for item(s) of supply of steel.
W <sub>C</sub>	Gross value of work done by Contractor for item(s) of supply of cement and /or supply of grout material.
W <sub>SF</sub>	Gross value of work done by Contractor for item(s) of Fabrication & Erection of Structures including supply of Steel.
W <sub>F</sub>	Gross value of work done by Contractor for Fabrication & Erection of Structures excluding supply of Steel.
W <sub>SFL</sub>	Gross value of work done by Contractor for item(s) of Fabrication, Assembly, Erection / Launching of Girders including supply of Steel.
W <sub>FL</sub>	Gross value of work done by Contractor for item(s) of Fabrication, Assembly, Erection / Launching of Girders excluding supply of Steel.
L <sub>B</sub>	Consumer Price Index for Industrial Workers - All India: Published in R.B.I. Bulletin for the base period
L <sub>Q</sub>	Consumer Price Index for Industrial Workers - All India: Published in R.B.I. Bulletin for the average price index of the 3 months of the quarter under consideration

M <sub>B</sub>	Wholesale Price Index: All commodities – as published in the R.B.I. Bulletin for the base period
M <sub>Q</sub>	Wholesale Price Index: All commodities – as published in the R.B.I. Bulletin for the average price index of the 3 months of the quarter under consideration
F <sub>B</sub>	The average of official prices of Diesel available on the official website of ‘Petroleum Planning and Analysis cell’ under Ministry of Petroleum and Natural Gas for Delhi, Kolkata, Mumbai & Chennai, for the base period
F <sub>Q</sub>	The average of official prices of Diesel available on the official website of ‘Petroleum Planning and Analysis cell’ under Ministry of Petroleum and Natural Gas for Delhi, Kolkata, Mumbai & Chennai, for the 3 months of the quarter under consideration
E <sub>B</sub>	Index number of Monthly Whole Sale Price Index for the category ‘Explosive’ of (g). Manufacture of other chemical products under (J) MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS, published by Office of Economic Adviser, Govt. of India, Ministry of Commerce & Industry, Department of Industrial Policy & Promotion (DIPP), for the base period.
E <sub>Q</sub>	Index number of Monthly Whole Sale Price Index for the category ‘Explosive’ of (g). Manufacture of other chemical products under (J) MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS, published by Office of Economic Adviser, Govt. of India, Govt. of India, Ministry of Commerce & Industry, Department of Industrial Policy & Promotion (DIPP), for the average price index of 3 months of the quarter under consideration.
PM <sub>B</sub>	Index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for ‘Manufacture of machinery for mining, quarrying and construction’– published in RBI (Reserve Bank of India) Bulletin, for the base period.
PM <sub>Q</sub>	Index Number of Wholesale Prices in India by Groups and Sub Groups (Averages) for ‘Manufacture of machinery for mining, quarrying and construction’– published in RBI (Reserve Bank of India) Bulletin, for the average price index of 3 months of the quarter under consideration.
S <sub>B</sub>	The average rate provided by the Joint Plant Committee for the relevant category of steel item as mentioned in Clause 46A.9; for the base period.
S <sub>Q</sub>	The average rate provided by the Joint Plant Committee for the relevant category of steel item as mentioned in Clause 46A.9; for the 3 months of the quarter under consideration.
C <sub>B</sub>	Index No. of Wholesale Price Index of sub-group Cement, Lime & Plaster as published in RBI Bulletin for the base period
C <sub>Q</sub>	No. of Wholesale Price Index of sub-group Cement, Lime & Plaster as published in RBI Bulletin for the average price index of the 3 months of the quarter under consideration

R <sub>T</sub>	IEEMA price index for Steel Blooms (size 150mmx150mm) for the month which is two months prior to date of inspection of material.
R <sub>O</sub>	IEEMA price index for Steel Blooms (size 150mmx150mm) for the month which is one month prior to date of opening of tender.
P <sub>T</sub>	IEEMA price index for Copper wire rods for the month which is two months prior to date of inspection of material.
P <sub>O</sub>	IEEMA price index for Copper wire rods for the month which is one month prior to date of opening of tender.
Z <sub>T</sub>	IEEMA price index for Zinc for the month which is two months prior to date of inspection of material
Z <sub>O</sub>	IEEMA price index for Zinc for the month which is one month prior to date of opening of tender
I <sub>T</sub>	RBI wholesale price index for the sub-group “Insulators” for the month which is two months prior to date of inspection of material
I <sub>O</sub>	RBI wholesale price index for the sub-group “Insulators” for the month which is one month prior to date of opening of tender

