

Amendment No. 1

Date: 15.12.2017

Tender Package Name: “Construction of 2X50 MVA, 220/33 kV Nagrota (New) substation including LILO of 220kV Kishenpur-Barn S/C line on D/C Tower at Nagrota Substation under PMDP Sceme-15.

Tender Specification No- RECTPCL/PIA/JKPDD/SS & LILO-01 of 2017 Dated: 18-11-2017

S. No.	Clause No.	Existing Clause	To be Read as
A. INVITATION FOR BIDS, SECTION-I, VOL-I			
1.	Clause 5.0 under table for Important date	Starting Date & Time of Bid Submission: 12/12/2017, 10:00 Hrs Onward	Starting Date & Time of Bid Submission: 01/01/2018, 10:00 Hrs Onward
		Close of Registration on MSTC portal: 19/12/2017 at 15:00 Hrs(IST)	deleted
		Last Date & Time of Submission of Bid: 19/12/2017 at 15:00 Hrs(IST)	Last Date & Time of Submission of Bid: 05/01/2018 at 15:00 Hrs (IST)
		Date of opening of Technical bid: 19/12/2017 at 16:00 Hrs(IST)	Date of opening of Technical bid: 05/01/2018 at 16:00 Hrs (IST)
B. INSTRUCTION TO BIDDER, SECTION-II, VOL-I			
1	Clause No. 11.3	Bidders shall give a breakdown of the prices in the manner and detail called for in the Price Schedules. Where no Price Schedules are included in the Bidding Documents, Bidders shall present their prices in the following manner: Schedule-2: Local Transportation, Insurance and loading and unloading. Schedule-6: Grand Summary (Schedule Nos. 1 to 5)	Bidders shall give a breakdown of the prices in the manner and detail called for in the Price Schedules. Where no Price Schedules are included in the Bidding Documents, Bidders shall present their prices in the following manner: Schedule-2: Local Transportation, In –Transit Insurance, loading and unloading. Schedule-6: Grand Summary (Schedule Nos. 1 to 5)

S. No.	Clause No.	Existing Clause	To be Read as
		<p>Schedule-7: Break-up of Type Test Charges</p> <p>Bidders shall note that the plant and equipment included in Schedule No. 1 above exclude materials used for civil, building and other construction works. All such materials shall be included and priced under Schedule No. 3, Installation Services.</p>	<p>Schedule-6: (After Discount)(GRAND SUMMARY: AFTER DISCOUNT)</p> <p>Schedule-7: Break-up of Type Test Charges</p> <p>Bidders shall note that the plant and equipment included in Schedule No. 1 above exclude materials used for civil, building and other construction works. All such materials shall be included and priced under Schedule No. 3, Installation Services.</p>
C. GENERAL CONDITIONS OF CONTRACT, SEC-IV, VOL-I			
1	Clause no- 32 (ii)	<p>Procedure to order variation:</p> <p>The Engineer-in-Charge shall notify the Contractor of the nature and form of the variation considered necessary. After having received such notice, the Contractor shall submit to the Engineer-in-Charge.</p> <ul style="list-style-type: none"> a) a description of work, if any, to be performed and a programme for its execution, and b) the Contractor's proposal for any modifications to the programme, if considered necessary, according to Clause-25 hereof or to any of the Contractor's obligations under the Contract, and c) the Contractor's proposals for adjustment to the Contract Price. <p>Following the receipt of the Contractor's</p>	<p>Procedure to order variation:</p> <p>The Engineer-in-Charge shall notify the Contractor of the nature and form of the variation considered necessary. After having received such notice, the Contractor shall submit to the Engineer-in-Charge.</p> <ul style="list-style-type: none"> a) a description of work, if any, to be performed and a programme for its execution, and b) the Contractor's proposal for any modifications to the programme, if considered necessary, according to Clause-25 hereof or to any of the Contractor's obligations under the Contract, and c) the Contractor's proposals for adjustment to the Contract Price. <p>Following the receipt of the Contractor's submission, the Engineer-in-Charge shall, decide as soon as possible</p>

S. No.	Clause No.	Existing Clause	To be Read as
		<p>submission, the Engineer-in-Charge shall, decide as soon as possible whether or not the variation shall be carried out.</p> <p>If the Engineer-in-Charge decides that the variation shall be carried out, he shall notify the Contractor to proceed with the variations. If the Engineer-in-Charge and the Contractor are unable to agree the adjustment of the Contract Price, the provisions of Sub-Clause (iii) of this Clause shall apply.</p>	<p>whether or not the variation shall be carried out.</p> <p>1. <u>Changes Originating from Employer</u></p> <p>a. The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the parties thereto shall agree on specific rates for the valuation of the Change.</p> <p>b. The Contract Price for (i) the items for which quantities have been indicated as lumpsum or lot or set and/or (ii) where the quantities are to be estimated by the Contractor shall remain constant unless there is change made in the Scope of Work by Employer. The quantities and unit prices (i) subsequently arrived while approving the Bill of Quantities (BOQ)/Billing breakup of lumpsum quantities/lot/Set and/or (ii) estimated by the Contractor shall be for on account payment purpose only. In case additional quantities, over and above the quantities in BOQ/billing breakup and /or estimated by the Contractor, are required for successful completion of the scope of work as per Technical Specification, the Contractor shall execute additional quantities of these items for which no additional payment shall be made over and above the lumpsum Contract Price. In case quantities of these items supplied at site are in</p>

S. No.	Clause No.	Existing Clause	To be Read as
			<p>excess of that required for successful completion of scope of work, such additional quantities shall be the property of the Contractor and they shall be allowed to take back the same from the site for which no deduction from the lumpsum Contract Price shall be made. Further, in case actual requirement of quantities for successful completion of scope of work is less than the quantities identified in the approved BOQ /billing breakup and/or estimated by the Contractor, the lumpsum contract price shall remain unchanged and no deduction shall be made from the lumpsum price due to such reduction of quantities.</p> <p>It shall be the responsibility of the Contractor to pay all statutory taxes, duties and levies to the concerned authorities for such surplus material which would otherwise have been, lawfully payable in case of non-deemed export contracts. The Contractor shall submit an indemnity bond to keep Employer harmless from any liability, before release of such material to the Contractor by Employer.</p> <p>Set/Lot/Lumpsum shall be governed as per the requirement of the corresponding item description read in conjunction with relevant provisions of Technical Specifications and the Billing breakup referred to above shall be issued by the Employer based on Contractor's request,</p>

S. No.	Clause No.	Existing Clause	To be Read as
			<p>if and as may be required during the currency of the Contract.</p> <p>c. If rates and prices of any change are not available in the Contract, the parties thereto shall agree on specific rates for the valuation of the change and all matters therein related to the change. Based on the same, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.</p> <p>d. The Employer shall issue the Contractor with a Change Order by way of amendment to the Contract or in any other manner deemed appropriate. Even if the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters related to the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a "Pending Agreement Change Order" ("Pending Agreement Amendment").</p> <p>Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.</p>

S. No.	Clause No.	Existing Clause	To be Read as
			<p>If the parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Arbitrator in accordance with the provisions of GCC Clause 48.</p> <p>If the Engineer-in-Charge decides that the variation shall be carried out, he shall notify the Contractor to proceed with the variations. If the Engineer-in-Charge and the Contractor are unable to agree the adjustment of the Contract Price, the provisions of Sub-Clause (iii) of this Clause shall apply.</p>
2	<p>Clause No-32 (vi) New sub clause</p>	No Such Clause	<p>Variations in quantities:</p> <ul style="list-style-type: none"> • Variations by the employer: The employer will have the right to vary the quantities by $\pm 20\%$. No compensation shall be applicable for reducing the quantity. The increased quantity executed shall be built on the same item rates as given in the price schedule. In case of unforeseen circumstances, the Employer reserves his right to delete any Activity Schedule or part thereof. • Variation during actual execution: There may be variation in the executed quantities as per the site conditions. Variation in actual number of quantity required may be more or less than given in price schedule such variations shall be billed by the contractor on the item rates given in the price schedule for the actually executed quantities.

