



KERALA STATE ELECTRICITY BOARD LIMITED
(Incorporated under the Companies Act, 1956)

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ABSTRACT

TransGrid 2.0 Projects - Construction of 220kV Air Insulated Substations at Manjeri, Chalakudy, Kothamangalam & Chithirapuram - Excess quantities and extra items - Sanction accorded - Orders issued

Corporate Office (SBU-T)

B.O.(FTD)No.206/2021/D(T&SO)/T6/AIS-Package 1/2020-21/Thiruvananthapuram dated.18.03.2021

- Read: 1. Work Order No.15/2018-19/DCE/TGN/SRR dated. 05.07.2018
2. Note No. D(T&SO)/T6/TransGrid/AIS-Excess quantity&Extra item/20-21/260 dated. 09.03.2021 of the Director(T&SO) (Agenda Item No. 36/3/21)

ORDER

KSEB Limited has accorded Administrative Sanction for the execution of AIS package 1 under Transgrid 2.0 project for an amount of Rs. 189.77 Crore which includes construction of 220kV AIS Substations at Manjeri, Kothamangalam, Chithirapuram and Chalakudy. Subsequently Technical Sanction was accorded for Rs.131.43 Crore. The subject work was tendered for a PAC of Rs. 131.43Cr and awarded to M/s. Siemens Ltd, Energy Management Transmission Solution, Gurgaon for an amount of Rs. 137.97 Cr, which is 4.976% above PAC.

During the execution of the projects, some deviations were necessitated from original estimate for the successful completion of the project. The variation in quantity of excess and under executed items leads to a net decrease in cost of Rs. 275.67 lakh. The cost of extra items required including material and labour causes net increase of Rs. 632.39 Cr.

The changes during approval by KSEBL over the design of the contractor, compilation of the estimates prepared at various offices, control room building extension at Chalakudy, construction of Bay Control Centre (BCC) in the switchyard, changes in the soil strata at project locations, relocation of Chithirapuram due to special requirement of Generation wing and as per the direction of the Geological department after the flood 2018 required the additional site leveling works etc resulted in quantity deviations & extra items.

The quantity deviation and extra items were reviewed by the PMC and as directed, negotiated with the contractor. Accordingly, four methodologies were adopted for arriving a mutually agreed rate for extra items (which was categorized as Category I, II, III & IV) without much financial commitment to KSEBL. Category I (DSR 2016 + Cost Index or KSEBL Cost Data, for 27 Labour items), Category II (DSR 2016 + Cost Index with tender excess, for 4 Labour items), Category III (expenditure actually incurred by contractor for 3 labour items) and Category IV (Market rate, for Labour -6 & material - 7 items)

The deviations in the quantity and extra item resulted in excess Rs.361.90 Cr (2.62%) above the contract amount. The subject matter was referred to the Financial Adviser for remarks and the FA

has recommended to sanction the excess quantity/extra item subject to the clarification by the Chief Engineer, TransGrid on certain points and the Chief Engineer, TransGrid clarified the same. The PMC-2 reviewed the subject work and approved the amount incurred due to excess/under executed quantity and extra items.

The Committee formed as per the direction of the CMD, KSEBL to examine this excess/extra claims, recommended to accept all Excess and Extra item quantities executed & the rate proposed under Category I,II,and IV for extra items. It is also recommended to renegotiate in the rate for 3 extra items under Category III. On re negotiation, the contractor reduced the rate of two items and hence the net excess amount comes to Rs. 356.72 lakh which is 2.59% above the contract amount including GST.

The matter of this deviations due to under/over executed items and extra items carried out for the subject work was placed before the Full Time Directors for sanction as per note read as 2nd as above.

Having considered the matter in detail, the Full Time Directors in the meeting held on 09.03.2021,

Resolved to accord sanction for excess quantity (as per Annexure I, 12 pages) and extra items (Annexure II, 9 pages) required for the construction of 220kV Air Insulated Substations at Manjeri, Kothamangalam, Chithirapuram and Chalakudy under TransGrid 2.0 projects with financial commitment of Rs. 356.72 lakh, which is 2.59% of the contract amount including GST.

Orders are issued accordingly.