## (II) **SIGNALING & TELECOMMUNICATION WORKS:**

- (a) The following expressions and meanings are assigned to the value of the work done for signalling and telecommunication works:

SIGWK = Value of signalling works for a stage payment of the item signalling works;

INVSIG = Value of inventory for signalling works for a stage payment of the item inventory for signalling works;

INTGTESTSIG = Value of integrated testing and commission for signalling works of the Railway Project;

COMWK = Value of telecommunication works for a stage payment of the item telecommunication works;

INVCOM = Value of inventory for telecommunication works for a stage payment of the item inventory for telecommunication works; and

INTGTESTCOM = Value of integrated testing and commission for telecommunication works of the Railway Project.

- (b) Price adjustment for changes in cost of signalling works and telecommunication works shall be paid in accordance with the following formula:

$$(i) \quad VSIGWK = 0.85 \text{ SIGWK} \times [PELEX \times (ELEX_i - ELEX_o) / ELEX_o + POFC \times (OFC_i - OFC_o) / OFC_o + PLB \times (LBI - LBo) / LBo + POTH \times (OTH_i - OTH_o) / OTH_o + S30C \times (P30C_i - P30C_o) / P30C_o + S24C \times (P24C_i - P24C_o) / P24C_o + S19C \times (P19C_i - P19C_o) / P19C_o + S12C \times (P12C_i - P12C_o) / P12C_o + S9C \times (P9C_i - P9C_o) / P9C_o + S6C \times (P6C_i - P6C_o) / P6C_o + S4C \times (P4C_i - P4C_o) / P4C_o + S2C \times (P2C_i - P2C_o) / P2C_o + S12C2.5 \times (P12C2.5_i - P12C2.5_o) /$$

$$P12C2.5_o + S2C2.5 \times (P2C2.5_i - P2C2.5_o) / P2C2.5_o + S2C25 \times (P2C25_i - P2C25_o) / P2C25_o + QC \times (PQC_i - PQC_o) / PQC_o;$$

- (ii)  $VINVSIG = 0.85 \text{ SIGWK} \times [PELEX \times (ELEX_i - ELEX_o) / ELEX_o + POTH \times (OTH_i - OTH_o) / OTH_o];$
- (iii)  $VINTGTESTSIG = 0.85 \text{ INTGTESTSIG} \times [PLB \times (LBI - LBo) / LBo + POTH \times (OTH_i - OTH_o) / OTH_o];$
- (iv)  $VCOMWK = 0.85 \text{ COMWK} \times [PELEX \times (ELEX_i - ELEX_o) / ELEX_o + POFC \times (OFC_i - OFC_o) / OFC_o + PLB \times (LBI - LBo) / LBo + POTH \times (OTH_i - OTH_o) / OTH_o + S30C \times (P30C_i - P30C_o) / P30C_o + S24C \times (P24C_i - P24C_o) / P24C_o + S19C \times (P19C_i - P19C_o) / P19C_o + S12C \times (P12C_i - P12C_o) / P12C_o + S9C \times (P9C_i - P9C_o) / P9C_o + S6C \times (P6C_i - P6C_o) / P6C_o + S4C \times (P4C_i - P4C_o) / P4C_o + S2C \times (P2C_i - P2C_o) / P2C_o + S12C2.5 \times (P12C2.5_i - P12C2.5_o) / P12C2.5_o + S2C25 \times (P2C25_i - P2C25_o) / P2C25_o + QC \times (PQC_i - PQC_o) / PQC_o + PCEQP \times (CEQP_i - CEQP_o) / CEQP_o];$
- (v)  $VINVCOM = 0.85 \text{ SIGWK} \times [PELEX \times (ELEX_i - ELEX_o) / ELEX_o + PCEQP \times (CEQP_i - CEQP_o) / CEQP_o + POTH \times (OTH_i - OTH_o) / OTH_o];$  and
- (vi)  $VINTGTESTCOM = 0.85 \text{ INTGTESTCOM} \times [PLB \times (LBI - LBo) / LBo + POTH \times (OTH_i - OTH_o) / OTH_o].$