S. No.	Clause No.	Existing Clause	To be Read as
3	Clause No-43	<u>Increase or Decrease of Costs:</u> Deleted	<u>Increase or Decrease of Costs:</u> The Contract Price shall be subject to adjustment in accordance with the provisions of Appendix 2 (Price Adjustment) to the Contract Agreement. The Contract Price shall be increased or reduced on account of variation in quantity in accordance with Clause 32 of GCC.
D. SAMPLE FORMS AND PROCEDURES, SEC-IX, VOL-I			
1	Appendix-2	4.2 PRICE ADJUSTMENT	Revised Appendix-2 in respect of Price Adjustment is enclosed as Annexure - A to Amendment-1
E. TECHNICAL SPECIFICATION, PART-I, VOL-II,			
1.	SEC- XVII, Civil Works	No such annexure	Annexure-1(Specification of Store Shed) to Section XVII, Civil Works is enclosed as Annexure-B to Amendment-1
2.	SEC-XXIII DRAWINGS	Ground Floor Plan for fire water pump house & water tank	Revised drawing for Ground Floor Plan for fire water pump house & water tank is enclosed as Annexure-C to Amendment-1
3.	Additional Section	No such section	Added : PART-I, TECHNICAL SPECIFICATION, VOLUME-II, SECTION-XXIV, APPROVED MAKE OF VARIOUS EQUIPMENTS As Annexure-D to Amendment-1
F. General Information and Scope, SEC-I, PART-II, TECHNICAL SPECIFICATION, VOL-II			

S. No.	Clause No.	Existing Clause	To be Read as
1	Clause No. 1.4	<p>Access to the Line and Right of Way</p> <p>Right of way and way leave clearance shall be arranged by the Employer in accordance with work schedules. Employer will secure way leave and Right of way in the Forest area</p>	<p>Access to the Line and Right of Way</p> <p>Right of way and way leave clearance shall be arranged by the Contractor only in accordance with work schedules.</p>
G. INDICATIVE TENDER DRAWINGS FOR LILO, SEC-IX PART-II, TECHNICAL SPECIFICATION, VOL-II			
1.	INDICATIVE TENDER DRAWINGS FOR LILO	No such drawing	Drawing for route map of LILO is enclosed as Annexure-E to Amendment-1
H. VOL-III, First Envelope (BID FORMS & ATTACHMENTS)			
1	First Envelope	First Envelope- Bid Forms & Attachments	Bidders may note that Bid Forms & attachments (First Envelope) is enclosed as Annexure -F to Amendment-1 in excel file. Bidders are requested to fill the required information in the same excel file and upload the same in the e-bidding portal.
I. VOL-III, Second Envelope (PRICE SCHEDULE)			
2	Schedule-4, Installation Charges	<p>R. Civil Works</p> <p>.....</p> <p>4. Cable Trench of Various Sizes as per drawing including crossing</p> <p>Description:</p> <p>a) Section A-A b) Section B-B</p>	<p>R. Civil Works</p> <p>.....</p> <p>4. Cable Trench of Various Sizes as per drawing including crossing</p> <p>Description:</p> <p>a) Section 1-1 b) Section 2-2</p>

S. No.	Clause No.	Existing Clause	To be Read as
		c) Section C-C d) Section D-D	c) Section 3-3 d) Section 4-4

(Annexure-A to Amendment-1)

REVISED PRICE ADJUSTMENT

Appendix – 2

PRICE ADJUSTMENT

1.0 General

1.1 Prices for work and materials covered under the scope of this Specification shall be furnished by the bidder in the manner specified in the Bid Form & Price Schedules. The bidder shall quote base prices for the Ex-Works price component of the equipment/materials, the complete equipment procured as spares (Transformers, CB, ISO, CT, CVT & SA only) and installation (including civil works) price component of the equipment/materials. These price components for certain equipment/ materials, as specified, shall be subject to price adjustment to reflect changes in the cost of labour and material components as per the provisions given below:

1.2 All Ex-Works Price Components for Installation Hardware, Control and Relay Panels, PLCC Equipment, Wave Traps, Bus Post Insulators, Fire Protection Systems, Illumination System, L.T. Switchgear, IPS Aluminium Tube, Spares etc. and other items not specifically mentioned below shall remain firm and no price adjustment shall be applicable for the price components of these items.

1.3 The Ex-Works Price Components for tower accessories such as danger plate, phase plate, circuit plates, number plate, anti-climbing device, span marker, bird guards, pipe, counterpoise earthing, obstruction lights, Flexible Copper Bond, Insulators etc. shall remain firm and no price adjustment shall be applicable for the price components of these items. Ex-Works Price Components for OPGW shall also remain firm and no price adjustment shall be applicable for this item.

1.4 Other Charges viz. inland transportation, inland insurance, type test charges, survey, soil investigation & painting of towers computer studies (if any) & training charges etc. shall be firm and no price variation shall be payable for these components.

2.0 Ex-works Price Component for Substation Portion

The formulae for calculating the price adjustment to be applied to the Ex-works price component of the equipment/material will be as follows:

A (i). Power Transformer (excluding Insulating Oil)

$$P_1 = P_0 \times \{0.15 + a \times (A_1/A_0) + b \times (B_1/B_0) + c \times (C_1/C_0) + d \times (D_1/D_0) + l \times (L_1/L_0)\} - P_0$$

Where,

P_1 = Price adjustment amount, shipment-wise (if it works out negative, that would mean the amount to be recovered by the Employer from the Contractor).

P_0 = Ex-works price of Power Transformer (excluding Insulating Oil).

A, B, C, D & L = Corresponding recognized price indices published by IEEMA for various materials used in the equipment (except insulating oil) and Labour respectively.

a, b, c & d = Coefficients for copper, electrical lamination steel, Ferrous metals & insulating material respectively for Power Transformer. The sum of these coefficients shall be between 0.65 and 0.73

l = Coefficient of labour, value of which shall be between 0.12 and 0.20.

Further the coefficient a, b, c, d & l should be so selected that their summation shall be equal to 0.85.

A(ii). For Insulating Oil for Power Transformer

$$P_2 = P_0 \times \{0.15 + 0.85 \times (E_1/E_0)\} - P_0$$

P_2 = Price adjustment amount for insulating oil, payable to Contractor for each shipment.

P_0 = Ex-works price of insulating oil, shipment-wise.

E = Recognized price indices published by IEEMA for Insulating oil.

B. L.T. Transformer

$$P_1 = P_0 \times \{0.15 + a \times (A_1/A_0) + b \times (B_1/B_0) + c \times (C_1/C_0) + d \times (D_1/D_0) + e \times (E_1/E_0) + l \times (L_1/L_0)\} - P_0$$

Where,

P_1 = Price adjustment amount expressed in currency of Bid, for each shipment.

P_0 = Ex-works price of L.T. Transformer, in currency of Bid, shipment wise.

A, B, C, D, E & L = Published recognized price indices for the materials identified as below and Labour respectively.

a, b, c, d, e = Value of corresponding co-efficients for Copper, Electrical lamination Steel, Construction Steel, Insulating Material and Oil respectively. The sum of these coefficients shall be between 0.65 and 0.73.

l = The coefficient of labour, which shall be between 0.12 and 0.20.