By Order of the Full Time Directors,

S/d/-

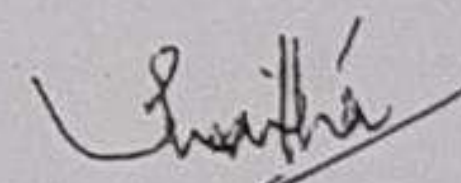
Lekha G

Company Secretary (In-Charge)

To : The Chief Engineer (TransGrid), Shornur

Copy to: The Deputy Chief Engineer, TransGrid North/South
The Financial Adviser/ The Chief Internal Auditor/ The Company Secretary
The RCAO/ RAO
The TA to Chairman & MD/D(T&SO)/D(D,IT&HRM)/ D(G-C)/D(G-E& SCM),D(P&S) PA to D(F)
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Assistant Engineer

Annexure I to BO-206/2021/D(TWSO)/T6/HIS Package-I/2020-21, IVPM dtd. 18.03.2021
 KERALA STATE ELECTRICITY BOARD LIMITED
 TRANSGRID, SHORANUR

AIS Substation Package - 1 - Construction of 220kV Substations at Manjeri, Kothamangalam, Chithirapuram and Chalakudy
 Contract No: E-Tender No. DCE/TransGrid(N)/02/2018-19

Name of Contractor: M/s. Siemens Ltd, Gurgaon (India)
 Work Order: 15/2018-19/DCE/TGN/SRR dated 05-07-2018 of DCE
 Agreement: 30/18-19/Transgrid (N)/SRR dated 16-07-2018

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item	Sl. No.	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)					Specific Reason for Variation		
				Quantity			Agreed Rate Rs	Amount -Rs (Excluding GST)			
				BOQ	Revised	% Deviation		Agreement		Revised	
1	2	3	4	5	6	7	8	9	10	11	
Part A		Supply									
Supply	37	12x2.5mm2 PVC Insulated Armoured Copper Control Cable	km	22.00	44.09	100.40%	2,46,535.07	54,23,771.54	1,08,69,238.17	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.	
Supply	38	4x2.5mm2 PVC Insulated Armoured Copper Control Cable	km	6.50	41.23	534.35%	1,02,014.51	6,63,094.32	42,06,364.29	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.	
Supply	39	2x2.5mm2 PVC Insulated Armoured Copper Control Cable	km	7.50	24.57	227.55%	64,973.53	4,87,301.48	15,96,139.74	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.	
Supply	40	4x4mm2 PVC Insulated Armoured Copper Control Cable	km	6.50	36.22	457.26%	1,38,448.26	8,99,913.69	50,14,872.87	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.	
Supply	41	4x10mm2 PVC Insulated Armoured Copper Cable	Metre	1,600.00	4,348.00	171.75%	310.29	4,96,464.00	13,49,140.92	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.	
Supply	45	3.5Cx35mm2, 1.1kV XLPE insulated Armoured Aluminium Power Cable.	Metre	1,200.00	5,285.00	340.42%	157.32	1,88,784.00	8,31,436.20	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.	
Supply	48	Moose conductor for Bus arrangements	km	12.00	20.45	70.43%	3,60,738.06	43,28,856.72	73,77,454.07	The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The twin moose selected for the transformer bays - strung bus by considering the future enhancement of transformer and hence the quantity exceeded.	
Supply	54	220kV Single Tension H/W for Single MOOSE	No	150.00	164.00	9.33%	4,261.87	6,39,280.50	6,98,946.68	The quantity changed as part of the detailed engineering and design approved.	