Where

VSIGWK = Increase or decrease in the cost of signalling works during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VINVSIG = Increase or decrease in the cost of inventory for signalling during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VINTGTESTSIG = Increase or decrease in the cost of integrated testing and commissioning of signalling works of the Railway Project during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VCOMWK = Increase or decrease in the cost of communication works during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VINVCOM = Increase or decrease in the cost of inventory for telecommunications works during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);

VINTGTESTCOM = Increase or decrease in the cost of integrated testing and commissioning of telecommunication works of the Railway Project during the period under consideration due to changes in the rates for relevant components as specified in sub-paragraph (h);



PCEQP, PELEX, PIC, PLB, POFC, and POTH are the percentages of communication equipment, electronics, PVC insulated cables, labour, optical fibre cables, and other materials respectively;

CEQP<sub>o</sub> = The wholesale price index as published by the Ministry of Commerce and Industry, Government of India (hereinafter called “WPI”) for communication equipment for the month of the Base Month;

CEQP<sub>i</sub> = The WPI for communication equipment for the average price index of the 3 months of the quarter under consideration;

ELEX<sub>o</sub> = The WPI for electronics for the month of the Base Month;

ELEX<sub>i</sub> = The WPI for electronics for the average price index of the 3 months of the quarter under consideration;

P30C<sub>i</sub> = Price payable per Km as adjusted in accordance with price variation Clause for size 30C x 1.5 sq mm signalling cable

P30C<sub>o</sub> = Price per Km of cable as per purchase order/ Contract agreement.

S30C = Percentage of size 30C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

P24C<sub>i</sub> = Price payable per Km as adjusted in accordance with price variation Clause for size 24C x 1.5 sq mm signalling cable

P24C<sub>o</sub> = Price per Km of cable as per purchase order/ Contract agreement.

S24C = Percentage of size 24C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

P19C<sub>i</sub> = Price payable per Km as adjusted in accordance with price variation Clause for size 19C x 1.5 sq mm signalling cable

P19C<sub>o</sub> = Price per Km of cable as per purchase order/ Contract agreement.

S19C = Percentage of size 19C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

P12C<sub>i</sub> = Price payable per Km as adjusted in accordance with price variation Clause for size 12C x 1.5 sq mm signalling cable

P12C<sub>o</sub> = Price per Km of cable as per purchase order/ Contract agreement.

S12C = Percentage of size 12C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

P9C<sub>i</sub> = Price payable per Km as adjusted in accordance with price variation Clause for size 9C x 1.5 sq mm signalling cable

P9C<sub>o</sub> = Price per Km of cable as per purchase order/ Contract agreement.

S9C = Percentage of size 9C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P6C_i$  = Price payable per Km as adjusted in accordance with price variation Clause for size 6C x 1.5 sq mm signalling cable

$P6C_o$  = Price per Km of cable as per purchase order/ Contract agreement.

$S6C$  = Percentage of size 6C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P4C_i$  = Price payable per Km as adjusted in accordance with price variation Clause for size 4C x 1.5 sq mm signalling cable

$P4C_o$  = Price per Km of cable as per purchase order/ Contract agreement.

$S4C$  = Percentage of size 4C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P2C_i$  = Price payable per Km as adjusted in accordance with price variation Clause for size 2C x 1.5 sq mm signalling cable

$P2C_o$  = Price per Km of cable as per purchase order/ Contract agreement.

$S2C$  = Percentage of size 2C x 1.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P12C2.5_i$  = Price payable per Km as adjusted in accordance with price variation Clause for size 12C x 2.5 sq mm signalling cable

$P12C2.5_o$  = Price per Km of cable as per purchase order/ Contract agreement.

$S12C2.5$  = Percentage of size 12C x 2.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P2C2.5_i$  = Price payable per Km as adjusted in accordance with price variation Clause for size 2C x 2.5 sq mm signalling cable

$P2C2.5_o$  = Price per Km of cable as per purchase order/ Contract agreement.

$S2C2.5$  = Percentage of size 2C x 2.5 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$P2C25_i$  = Price payable per Km as adjusted in accordance with price variation Clause for size 2C x 25 sq mm signalling cable

$P2C25_o$  = Price per Km of cable as per purchase order/ Contract agreement.

$S2C25$  = Percentage of size 2C x 25 sq mm signalling cable shall govern the price adjustment of the contract price for signalling and telecommunication works.

$PQC_i$  = Price payable per Km as adjusted in accordance with price variation Clause for size 0.9mm dia, 6 Quad cable.