Further the coefficient a, b, c, d, e & l should be so selected so that their summation shall be equal to 0.85.

For both A & B above:

1) Subscript '0' refers to indices as on 30 days prior to date of bid opening.

2) Subscript '1' refers to indices as on 60 days prior to date of shipment of Material.

C. Circuit Breaker, Current Transformer, Capacitance Voltage Transformer, Isolator and Surge Arrestor

$$P_1 = P_0 \times \{0.15 + a \times (A_1/A_0) + b \times (B_1/B_0) + c \times (C_1/C_0) + d \times (D_1/D_0) + l \times (L_1/L_0)\} - P_0$$

Where,

P_1 = Price adjustment amount for each shipment.

P_0 = Ex-works price of the respective equipment.

A, B, C, D = Price indices of raw materials used in the equipment as published by IEEMA.

L = Indian field labour index – namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

a, b, c, d = The value of corresponding coefficients of raw materials used and the sum of which should be between 0.55 to 0.65.

l = Co-efficient for labour component.

These coefficients are estimated percentage of major raw material/labour component involved in the Ex-works price of equipment such that their summation shall be equal to 0.85.

D. PVC/XLPE Insulated Power and Control Cables

$$P_1 = P_0 \times \{0.85 + 0.15 \times (A_1/A_0)\} - P_0 + (M_1 - M_0)$$

Where,

P_1 = Price adjustment amount per Km. of cable.

P_0 = Ex-works price per Km. of cable.

A = Price index for PVC/XLPE as published by IEEMA.

$M_1 - M_0$ = Change in metal component of the ex-works price of particular type & size of cable.

Where,

M = Weight in MT of metal per Km. of Cable x Price index of metal per MT as published by IEEMA.

The Bidder has to specify in his Bid metal component per Km. for each type and size of cable.

E. Sub Station Structures (including Bolts & Nuts)

For Lattice & Pipe Structures (including washers, foundation bolts and Bolts & Nuts).

$$P_1 = P_0 \times \{0.15 + 0.58 \times (A_1/A_0) + 0.16 (B_1/B_0) + 0.11 (L_1/L_0)\} - P_0$$

Where,

P_1 = Price adjustment amount shipment-wise.

P_0 = Ex-works price of Lattice & Pipe Type Structure including washers, foundation bolts, bolts & nuts.

A = JPC Market Price (Retail) for average Price of Steel Angles of size 50 x 50 x 6 mm of all cities in Rs./MT as published by Joint Plant Committee(JPC).

B = Price indices of electrolytic zinc as published by IEEMA.

L = Indian field labour index - namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

- 2.2 i) Subscript '0' refers to indices as on thirty (30) days prior to date of opening of Bids, for materials & labour.
- ii) Subscript '1' refers to indices and exchange rate as applicable on:
- a) Sixty (60) days prior to the date of shipment for Labour.
 - b) At the expiry of two third (2/3) period from the date of base index to the date of shipment for materials in case of CB, CT, CVT, ISO and SA.
 - c) Sixty (60) days prior to the date of shipment for materials in case of Power & Control Cables and Sub-station structure.

- 2.3 The total adjustment for CB, CT, CVT, SA, ISO, PVC/XLPE insulated Power & Control Cables and Sub-Station Structures (including bolts & nuts) shall be subject to a ceiling of $\pm 20\%$ individually of respective Ex-Works price of CB, CT, CVT, SA, ISO, PVC/XLPE insulated Power & Control Cables and Sub-Station Structures (including bolts & nuts).

However, the total price adjustment for L.T. Transformer, Power Transformer and Insulating Oil for Power Transformer for each shipment shall not be subject to any ceiling whatsoever.

3. Ex-works Price Component for Transmission Line Portion

The formulae for calculating the price adjustment to be applied to the Ex-works price component of the equipment/material will be as follows:

A. Fabricated Tower Parts (including Bolts & Nuts)

$$EC_1 = EC_0 [0.15 + a \times (A_1/A_0) + b \times B_1/B_0 + l \times (L_1/L_0)] - EC_0$$

Where, EC_1 is the price adjustment amount payable on ex-works prices of fabricated tower parts (including Bolts & Nuts), shipment-wise.

EC_0 = Ex-works price component of fabricated tower parts (including ex-works price of Bolts & Nuts) shipment-wise.

A = Price of Steel Blooms of size 150 mm x 150 mm, as published by IEEMA.

B = Price for Electrolytic High Grade Zinc, as published by IEEMA.

L = Indian field labour index – namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

a = Co-efficient of Steel Blooms, Value of which shall be between 0.51 & 0.57.

b = Co-efficient of Zinc, Value of which shall be between 0.08 & 0.10

l = Co-efficient of labour, Value of which shall be between 0.20 & 0.24.

and the sum of a, b & l shall be 0.85.

B. Line Materials

B.1 Hardware Fittings

$$EC_{HW1} = EC_{HW} [0.20 + a \times (A_1/A_0) + b \times (B_1/B_0) + c \times (C_1/C_0) + l \times (L_1/L_0)] - EC_{HW}$$

EC_{HW1} = Price adjustment amount payable on Ex-works price of Hardware Fittings, shipment-wise.

EC_{HW} = Ex-works price for Hardware fittings, shipment-wise.

A = Price indices for EC Grade Aluminium Ingots, as published by IEEMA.

B = Price indices for Electrolytic High Grade Zinc, as published by IEEMA.

C = Wholesale Price Index Number for `Ferrous Metals'(Group Item) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry(www.eaindustry.nic.in).

L = Indian field labour index – namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

a = Co-efficient of EC Grade Aluminum Ingots, Value of which shall be between 0.35 & 0.45.

b = Co-efficient of Electrolytic High Grade Zinc, Value of which shall be between 0.04 & 0.06.

c = Co-efficient of Ferrous Metal, Value of which shall be between 0.18 & 0.22.

l = Co-efficient of labour, Value of which shall be between 0.13 & 0.17.

and the sum of a, b, c & l shall be 0.80.

B.2 Conductor Accessories:

(i) Mid Span Compression Joint for Conductor, Repair Sleeve for conductor

$$EC_1 = EC_0 [0.20 + a \times (A_1/A_0) + l \times (L_1/L_0)] - EC_0$$

Where,

a = Co-efficient of EC Grade Aluminum Ingots, Value of which shall be between 0.63 & 0.67.

l = Co-efficient of labour, Value of which shall be between 0.13 & 0.17.

and the sum of a & l shall be 0.80.

(ii) Vibration Damper for Conductor

$$EC_1 = EC_0 [0.20 + b \times (B_1/B_0) + c \times (C_1/C_0) + l \times (L_1/L_0)] - EC_0$$

Where,

b = Co-efficient of Electrolytic High Grade Zinc, Value of which shall be between 0.06 & 0.08.

c = Co-efficient of Ferrous Metal, Value of which shall be between 0.55 & 0.61.

l = Co-efficient of labour, Value of which shall be between 0.13 & 0.17.

and the sum of b, c & l shall be 0.80.

In the above formulae,

EC₁ = Price adjustment amount of respective items, shipment-wise.