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

S/N	Item No.	Item Description	Units	220KV AIS Package (Main, Chhaganpur, Kuthamangalam and Chakkul)			Amount: Rs (Excluding GST)			Specific Reason for Variation
				Quantity			Agreed Unit Rs	Agreement	Billed	
				BBO	Maximal	% Deviation				
Supply	82	1/3 Strip 50 x 6mm	Mt	21.00	27.27	27.48%	71,287.25	14,91,653.35	16,28,815.81	Based on the current design, minimum crosssection required for conductor is 400/70mm. So double earthing is required for all major equipments with 50mm strip which was not envisaged. The DESP also provided for the control room building and PPPH, which was not estimated in initial estimation and hence excess quantity.
Supply	78	1x500mm ² 11kV XLPE cable	km	2.50	2.40	86.00%	8,17,371.04	9,28,956.19	14,81,699.54	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.
Supply	79	1x500mm ² 11kV XLPE cable Termination Kit Outdoor Heat Shrinkable	No	8.00	13.00	82.50%	1,905.00	15,240.72	24,766.17	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.
Supply	80	1x500mm ² 11kV XLPE cable Termination Kit Indoor Heat Shrinkable	No	8.00	13.00	82.50%	1,720.72	13,765.84	22,369.49	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the contract and the approval at later stage resulted in the excess quantity. The quantity also required for the successful completion of the project and being executed at site.
Supply	94	BPI clamp for Al pipe (Rigid/Sliding)	No	68.00	75.00	10.29%	841.93	57,251.24	62,144.75	The item was under estimated and hence revised as per actual requirement.
Supply	95	Breaker clamp for Al pipe bus 114.5/97.1R	No	14.00	77.00	450.00%	3,485.70	48,799.80	2,68,398.90	The item was under estimated and hence revised as per actual requirement.
Supply	96	CT clamp for Al pipe bus 114.5/97.1R	No	14.00	50.00	257.14%	3,485.70	48,799.80	1,74,285.00	The item was under estimated and hence revised as per actual requirement.
Supply	99	Spacer for ACBR Twin Moose	No	1,000.00	1,498.00	49.80%	911.99	9,11,990.00	13,66,161.02	The spacers increased due to change as double bar (Twin moose) bus provided for the transformer by considering the transformer upgradation in the future. The spacers provided as per the spacer damper design template.
Supply	103	60W LED Out door Yard/Street lights for switchyard and road	No	134.00	354.00	278.77%	4,137.12	6,37,116.48	14,64,540.48	The Switchyard lighting design done based on the CBIP Lux level standard and excess quantity required for achieving the required lux levels in the outdoor area.
Supply	104	Single 8 Feet, 18W LED tube light fittings with LED tube and accessories of ISI marked good quality	No	60.00	238.00	298.33%	462.14	27,728.40	1,10,451.46	Tube fittings amended based on the lighting requirement and lux level estimation done as part of the illumination design.
Supply	112	Bulk Head Flame proof light fitting without bulb	No	4.00	18.00	350.00%	2,522.71	10,099.84	45,408.78	The number of lights increased based on the lighting requirement of the substation.
Part A		Total - Supply		1,73,21,338.20	3,96,21,683.34			1,73,21,338.20	3,96,21,683.34	