$PQC_o$  = Price per Km of cable as per purchase order/ Contract agreement.

$QC$  = Percentage of size 0.9mm dia, 6 Quad cable shall govern the price.

LBo = The consumer price index for industrial workers – All India, published by Labour Bureau, Ministry of Labour, Government of India, (hereinafter called “CPI”) for the month of the Base Month;

LBi = The CPI for industrial workers – All India for the average price index of the 3 months of the quarter under consideration;

OFCo = The WPI for fibre cables for the month of the Base Month;

OFCi = The WPI for fibre cables for the average price index of the 3 months of the quarter under consideration;

OTHo = The WPI for all commodities for the month of the Base Month; and

OTHi = The WPI for all commodities for the average price index of the 3 months of the quarter under consideration.

- (c) The following percentages shall govern the price adjustment of the Contract Price for signalling and telecommunication works:

Works  Component	Signalling			Telecommunication		
	Signalling Works	Signalling inventory	Integrated testing and Commissioning	Telecommunication Works	Telecomm inventory	Integrated testing and Commissioning
Electronics (PELEX)	***%	***%	—	***%	***%	—
Communication Equipment (PCEQP)	—	—	—	***%	***%	—
Optical Fibre Cable (POFC)	***%	—	—	***%	—	—
30C x 1.5 sq mm signalling cable(S30C)	***%	—	—	***%	—	—
24C x 1.5 sq mm signalling cable (S24C)	***%	—	—	***%	—	—
19Cx 1.5 sq mm signalling cable (S19C)	***%	—	—	***%	—	—
12C x 1.5 sq mm signalling cable (S12C)	***%	—	—	***%	—	—
9C x 1.5 sq mm signalling cable (S9C)	***%	—	—	***%	—	—
6C x 1.5 sq mm signalling cable (S6C)	***%	—	—	***%	—	—

4C x 1.5 sq mm signalling cable (S4C)	***%	—	—	***%	—	—
2C x 1.5 sq mm signalling cable (S2C)	***%	—	—	***%	—	—
12C x 2.5 sq mm signalling cable (S12C2.5)	***%	—	—	***%	—	—
2C x 2.5 sq mm signalling cable (S2C2.5)	***%	—	—	***%	—	—
2C x 25 sq mm signalling cable (S2C25)	***%	—	—	***%	—	—
0.9 mm dia, 6Quad cable (QC)	***%	—	—	***%	—	—
Labour (PLB)	***%	—	***%	***%	***%	***%
Other materials	***%	***%	***%	***%	***%	***%
Total	100%	100%	100%	100%	100%	100%

*(Note- the percentages may be finalized by tendering authority depending on BOQ)*

#### FORMULAE FOR SIGNALING & TELECOM CABLE

The price payable for signalling cables is variable as per Price Variation Formula given below:

**For Signalling Copper Cables:**

$$P_i = P_o + CuF (Cu - Cu_o) + CCFcu(CC - CCo) + FeF (Fe - Fe_o)$$

**For Telecom Copper Cables For Jelly Filled, 0.9 mm dia, 6 quad cable**

$$P_i = P_o + CuF (Cu - Cu_o) + AlFcu(Al - Alo) + CCFcu (CC - Cco) + FeF (Fe - Fe_o)$$

**For Aluminium Power Cables:**

$$P_i = P_o + AlF (Al - Alo) + CCFAI(CC - CCo) + FeF (Fe - Fe_o)$$

Where,

$P_i$  = Price payable per KM as adjusted in accordance with Price variation clause.

$P_o$  = Price per KM of cable as per Purchase order.

$CuF$  = Variation factor for Copper

$Cu_o$  = Price of copper Rod in Rs. Per MT

$CCFCu$  = Variation factor for PVC Compound for Copper Signalling & Telecom cable

$CCo$  = Price of PVC Compound in Rs. Per MT

$AlF$  = Variation factor for Aluminium

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Alo= Price of EC grade LME Aluminium rods (Properzi rods) in Rs. Per MT.

CCFAI = Variation factor for PVC Compound for Aluminium power cable

FeF= Variation factor for Steel

Feo= Price of Steel for Armour (Flat strip 4 mm. x 0.8mm/ Round 1.4mm dia) in Rs. Per MT

**(Prices per MT for Cuo, CCo, Feo, Alo as applicable on the 1<sup>st</sup> working day of the month, one month prior to the deadline for submission of bids. The above prices and indices are as published by IEEMA vide circular reference no. IEEMA (PVC) /CABLE --/--/-- one month prior to the deadline for submission of bids.)**

Cu= Price of Copper Rod in Rs. Per MT.