- EC₀ = Ex-works price for Conductor & Earthwire Accessories, shipment-wise.
- A = Price indices for EC Grade Aluminium Ingots, as published by IEEMA.
- B = Price indices for Electrolytic High Grade Zinc, as published by IEEMA.
- C = Wholesale Price Index Number for `Ferrous Metals'(Group Item) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry(www.eaindustry.nic.in).
- L = Indian field labour index - namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

C. Composite Long Rod Insulators shall be on FIRM price basis.

D. Flexible Copper Bond shall be on Firm price basis.

- 3.1 i) Subscript '0' refers to indices for material & labour as on thirty (30) days & three (3) months prior to date of opening of Bids respectively.
- ii) Subscript '1' refers to indices for material & labour as on 60 (sixty) days & four months prior to the date of shipment respectively.
- 3.2 The total adjustment for Hardware Fittings & Conductor Accessories shall be subject to a ceiling of ± 20% individually of respective Ex-Works price of Hardware Fittings & Conductor Accessories.

However, the total price adjustment of fabricated tower parts (including Bolts & Nuts) shall not be subject to any ceiling whatsoever.

4. Insulator (Disc insulators/ Porcelain Long Rod Insulators)

- 4.1 The formulae for calculating the price adjustment to be applied to the Ex-works price component of Insulator will be as follows:

$$P_1 = P_0 \times \{0.15 + 0.05 \times (A_1/A_0) + 0.53 \times (B_1/B_0) + 0.27 \times (L_1/L_0)\} - P_0$$

Where,

P₁ = Price adjustment amount, shipment-wise (if it works out negative, that would mean the amount to be recovered by the Purchaser from the Supplier).

P₀ = Ex-works price of Insulator.

A, B & L are the indices for materials and labour as below:

A = Price Index of High Grade Zinc Ingots, as published by IEEMA /Nationally recognized published index acceptable to the Purchaser.

B = Wholesale Price Index Number for 'Fuel & Power'(Group Item) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry(www.eaindustry.nic.in).

L = Indian field labour index - namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

4.1.1 i) Subscript '0' refers to indices as on thirty (30) days prior to date of opening of Bids, for materials & labour.

ii) Subscript '1' refers to indices as applicable on:

a) Sixty (60) days prior to the date of shipment for Labour.

b) Sixty (60) days prior to the date of shipment for materials.

4.1.2 The total adjustment for Insulator shall be subject to a ceiling of twenty percent ($\pm 20\%$).

5.0 Conductor:

The formulae for calculating the price adjustment to be applied to the Ex-works price component of Conductor will be as follows:

$$P_1 = P_0 \times \{0.15 + a \times (A_1/A_0) + b \times (B_1/B_0) + c \times (C_1/C_0) + l \times (L_1/L_0)\} - P_0$$

Where,

P_1 = Price adjustment amount, shipment-wise (if it works out negative, that would mean the amount to be recovered by the Purchaser from the Supplier).

P_0 = Ex-works price of Conductor.

A, B & L are the indices for materials and labour as below:

A = Price Index of EC Grade Aluminium Ingots, as published by CACMAI/Nationally recognized published index acceptable to the Employer.

B = Price Index of High Carbon Steel, as published by CACMAI/Nationally recognized published index acceptable to the Employer.

C = Price Index of High Grade Electrolytic Zinc, as published by CACMAI/Nationally recognized published index acceptable to the Employer.

L = Indian field labour index - namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

a = Co-efficient for EC Grade Aluminium Ingots, which shall be 0.65.

- b* = Co-efficient for High Carbon Steel, which shall be 0.13.
- c* = Co-efficient for High Grade Electrolytic Zinc, which shall be 0.02.
- l = Co-efficient for labour component, which shall be 0.05.

(*) For bidders who intend to quote their prices based on High Tensile Galvanised Steel wire, the coefficient for the same (i.e. coefficient 'b' for High Tensile Galvanised Steel wire) shall be 0.15 and coefficient 'c' shall not be applicable.

- 5.1 i) Subscript '0' refers to indices as on thirty (30) days prior to date of opening of Bids, for materials & labour.
- ii) Subscript '1' refers to indices as applicable on:
- a) Sixty (60) days prior to the date of shipment for Labour.
 - b) Sixty (60) days prior to the date of shipment for materials.

5.2 The total adjustment for Conductor shall not be subject to any ceiling whatsoever.

6.0 Installation (including Civil Works) Price Component

The formula for calculation of the monthly price adjustments for Installation [including civil works but excluding survey, soil investigation and aviation signal for river crossing towers(if any)] price component shall be as under:

A. Installation price component [including civil works but excluding 'supply & placement of reinforcement steel', 'concreting', survey, soil investigation and aviation signal for river crossing towers (if any)]

$$ER_1 = ER_0 [0.20 + a \times (A_1/A_0) + l \times (L_1/L_0)] - ER_0$$

Where,

ER₁ = Price adjustment amount payable on Installation price component (excluding supply & placement of steel and concreting) for each billing.

ER₀ = Value of erection work done (excluding supply & placement of steel and concreting) in billing period as established by Contract.

A = Wholesale Price Index Number for 'High Speed Diesel'(Individual Commodity) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry(www.eaindustry.nic.in).

L = Indian field labour index – namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

Where,

a = Co-efficient of 'High Speed Diesel Oil', Value of which shall be between 0.20 & 0.24.

l = Co-efficient of labour, Value of which shall be between 0.56 & 0.60.

and the sum of a & l shall be 0.80.

B. Supply and Placement of Reinforcement Steel

$$ER_1 = ER_0 [0.20 + a \times (A_1/A_0) + l \times (L_1/L_0) + b \times (B_1/B_0)] - ER_0$$

Where,

ER_1 = Price adjustment amount payable on price components of Supply and Placement of Steel.

ER_0 = Value of supply & placement of steel in billing period as established by Contract.

A = Wholesale Price Index Number for 'High Speed Diesel'(Individual Commodity) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry(www.eaindustry.nic.in).

B = Wholesale Price Index Number for 'Ferrous Metals'(Group Item) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry(www.eaindustry.nic.in).

L = Indian field labour index – namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

Where,

a = Co-efficient of 'High Speed Diesel Oil', Value of which shall be between 0.09 & 0.11.

b = Co-efficient of 'Ferrous Metal', Value of which shall be between 0.63 & 0.67.

l = Co-efficient of labour, Value of which shall be between 0.04 & 0.06.

and the sum of a, b & l shall be 0.80.

C. Concreting

$$ER_1 = ER_0 [0.20 + a \times (A_1/A_0) + l \times (L_1/L_0) + b \times (B_1/B_0) + c \times (C_1/C_0)] - ER_0$$

Where,

ER_1 = Price adjustment amount payable on price components of concreting.

ER_0 = Value of concreting in billing period as established by Contract.

A = Wholesale Price Index Number for 'High Speed Diesel'(Individual Commodity) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry(www.eaindustry.nic.in).

- L = Indian field labour index – namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).
- B = Wholesale Price Index Number for `Cement & Lime'(Group Item) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry (www.eaindustry.nic.in).
- C = Wholesale Price Index Number for `Structural Clay Products'(Group Item) (monthly) (Base: 2004-05=100), as published by Office of Economic Advisor, Ministry of Commerce & Industry(www.eaindustry.nic.in).

Where,

- a = Co-efficient of 'High Speed Diesel Oil', Value of which shall be between 0.18 & 0.22.
- b = Co-efficient of 'Cement & Lime', Value of which shall be between 0.25 & 0.35.
- c = Co-efficient of 'Structural Clay products', Value of which shall be between 0.18 & 0.22.
- l = Co-efficient of labour, Value of which shall be between 0.09 & 0.11.

and the sum of a, b, c & l shall be 0.80.