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item	Sl. No.	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)			Agreed Rate Rs	Amount -Rs (Excluding GST)		Specific Reason for Variation	
				Quantity				Agreement	Revised		
				BOQ	Revised	% Deviation					
1	2	3	4	5	6	7	8	9	10	11	
Part B		Labour & Erection Charge									
Labour	2	Earth work in excavation in all kinds of soil by mechanical means (Hydraulic excavator)/manual means in foundation trenches or drains (not exceeding 1.5m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50m.	Cum	4,565.00	9,137.24	100.16%	140.12	6,39,647.80	12,80,310.63	The provision in the estimate was only tentative. The cable trench design based on the Road requirement, requirement for drains, sock pit etc were finalised after the detailed engineering and design. The quantity exceeded based on the design requirement in the location. The excavation of the FHP pedestral supports, LM Fdn, Chain link fencing, CB Platform, DG set fuel tank, drain works etc. were not included in the original estimate	
Labour	3	Earth work in excavation in all kinds of soil by mechanical means (Hydraulic excavator)/manual means in foundation trenches or drains (not exceeding 1.5m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift above 1.50 m and upto 3.0 m, including	Cum	320.00	410.56	28.30%	122.85	39,312.00	50,437.79	The item exceeded as part of the detailed engineering and design. The wall works increased at Chalakudy due to FFPH, BOT, Cable Trench, Aux. transformer etc.	
Labour	4	Earth work in excavation by mechanical means (Hydraulic excavator) in all kinds of soil including disposal of excavated earth, lead upto 50m and lift upto 1.5m.	Cum	18,000.00	30,000.09	66.67%	196.56	35,38,080.00	58,96,816.90	The item exceeded as part of the detailed engineering and design. The wall works increased at Chalakudy due to FFPH, BOT, Cable Trench, Aux. transformer etc.	
Labour	5	Earth work in excavation by mechanical means (Hydraulic excavator) in all kinds of soil including disposal of excavated earth, lead upto 50m and additional lift upto 1.5m.	Cum	6,100.00	12,145.75	99.11%	122.85	7,49,385.00	14,92,105.14	The earth work additional lift above 1.5m was less as per the detailed engineering and design. The additional lift was not required for Equipment foundation as per the design approval based on soil strata	
Labour	8	Providing and laying in position cement concrete of specified grade of 1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size) excluding the cost of centering and shuttering - All work up to plinth level.	Cum	500.00	1,637.72	227.54%	4,648.29	23,24,145.00	76,12,574.26	This item used as per the design approval for foundation. There were three lean concrete items in the BOQ viz item No. 8, 9 and 41. The item 9 and 41 are not executed at site as the design approved specified only item No. 8, which resulted in the excess quantity of the item.	
Labour	11	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level :1:1.5:3 (1 cement : 1.5 coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size).	cum	6,485.00	7,556.30	16.52%	5,994.46	3,88,74,073.10	4,52,95,919.37		
Labour	12	Centering and shuttering including strutting, propping etc. and removal of form for all heights for Wall (any thickness) including attached pilasters, buttresser plinth and string courses.	sqm	930.00	18,147.91	1851.39%	675.66	6,28,363.80	1,22,61,819.57	The quantity is the actually executed at site as per approved drawing and which exceeded BOQ. These item is used for executing the internal cable trench wall, FFPH,BOT,Culvert wall, Transformer foundation wall etc. The item provided for shuttering works of the wall and the quantity was insufficient at Chalakudy.	
Labour	13	Centering and shuttering including strutting, propping etc. and removal of form for all heights.Columns, Pillars, Piers, Abutments, Posts and Struts	sqm	9,040.00	15,378.83	70.12%	577.38	52,19,515.20	88,79,426.56	The item exceeded when considered the lightning mast, Circuit Breaker Platform, Equipment pedestal and the grouting of Transformers, FFPH fire Hydrant Support etc. These works were an omission in the estimate. The CRB area also increased during approval, which also resulted in the excess quantity	
Labour	14	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns,pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20 mm nominal size).	cum	170.00	196.16	15.39%	5,994.46	10,19,058.20	11,75,891.26	The item exceeded as part of the detailed engineering and design. The wall works increased at Chalakudy due to FFPH, BOT, Cable Trench, Aux. transformer etc.	
Labour	16	Centering and shuttering including strutting, propping etc. and removal of form for all heights, Stairs, (excluding landings) except spiral-staircases	sqm	220.00	261.70	18.96%	675.66	1,48,645.20	1,76,821.57		

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item	Sl. No.	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)						Specific Reason for Variation
				Quantity			Agreed Rate Rs	Amount -Rs (Excluding GST)		
				BOQ	Revised	% Deviation		Agreement	Revised	
1	2	3	4	5	6	7	8	9	10	11
Labour	17	Centering and shuttering including strutting, propping etc. and removal of form for all heights. Suspended floors, roofs, landings, balconies and access platform	sqm	3,225.00	3,261.32	1.13%	61.42	1,98,079.50	2,00,310.46	
Labour	19	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level with Thermo-Mechanically Treated bars of grade Fe-500 D or more.	kg	85,000.00	5,14,090.94	504.81%	71.16	60,48,600.00	3,65,82,710.93	<p>There are two items in the contact schedule for steel reinforcement</p> <p>Item No. 19 - Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level with Thermo-Mechanically Treated bars of grade Fe-500 D or more - Quantity 85,000 kg &</p> <p>Item No. 20 - Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level with Thermo-Mechanically Treated bars of grade Fe-500 D or more - Quantity - 460,100 kg.</p> <p>The quoted rate for the above items are same as per the contract i.e. Rs. 71.16. The total quantity booked in the four project is 411,036kg, against the available provision for the steel reinforcement of 545,100 kg (Item 19 + Item 20), which is 75.41%. The variation happened due to an oversight error during the quantity compilation of our projects, but doesn't affect the project cost being one and same item without any cost additional implications. KSEBL had already proposed the variation in the PMC meeting for review and its subsequent approval with TS Authority in accordance with the KIIFB guidelines (Clause 9.2 of KIIFB). The copy of the approval will be submitted after completing the approval formalities and meanwhile we request for accepting the compliance report and processing the work bill at the earliest</p>
Labour	21	Random rubble masonry with hard stone in cement mortar 1:6 (1 cement : 6 coarse sand) in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level.	cum	320.00	330.00	3.13%	4,082.21	13,06,307.20	13,47,129.30	The item provided for general civil works like auxiliary transformer plinth, rivetment works etc. But the work done RCC and hence executed less
Labour	22	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	17,010.00	32,531.58	91.25%	159.70	27,16,497.00	51,95,293.81	The item changed subject to the proportional change in item 2,3,4 & 5.
Labour	23	Concrete Solid block masonry using precast solid blocks (Factorymade) of size 30x20x15cm or nearest available size conforming to IS2185 part I of 1979 for superstructure upto five floor level with thickness 20 cm in CM1:6 (1 cement:6coarsesand) etc complete.	cum	650.00	846.79	30.28%	7,978.92	51,86,298.00	67,56,461.69	The item was under estimated and hence revised as per actual requirement