Cc= Price of PVC Compound in Rs. Per MT.

Fe= Price of Steel for Armouring (Flat strip 4mm x 0.8 mm/ Round 1.4mm dia) in Rs. Per MT.

Al = Price of EC grade LME Aluminium rods (Properzi rods) in Rs. Per MT.

**(Prices per MT for Cu, CC, Fe, Al as prevailing on 1<sup>st</sup> working day of the calendar month covering the date One month prior to the date of inspection call letter will be applicable for the calculation of updated price. The above prices and indices are as published by IEEMA vide circular reference no. IEEMA (PVC) /CABLE --/--/-- one month prior to the date of inspection.)**

The value of variation factors for copper, steel and PVC Compound are different for different sizes of signalling cables. Accordingly, the PVC formula for some of the types of signalling cable is as given under:-

Underground Railway Signalling Cable unscreened and armoured copper conductor

- (i) Size 30 C x 1.5 sq.mm.

$$P30C_i = P30C_o + 0.391(Cu - C_{uo}) + 0.557(CC - C_{co}) + 0.425(Fe - Fe_o)$$

For armouring, price of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (ii) Size 24C x 1.5 sq.mm

$$P24C_i = P24C_o + 0.313(Cu - C_{uo}) + 0.481(CC - C_{co}) + 0.398(Fe - Fe_o)$$

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (iii) Size 19C x 1.5 sq.mm

$$P19C_i = P19C_o + 0.248(Cu - C_{uo}) + 0.395(CC - C_{co}) + 0.343(Fe - Fe_o)$$

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (iv) Size 12C x 1.5 sq.mm

$$P12C_i = P12C_o + 0.157(Cu - C_{uo}) + 0.277(CC - CC_u) + 0.289(Fe - Fe_o)$$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (v) Size 9C x 1.5 sq.mm

$$P9C_i = P9C_o + 0.117(Cu - C_{uo}) + 0.241(CC - CC_u) + 0.383(Fe - Fe_o)$$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (vi) Size 6Cx 1.5 sq.mm

$$P6C_i = P6C_o + 0.078(Cu - C_{uo}) + 0.199(CC - CC_u) + 0.329(Fe - Fe_o)$$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (vii) Size 4Cx1.5 sq.mm

$$P4C_i = P4C_o + 0.052(Cu - C_{uo}) + 0.152(CC - CC_o) + 0.277(Fe - Fe_o)$$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (viii) Size 2C x 4 sq.mm(multistrand)

$$P2C_i = P2C_o + 0.073(Cu - C_{uo}) + 0.156(CC - CC_o) + 0.3(Fe - Fe_o)$$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (ix) Size 12C x 2.5 sq.mm

$$P12C_{2.5}_i = P12C_{2.5}_o + 0.282 (Cu - C_{uo}) + 0.371 (CC - CC_o) + 0.342 (Fe - Fe_o)$$

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (x) Size 2C x 2.5 sq.mm

$$P2C_{2.5}_i = P2C_{2.5}_o + 0.047 (Cu - C_{uo}) + 0.139 (CC - CC_o) + 0.277 (Fe - Fe_o)$$

For armouring, value of steel wire size 1.4mm dia is to be taken into consideration.

- (xi) Size 2C x 25 sq.mm PVC insulated, armoured, Aluminium power cable

$$P2C_{25}_i = P2C_{25}_o + 0.146 (Al - Al_o) + 0.303 (CC - CC_o) + 0.306 (Fe - Fe_o)$$

For armouring, value of steel flat strip of size 4mmx0.8mm is to be taken into consideration.

- (xii) For Jelly filled, 0.9mm dia, 6 quad cable

$$PQC_i = PQC_o + 0.135 (Al - Al_o) + 0.139 (Cu - C_{uo}) + 0.515 (CC - C_{co}) + 0.693 (Fe - Fe_o)$$

For PVC Compound Grade CW-22, is to be taken into consideration.

- (viii) The demands for escalation of cost shall be allowed on the basis of provisional indices as mentioned above in Clause vii. Any adjustment needed to be done based on the finally

published indices shall be made as and when they become available.