- 6.1 i) Subscript 'o' will correspond to thirty (30) days prior to date of opening of Bids.
ii) Subscript '1' will correspond to the month of billing.
- 6.2 The total price adjustment amount for Installation (including civil works) price component shall not be subject to any ceiling whatsoever.
- 7.0 The bidder shall indicate in his bid the actual values of the coefficients a, b, c, d etc to be adopted, keeping in view the range/total values given in para 2,3 4 & 5 above.
- 8.0 The Bidders are required to estimate and indicate the values of different coefficients for each of the items in the price variation formulae within the specified range such that their summation is as specified in the Bidding Documents. Where no value or '-' or 'shall be furnished later' is specified against the coefficient, the same will be deemed to be zero and the fixed component would be suitably adjusted. If the values of all coefficients in price variation formulae indicated by the Bidder are within the specified range but their sum exceeds the summation specified in the Bidding Documents, the values of the coefficients shall be pro-rata adjusted such that the summation remains as per the provisions of the Bidding Documents. If the values of all coefficients indicated by the Bidder are within the specified range but their summation is less than the value specified in the Bidding Documents, the values of the coefficients as indicated by the Bidder shall be considered as such and the fixed component in the price variation formulae would be suitably adjusted. Further, if any of values of the coefficients indicated by the Bidder is out of the range

specified in the Bidding Documents, the lower of the values, as indicated by the Bidder vis-à-vis lower value of the range for that coefficient specified in the Bidding Documents, shall be considered and the fixed component would be suitably adjusted.

9.0 The above price adjustment provision shall be invoked by either party subject to the following further conditions:

- a) For the purpose of Price Adjustment on ex-works price components of the equipment, the date of shipment for Goods shall mean scheduled date of shipment or actual date of shipment, whichever is earlier. Scheduled date of shipment will be ex-works date of despatch, governed by the accepted PERT Network/Bar Chart. Similarly, for the purpose of Price Adjustment on Installation price component, the Billing period shall mean the billing period as per Contract time schedule i.e., the agreed Bar Chart or actual period, whichever is earlier. The Billing period for various Installation activities will be as per agreed Installation Bar Chart indicating monthly schedule of Installation activities for completion of works. However, when the Employer's specific approval for advancement of shipment/installation activities has been obtained in such case the said advanced date shall be treated as the schedule date of shipment/installation activities for the purpose of working out the price adjustment payable.

No price increase shall be allowed beyond the original delivery/ Installation dates unless specifically stated in the Time Extension Letter, if any, issued by the Employer. The Employer will, however, be entitled to any decrease in the Contract Price which may be caused due to lower price adjustment amount in case of delivery of Goods/ Installation beyond the original delivery/Installation dates. Therefore, in case of delivery of Goods/Installation beyond the original delivery/ Installation dates, the liability of the Employer shall be limited to the lower of the price adjustment amount which may work out either on schedule date or actual date of despatch of Goods/ Installation.

- b) In case IEEMA does not publish any of the price indices, as mentioned above, the Bidder shall indicate any nationally recognised published index for respective items and the source of the same shall be furnished in the Bid.
- c) In case of non-publication of applicable indices on a particular date, which happens to be the applicable date for Price Adjustment purposes, the published indices prevailing immediately prior to the particular date shall be applicable.
- d) If the Price Adjustment amount works out to be positive, the same is payable to the Contractor by the Employer and if it works out to be negative, the same is to be recovered by the Employer from the Contractor.
- e) The Contractor shall promptly submit price adjustment invoices for the supplies made/work done, positively within three (3) months from the date of shipment/work done, whether it is positive or negative.

SPECIFICATION OF STORE BUILDING

GENERAL

The scope includes design, engineering and construction, including anti-termite treatment, plinth protection, DPC, peripheral drains, electrification etc. of store building.

The store building shall be essentially single storied reinforced cement concrete (RCC) framed Building with sloping roof of steel tubular truss and 0.63 mm thick CGI roof sheet. The internal electrification shall be designed in accordance with the requirements as specified in relevant section of technical Specification. The store building shall be closed type with brick wall up to full height above floor level. Suitable toe wall of brick masonry in cement sand mortar (1 :6) shall be provided below plinth beam to retain plinth filling.

AREA REQUIREMENTS

The approximate size of building is 16.67 m X 6 m X 4 m high which may vary during detailed engineering stage. The height of building shall be measured from finished floor level to top of roof slab/tie beam.

DESIGN CRITERIA

The Building shall be designed:

1. To the requirements of the relevant Indian Standards quoted therein, and as specified in this specification.
2. for the specified climatic and loading conditions.
3. with a functional and economical space arrangement.
4. To be aesthetically pleasing.
5. With, wherever required, fire retarding materials for walls, doors etc., which would prevent supporting or spreading of fire and shall be decided by the bidder.
6. Suitable Expansion joints, wherever required, shall be provided as per Codal Provisions.
7. All the members of the buildings frame shall be designed for the worst combination of Loads as per relevant Indian Standards.
8. Permissible stresses for different load combinations shall be taken as per relevant Indian Standards.
9. Seismic analysis of the building for Earthquake forces shall be carried out as per relevant Indian Standards.

DESIGN LOADS

1. Building structure shall be designed for the most critical combinations of dead loads, super-imposed loads, equipment loads, wind loads, seismic loads etc. Any other incidental load, if anticipated, shall be duly accounted for in the design, and shall be clearly mentioned by the bidder.
2. Dead loads shall include the weight of structures complete with finishes, fixtures and partitions, and shall be taken as per relevant Indian Standards.
3. Super-imposed loads in different areas shall include live loads, loads from stored

material etc.

- a) Non-accessible Roof – 0.75 kN/m².
- b) Accessible Roof – 1.5 kN/m²
4. Wind loads shall be calculated as per relevant Indian Standards. The Factors affecting the wind speed shall be taken based on the site conditions.
5. Earthquake loads shall be calculated as per relevant Indian Standards.
6. Wind forces and Seismic forces shall not be considered to act simultaneously.
7. All the load combinations to create worst combinations of loads shall be as per relevant Indian Standards.
8. Floors shall be designed to carry loads imposed by stored material (1000 kG /Sq. M), movement of maintenance trucks (if required) and any other load associated with the building. In general, floors shall be designed for live loads as per relevant Indian Standards.

FLOORS, WALLS & ROOFS

The floor shall be constructed with 52 mm thick cement concrete finished with metallic hardener topping, 150 mm thick base plain cement concrete layer, 100 mm thick compacted local sand filling and 200 mm thick hard core of stone ballast with interstices filled with local sand shall be laid below cement concrete flooring top. The earth filling below floor shall be well rammed.

PLASTERING

External surfaces of building shall have 18 mm thick plaster in two layers, with the under layer 12mm thick 1:5 cement sand (coarse) plaster and the top layer 6 mm thick 1:6 cement sand (coarse) plaster. Inside wall surfaces shall have 12/15 mm thick 1:6 cement sand (coarse) plaster. Rough surfaces shall have 15mm and smooth surface shall have 12 mm thick cement sand plaster.

EXTERNAL PAINTING

External surfaces of the Building shall be painted with acrylic exterior flat paint as per manufacturer's specification and approval of Employer.

DOORS, WINDOWS AND VENTILATORS

The schedule of doors, roller shutter, windows and ventilators of the Building shall be of steel as per relevant Indian Standards. Rolling Steel shutters shall be provided as per the layout and requirements of the building. Main entrance door to the store Building shall be MS door frame with M.S. sheet double shutter. Windows and ventilators shall be of steel made of hot rolled sections windows and ventilators shall be provided with 5.5 mm thick glazing.