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Sl. No.	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)							Specific Reason for Variation
			Quantity			Agreed Rate Rs	Amount -Rs (Excluding GST)		Revised	
			BOQ	Revised	% Deviation		Agreement	Revised		
1	2	3	4	5	6	7	8	9	10	11
Labour	25	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass/ stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : Polyester powder coated aluminium (minimum thickness of polyester powder coating 50micron)For fixed portion.	kg	450.00	2,617.00	481.56%	421.83	1,89,823.50	11,03,929.11	The quantity variation due to the replacement of the rolling shutter originally proposed with Aluminium. The change was adopted as part of protecting the aesthetic requirement of the CRB, which was decided in the joint site level meeting. Item no 36 replaced with this item.
Labour	26	Providing and fixing aluminium work for shutters of doors, windows, ventilators and partitions with extruded built up standard tubular sections/appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass/ stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : Polyester powder coated aluminum (minimum thickness of polyester powder coating 50micron). for movable location.	kg	800.00	2,974.00	271.75%	421.83	3,37,464.00	12,54,522.42	The quantity variation due to the replacement of the rolling shutter, upvc windows , Toughned glass(item no 24,36,29) originally proposed with Aluminium. The change was adopted as part of protecting the aesthetic requirement of the CRB, which was decided in the joint site level meeting.
Labour	27	Providing and fixing prelaminate particle board flat pressed three layers or graded wood particle board conforming to IS 12823 grade I type II in panelling fixed in aluminium doors windows shutters and partition board with cp brass stainless screws as per complete as per architectrele drawings argend direction of engineer in charge pre- laminated particle board with decorative lamination on both sides	sqm	85.00	98.73	16.15%	3,071.18	2,61,050.30	3,03,217.60	The quantity variation due to the replacement of the rolling shutter originally proposed with Aluminium. The change was adopted as part of protecting the aesthetic requirement of the CRB, which was decided in the joint site level meeting.
Labour	28	Providing and fixing glazing in aluminium door, window, ventilator shutters and partition etc with EPDM rubber nepprene gasket etc complete as per architectural drawing and the direction of engineer in charge with float glass 4mm thickness.	sqm	206.00	376.28	82.66%	1,139.56	2,34,749.36	4,28,793.64	The quantity deviated as per the final design and approval. In chalakudy, it was proposed to extent the space earmarked for the Transmission Division office as per the request from Transmission wing. The additional requirement resulted in quantity deviation.
Labour	29	Providing and fixing 12mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot& spring type fixing arrangement and making necessary holes etc for fixing required door fittings , all complete as per direction of Engineer-in- charge (Door handle, lockand stopper etc to be paid separately)	sqm	45.00	134.50	198.89%	14,550.01	6,54,750.45	19,56,976.35	The item provided for the main access door and hence quantity reduced. This change resulted in the additional quantity in the item numbers 25,26,27 and 28. Aluminium doors are easy to handle and long lasting.
Labour	33	Providing and fixing 125mm aluminium handles, ISI marked,anodised (anodic coating not less than grade AC10 as per IS 1868) transparant or dyed to required colour and shade, with necessary screws etc. complete.	E	75.00	395.00	426.67%	307.12	23,034.00	1,21,312.40	The doors and windows were fixed as per the detailed engineering and approval. The CRB scope also increased after the finalisation of the contract as the Transmission Wing demanded the provision of office space also in the same CRB. One extra floor constructed in the CRB and hence all aluminium items including the door handles etc. increased. The door and windows provided in the 2F CRB resulted in the additional quantity