(ix)(i) Relevant categories of steel for the purpose of operating Price Variation formula as mentioned in this Clause shall be as under:

SL	Classification	Rates to be used for calculating $S_Q$ or $S_B$
1.	Reinforcement bars and other rounds	Average of per tonne rates of 10mm dia TMT & 25mm dia TMT; confirming IS1786; Fe 500
2.	All types and sizes of angles, channels and joists	Average of per tonne rates of 'Angle 75x75x6mm, Mild Steel Plate 10mm thickness and Channel 150x75mm; confirming IS2062, E250 Gr "A"
3.	All types and sizes of plates	Average of per tonne rates of 'MS Plates 10mm thickness and 25mm thickness; confirming IS2062, E250 Gr "A"
4.	Any other section of steel not covered in the above categories	Average of price for the 3 categories covered under SL 1, 2 & 3 in this table.

(ix)(ii). Relevant city for referring "JPC (Joint Plant Committee)" rates of steel items ( $S_Q$  / $S_B$ ) in different Zonal Railways shall be as under :

SL	City	Railway
1.	Delhi	Northern , North Central, North Eastern, North Western
2.	Kolkata	Eastern, East Central, East Coast, Northeast Frontier, South Eastern, Southeast Central
3.	Mumbai	Central, Western, West Central
4.	Chennai	Southern, South Central&South Western

#### (x) Price Variation during Extended Period of Contract

The price adjustment as worked out above, i.e. either increase or decrease shall be applicable upto the stipulated date of completion of work including the extended period of completion where such extension has been granted under Clause 17-A of the Standard General Conditions of Contract. However, where extension of time has been granted due to Contractor's failure under Clause 17-B of the Standard General Conditions of Contract, price adjustment shall be done as follows:

- In case the indices increase above the indices applicable to the last month of original completion period or the extended period under Clause 17-A, the price adjustment for the period of extension granted under Clause 17-B shall be limited to the amount payable as per the Indices applicable to the last month of the original completion period or the extended period under Clause 17-A of the Standard General Conditions of Contract; as the case may be.
- In case the indices fall below the indices applicable to the last month of original/ extended period of completion under Clause 17-A, as the case may be; then the lower indices shall be adopted for the price adjustment for the period of extension under Clause 17-B of the Standard General Conditions of Contract.

#### **NOTE:-**

**For calculation of price variation, cut-off date quarter for running bills/ final bills will be as under:-**

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- (a) In case of running bill, the date of measurement recorded in MB, shall be considered. If measurement date is more than one, then 1st date of measurement recorded in MB will be considered.
- (b) In case of final bill, the date of completion or 1st date of measurement recorded in MB, whichever is earlier, will be considered.

**6.0 Provision of “The Building and other Construction Workers (Regulation of Employment and Conditions of Services) Act,1996” and “The Building and Other Construction Workers Welfare Cess Act,1996” (Clause-55-C of GCC):** The tenderers, for carrying out any construction work, shall get themselves registered with the Registering Officer under Section-7 of the Building and Other Construction Workers act,1996 and rules made thereto by the concerned state Govt. and submit certificate of Registration, issued from the Registering Officer of the concerned State Govt. (Labour Dept.). The Cess shall be deducted from contractor’s bills as per provisions of the Act.

**6.1 Provisions of Payments of Wages Act:** The Contractor shall comply with the provisions of the Payment of Wages Act, 1936 and the rules made thereunder in respect of all employees employed by him either directly or through petty Contractors or sub-contractors in the works. If in compliance with the terms of the contract, the Contractor directly or through petty Contractors or sub-contractors shall supply any labour to be used wholly or partly under the direct orders and control of the Engineer whether in connection with the works to be executed hereunder or otherwise for the purpose of the Engineer, such labour shall nevertheless be deemed to comprise persons employed by the Contractor and any moneys which may be ordered to be paid by the Engineer shall be deemed to be moneys payable by the Engineer on behalf of the Contractor and the Engineer may on failure of the Contractor to repay such money to the Railways deduct the same from any moneys due to the Contractor in terms of the contract. The Railway shall be entitled to recover the same from Contractor’s bills/Security Deposit or any other dues of Contractor with the Government of India all moneys paid or payable by the Railway by way of compensation of aforesaid or for costs of expenses in connection with any claim thereto and the decision of the Engineer upon any question arising out of the effect or force of this Clause shall be final and binding upon the Contractor. (Para 55 of Part II of GCC/2022)

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