PLINTH PROTECTION

750 mm wide plinth protection all-around the building shall be provided. Plinth protection shall comprise of 50 mm thick PCC (1:2:4) laid over 75 mm thick well compacted stone aggregates with interstices filled with local sand including smooth finishing top.

BUILDING STORM WATER DRAINAGE

1. The building design shall provide for the collection of storm water from the roof. This water shall be drained to the main drainage system of the Sub-station.

2. Cast Iron Rainwater down comer pipes conforming to relevant Indian standards with water tight lead joints or medium class galvanized mild steel pipes conforms to relevant Indian Standards shall be provided to drain off the rain water from the roofs. These pipes shall be suitably concealed with masonry work or cement concrete or cladding material.
3. Suitable arrangements for draining out water collected from equipment blow downs, leakages, floor washings, fire fighting etc. shall be provided, if found necessary.

DETAILS OF ROOF

Roof of the Building shall be sloping type made of steel tubular truss and 0.63 mm thick CGI sheet. All necessary hooks, J bolts, washers and nuts etc. required to fix CGI sheet with truss shall be provided. The roof shall be leak proof and holes shall be properly sealed. The truss may be fixed with RCC tie beam and column with MS plate and bolts properly grouted. Suitable MS gutter along the face of roof sheet shall be provided to collect rain water from roof to finally discharge into rain water pipes. All steel work shall be provided with a priming coat of standard steel primer followed by one coat of epoxy paint and final coating of PU (Minimum 100 micron). The steel work for aforesaid members shall be provided with suitable treatment of shot blasting before application of steel primer.

DETAILED FINISH SCHEDULE

The detailed finish schedule for store building is given below:

Table- 2 : DETAILED FINISH SCHEDULE

	LOCATION	FLOORING & SKIRTING 150 MM HIGH	WALL (INTERNAL)	CEILING	ROLLER SHUTTER, DOOR, WINDOWS & VENTILATOR
	Store Building	62mm thick cement concrete flooring with metallic hardener topping .skirting shall be of cement sand plaster.	Oil bound washable distemper on masonry portion.	Sloping roof of CGI sheet.	Windows/ ventilator shall be hot rolled steel section with 5.5mm thick glazing. Entry door shall be of M.S. Sheet double shutter and rolling shutter shall be of steel. MS steel grill shall be provided for semi closed type store. Steel work shall be provided with one coat of steel primer and

					two coats of synthetic enamel paint of standard make.
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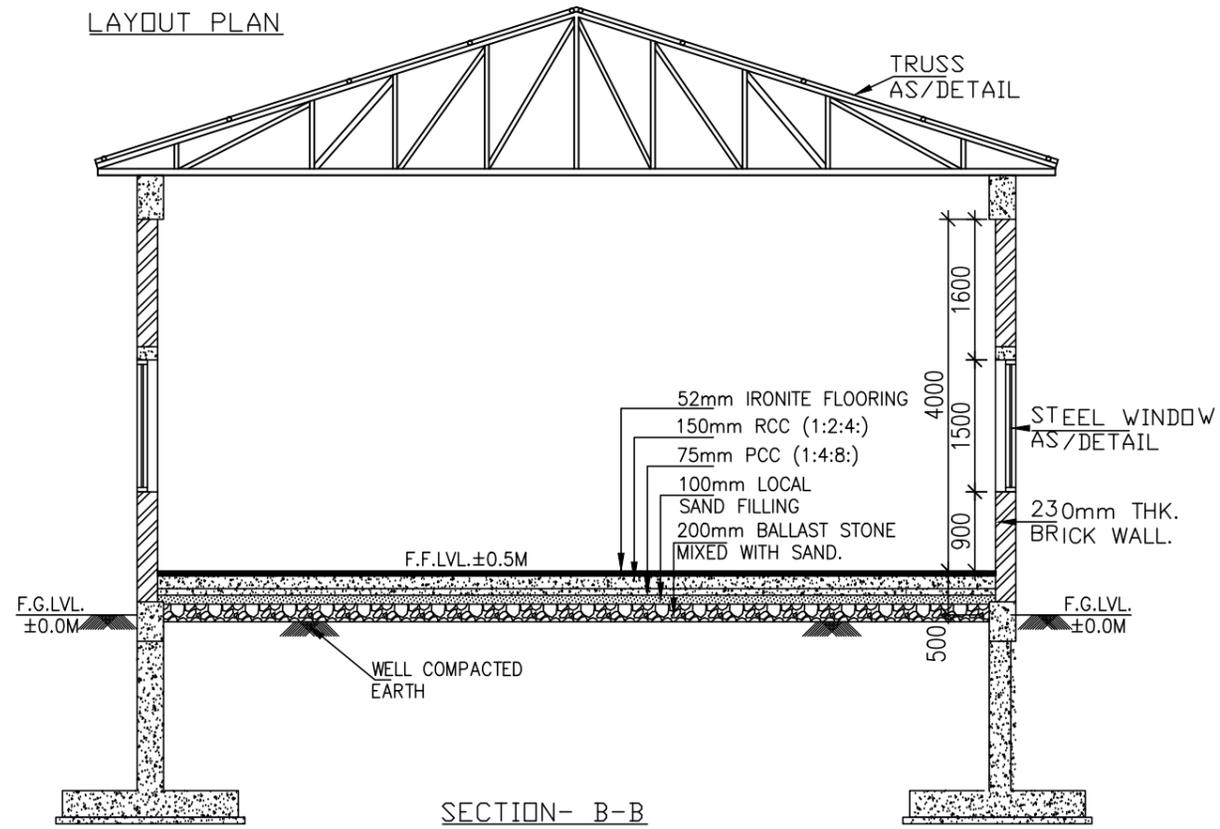
ELECTRIFICATION

All electrification shall be executed as per details specified elsewhere in the technical specification. All details shall be as per relevant Indian standard codes (I S Codes)/ equivalent International Standards.