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item No.	Item Description	Units	220KV AIS Package (Munges, Choharapuran, Kolhambangan and Chitabadi)				Amount (₹) (Including GST)			Specific Reason for Variation
			Quantity			Agreed Rate (₹)	Agreement	Revised		
			BOM	Revised	% Deviation					
4	5	6	7	8	9	10	11			
37	Plastering with 12 mm cement plaster of mix 1:4 (1 cement: 4 fine sand) for inside and out side of walls	sqm	8,500.00	12,115.71	42.54%	138.02	18,00,470.00	28,15,337.87	The plastering work like plastering of the tower foot and etc. are not considered in the initial level estimation. The additional requirement of 10% extra work for transmission office also resulted in the quantity variation.	
43	Providing and laying Ceramic glazed floor tiles of size 300x300 mm (thickness to be specified by the manufacturer) of 1st quality conforming to IS - 15622 of approved make in colours such as White, Ivory, Grey, Fume Red, Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement : 4 Coarse sand), jointing with grey cement slurry @ 3.7kg/sqm including pointing the joints with white cement and matching pigment	sqm	78.00	81.00	25.98%	906.14	87,829.80	87,813.91	The item was under estimated and hence revised as per actual requirement.	
47	Unquipped precast cement concrete tiles 22 mm thick in floor path & courtyard, jointed with neat cement slurry mixed with pigment to match the shade of tiles, including rubbing and cleaning etc. complete, on 20mm thick bed of cement mortar 1:4 (1 cement: 4 coarse sand) Dark shade pigment using ordinary cement.	sqm	195.00	420.00	113.38%	1,297.01	3,11,418.95	6,70,744.20	The quantity required as per the detailed engineering and drawing prepared. The item was provided for the Fire Exit Stair Case. But the requirement for the Plinth protection, Car Porch area etc resulted in the extra quantity.	
48	Finishing walls with Acrylic Smooth exterior paint of required shade - New work (Two or more coat applied @ 1.67 lit/10 sqm over and including priming coat of exterior primer applied @ 2.25 kg/ 10 sqm)	sqm	3,925.00	6,275.00	59.87%	201.00	3,88,925.00	17,61,375.00	The item accounted due to the additional work of 2nd floor in CRB.	
50	Painting on steel works with synthetic enamel paint of approved brand and manufacture to give an even shade two or more coats on new work.	sqm	290.00	2,080.00	617.24%	171.99	49,877.10	5,37,718.51	The item accounted due to the additional work main entrance Culvert, Placing Cable tray work. The item No: 51 increased and hence resulted in the proportionate increase in item No: 50. The cable tray length for the CRB was finalized during the design and approval stage and the quantity proposed is actual.	
51	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required in gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	24,500.00	74,404.17	203.69%	109.71	26,87,895.00	81,61,881.27	The item accounted due to the additional quantity for Entrance Culvert, Cable Trays at CRB, POPPE Tonne Cover, Extra cable trench, water tank cover at Road Top.	
54	Fabrication, supply and erection of false flooring using adjustable jack screws, channels, anchor bolts, reinforced tiles of suitable size and colour, including proper leveling etc complete and as directed by the departmental officers.	sqm	250.00	360.00	44.00%	2,456.94	6,14,235.00	8,84,498.60	The item accounted due to the communication room was included in the scope of work as per the special request from communication wing.	
55	Providing and fixing 52 mm chlorinated polyvinyl chloride (CPVC) pipes having thermal stability for hot and cold water supply including CPVC plain & brass threaded fittings, includes fixing pipes clamps at 1.00m spacing. This includes jointing of pipes and fittings with one step CPVC solvent cement, and testing of joints etc complete as per directions of the Engineer-in-charge.	m	175.00	275.00	57.14%	515.96	90,293.00	1,41,889.00	The requirement as per detailed engineering and design of the four substation projects.	
56	Providing and fixing 25 mm chlorinated polyvinyl chloride (CPVC) pipes having thermal stability for hot and cold water supply including CPVC plain & brass threaded fittings, includes fixing pipes clamps at 1.00m spacing. This includes jointing of pipes and fittings with one step CPVC solvent cement, and testing of joints etc complete as per directions of the Engineer-in-charge.	m	175.00	185.00	5.71%	429.96	75,243.00	79,542.60		