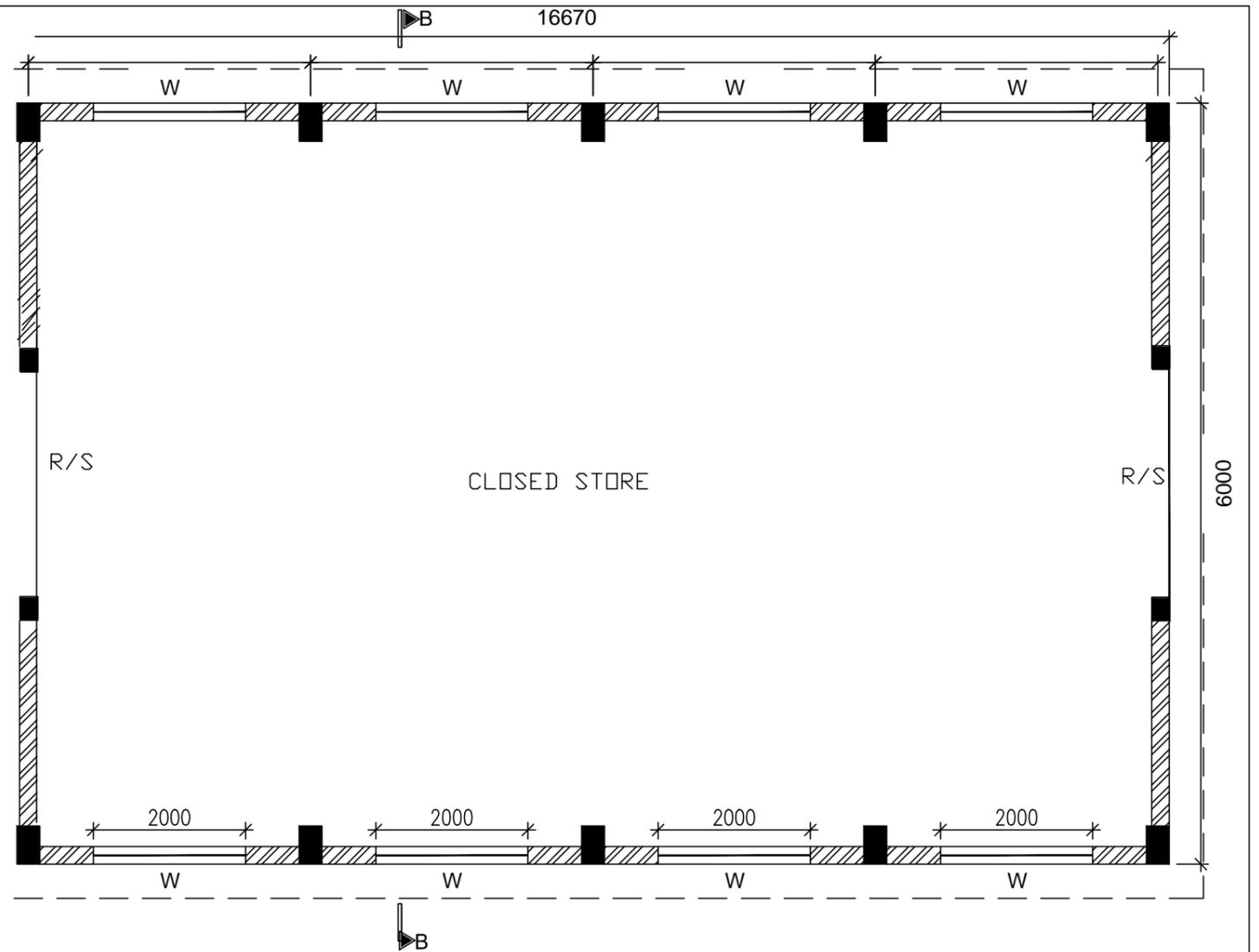
MEASUREMENT

The building shall be measured and paid on Square meter area basis. Items like excavation, plain Concrete, reinforced cement concrete and reinforcement steel shall not be measured separately and all items including electrification, finishing's, steel grills, windows, shutter etc. to complete the building shall be deemed to be included in unit rate of building.

LAYOUT PLAN



SECTION- B-B



NOTES :-

1. ALL DIMENSIONS ARE IN MM.
2. ALL BRICK WORK SHALL BE WITH BRICK OF CLASS DESIGNATION 75 IN CEMENT SAND MORTAR OF 1:6 (1 CEMENT : 6 SAND).
3. ALL FOUNDATION SHALL BE OF RCC FOOTING.
4. FOR STORE THE BRICK WALL SHALL BE OF FULL HEIGHT.
5. ALL DIMENSIONS OF COLUMNS, BEAMS ARE TENTATIVE WHICH SHALL VARY DURING DETAILED ENGG. STAGE.

DOOR & WINDOW SCHEDULE

NAME	WIDTH	HEIGHT	SILL	DESCRIPTION
R/S	3000	3000	00	MS ROLLING SHUTTER
W	2000	1500	900	STEEL WINDOW WITH 5.5 MM THK. GLASS GLAZING

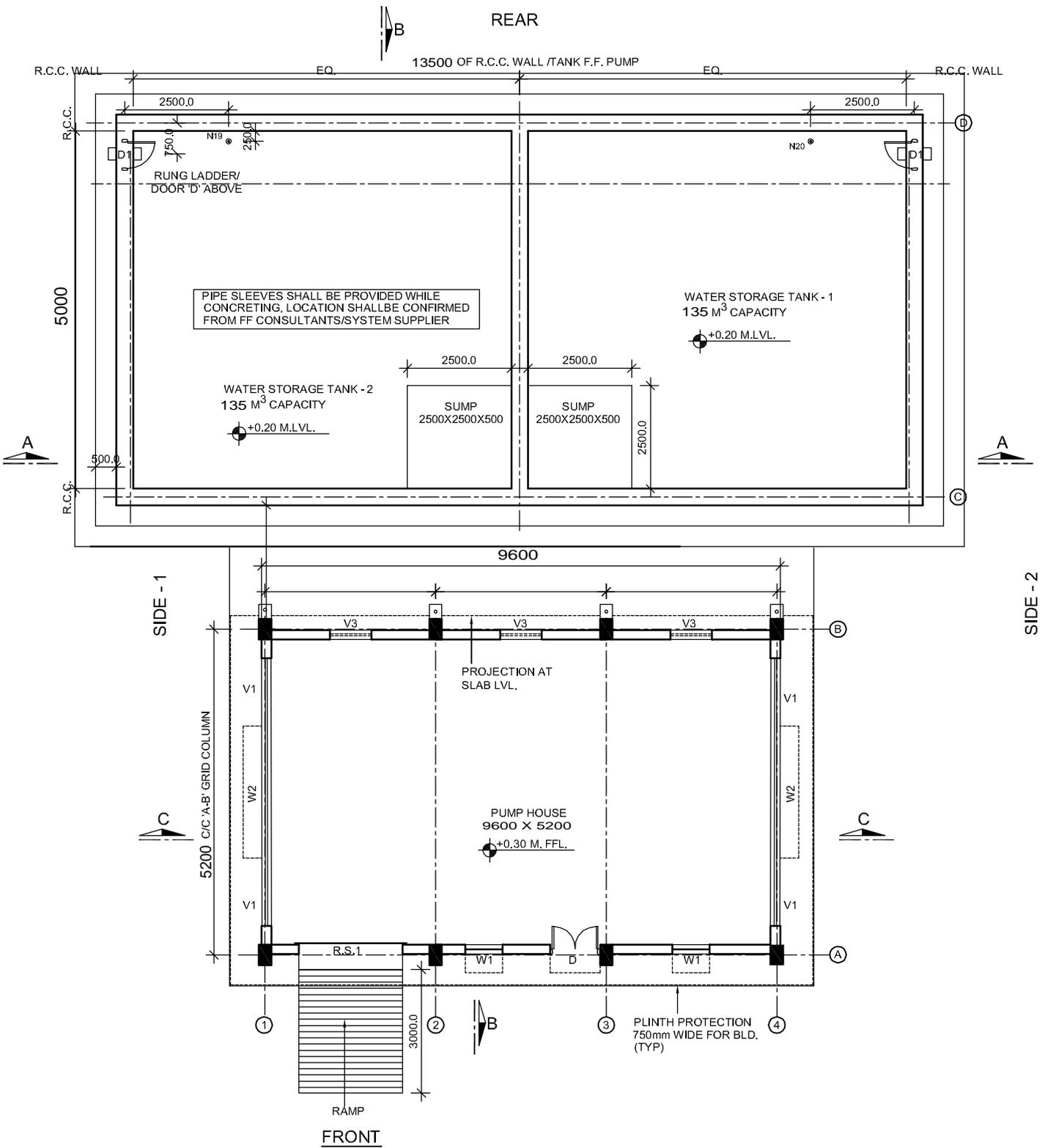
FOR TENDER PURPOSE

REC TRANSMISSION PROJECTS
COMPANY LIMITED

TITLE : CLOSED STORE BUILDING
GROUND FLOOR PLAN & SECTIONS

DRAWING NO. SCALE NTS REV 0

REVISED



GROUND FLOOR PLAN FOR FFPH

RELEASED FOR TENDER & CONSTRUCTION.

REC TRANSMISSION PROJECTS COMPANY LTD

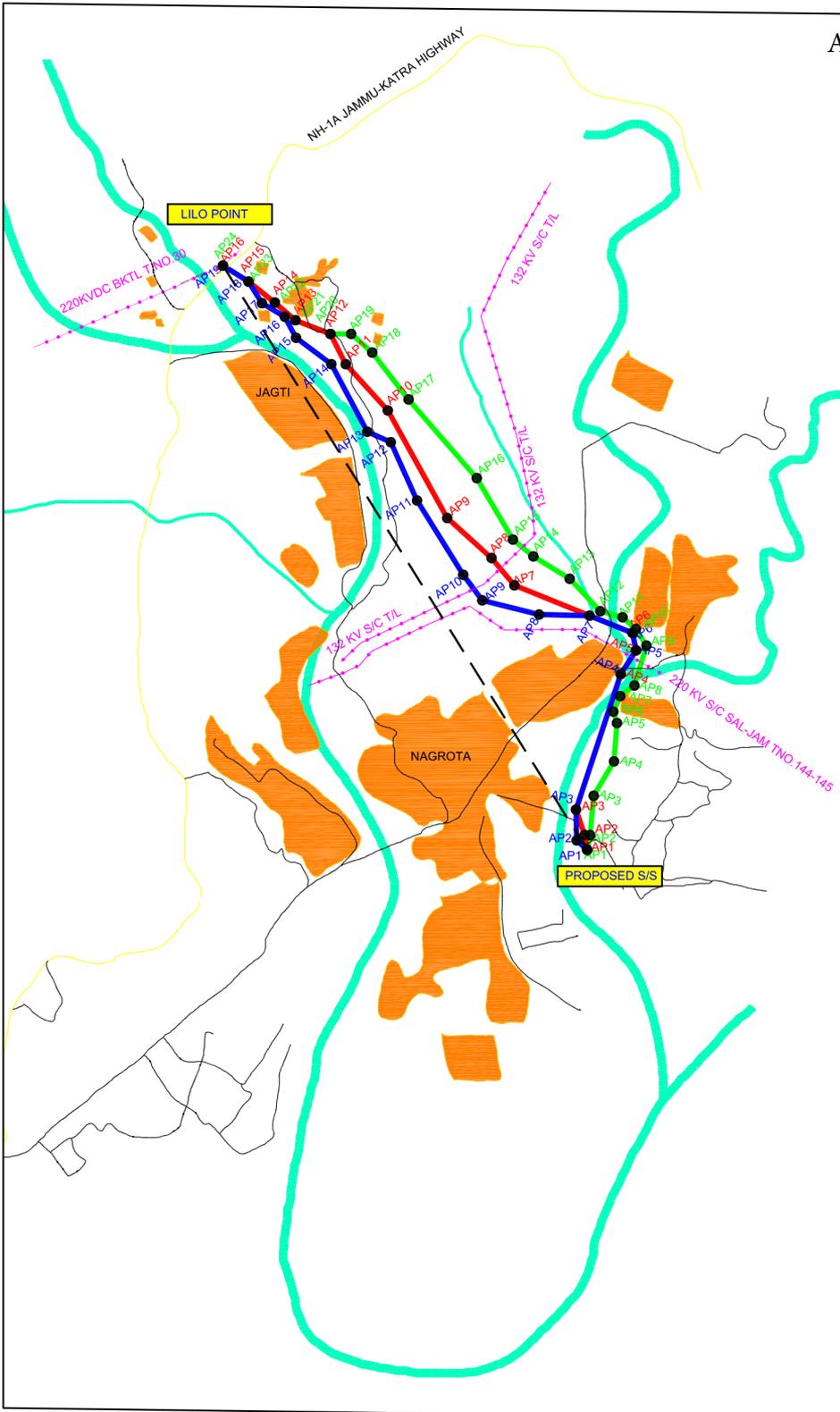
PROJECT:
220/33kV NAGROTA GRID SUBSTATION

TITLE:
GROUND FLOOR PLAN FOR FIRE WATER PUMP HOUSE & WATER TANK

PART-I
TECHNICAL SPECIFICATION
VOLUME-II, SECTION-XXIV
APPROVED MAKE OF VARIOUS EQUIPMENTS

LIST OF APPROVED MAKE FOR MAIN EQUIPMENTS

S.NO.	DESCRIPTION OF EQUIPMENT	NAME OF APPROVED MAKE
1	POWER TRANSFORMER	CGL/BBL/KANO HAR/EMCO/TOSHIBA/T&R
2	245kV/36kV CIRCUIT BREAKER	CGL/SIEMENS/ABB/ALSTOM
3	245KV CAPACITIVE VOLTAGE TRANSFORMER	CGL/SIEMENS/ABB/ALSTOM/MEHRU
4	245KV/36kV CURRENT TRANSFORMER	CGL/SIEMENS/ABB/ALSTOM/MEHRU/TOSHIBA/ANY OTHER POWER GRID APPROVED VENDOR
5	36kV POTENTIAL TRANSFORMER	CGL/SIEMENS/ABB/ALSTOM/MEHRU
6	245KV ISOLATOR	SIEMENS/GR POWER/SWITCHGEAR & STRUCTURES/HIVELM/S&S POWER
7	36KV ISOLATOR	SIEMENS/GR POWER/SWITCHGEAR& STRUCTURES/HIVELM/UNIVERSAL/ELECTROLITES
8	216KV SURGE ARRESTOR	CGL/OBLUM/LAMCO
9	30KV SURGE ARRESTOR	CGL/OBLUM/LAMCO
10	CONTROL & RELAY PANEL	SCHEINDER/ALSTOM/SIEMENS/ ANY OTHER POWER GRID APPROVED VENDOR
11	SUBSTATION AUTOMATION	SCHEINDER/ALSTOM/SIEMENS/ ANY OTHER POWER GRID APPROVED VENDOR
12	DIGITAL PROTECTION COUPLER	ABB/ALSTOM/ZIV-SPAIN/ ANY OTHER POWER GRID APPROVED VENDOR
13	1.1kV POWER & CONTROL CABLES	KEI/PARAMOUNT/HAVELLS/POLYCAB/RPG/LASER ANY OTHER POWER GRID APPROVED VENDOR
14	220V & 48V BATTERY	AMARAJA/EXIDE/ ANY OTHER POWER GRID APPROVED VENDOR
15	220V & 48V BATTERY CHARGER	AMARAJA/STATCON/CHLORIDE/CHHABI/ ANY OTHER POWER GRID APPROVED VENDOR
16	LT SWITCHGEAR	UNILEC/C&S/VIKAS/MAKTEL JASPER/SPACEAGE/NITYA
17	LT TRANSFORMER	TOSHIBA MARSON/TESLA/TECHNICAL ASSOCIATE



NORTH



LEGEND (SHEET 1 OF 1)

ROUTE-1 (Proposed)	
ROUTE-2	
ROUTE-3	
BEE LINE	
SUBSTATION	
RAILWAY LINE	
POWER LINE 132KVABOVE	
NATIONAL HIGHWAY	
SH / MAJOR ROAD	
CONTOUR	
RIVER AND WATER BODY	
SETTELMENT	
FOREST	

REC TRANSMISSION PROJECTS COMPANY LIMITED

Final Route Alignment Drawing of 3 Alternative Routes
Based on Toposheets, Walk Over Survey and
Using Modern Survey Techniques
For

220KV S/C LILO OF BARN TO KISHINPUR TL LINE

Scale : 1:20000 Dwg No. GEO/REC/RA/01

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