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item No	SU No	Item Description	Units	Quantity			Agreed Rate Rs	Amount Rs (excluding GST)		Specific Reason for Variation
				BQ	Executed	% Deviation		Agreement	Difference	
57		Providing and fixing 20 mm diameter polyvinyl chloride (PVC) pipes having thermal stability for hot and cold water supply, including CPVC pipe & brass threaded fittings, includes fixing pipes with clamps at 1.00m spacing, this including jointing of pipes and fittings with one bag CPVC silicon cement and testing of joints complete as per directions of the Engineer-in-charge.	m	100.00	275.00	275.00%	176.20	17,881.00	31,238.20	The quantity required as per the detailed engineering and drawing executed. Additional work at second floor of CRB. Item no 58 replaced with this item.
59		Providing and fixing 25 mm nominal bore ball valve (brass) of approved quality high or low pressure with plastic floats complete.	E	6.00	16.00	266.67%	1,557.00	9,342.54	13,379.54	The quantity required as per the detailed engineering and appr dwg.
60		Providing and fixing 25 mm gun metal gate valve with C.I wheel of approved quality.	E	6.00	13.00	216.67%	875.66	5,253.94	6,129.60	The quantity required as per the detailed engineering and appr dwg.
61		Providing and fixing 22 mm gun metal gate valve with C.I wheel of approved quality.	E	3.00	12.00	400.00%	1,251.52	3,754.56	5,006.08	The quantity required as per the detailed engineering and appr dwg.
64		Providing and fixing 22 mm gun metal non-return valve of approved quality.	E	2.00	4.00	200.00%	1,963.55	3,827.10	5,790.65	The item required as per the approved PPHF scheme and it was not included in the original estimate.
66		Providing and fixing white vitreous china wash hand basin size 630x500mmx40 C.P brackets, one number 15mm C.P brass pillar tap, 32mm brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls etc complete.	E	7.00	13.00	185.71%	5,328.12	38,096.84	43,424.96	The requirement of sanitary items reviewed during detailed engineering and it was decided to provide additional wash basin for better and convenient utilization. The change was arisen in the site level review meeting and provision included in the scope of the contract to avoid future inconvenience for station operation and maintenance.
67		Providing and fixing 600x450 mm bevelled edge mirror of superior glass (of approved quality) complete with 4mm thick hard board ground fixed to wooden chairs with C.P brass screws and washers complete.	E	7.00	12.00	171.43%	1,719.86	12,039.02	13,758.88	The proposal for providing additional wash basin also demanded this deviation.
72		Supplying, laying and jointing 110mm or nearest size rigid PVC pipe (6kg/cm ²) with all fittings such as tees, bends, elbows, elbows etc to line and gradient in trenches up to a depth of 1.5m jointing with suitable solvent cement and filling in water for testing the line, refilling the trench, consolidation 20cm layers watering, ramming, sectioning and depositing the surface earth etc complete.	m	150.00	350.00	233.33%	786.22	1,17,933.00	4,32,421.00	The requirement of sanitary items reviewed during detailed engineering and it was decided to provide additional plumbing works for better and convenient utilization. The change was arisen in the site level review meeting and provision included in the scope of the contract to avoid future inconvenience for station operation and maintenance. The item provided rain water collection from roof top and also the building height increased due to design change.
73		Supplying and fixing 110mm PVC vent cowl including cutting masonry etc complete.	E	6.00	8.00	133.33%	83.99	515.94	687.92	
74		Making soak pit 1.20X1.20X1.20 m filling with bricks including PVC drain pipe 100mm diameter and 1.2m long complete as per standard design.	E	1.00	8.00	800.00%	14,373.11	43,119.33	1,14,984.88	Only one septic tank was considered during initial estimate. But additional soak pit for waste water collection also was necessary after final design.
75		Excavating trenches in all classes of soil of required width for pipes, cables, excavation of sockets and dressing of sides, ramming of bottom, depth upto 1.5m including getting out the excavated soil and then returning the soil as required, in layer not exceeding 20cm in depth including consolidating each deposit layer by ramming, watering etc and disposing of surplus excavated soil as per direction within a load of 50 m. Pipes, cables etc not exceeding 80 mm dia.	m	2,000.00	3,350.00	167.50%	171.99	3,43,980.00	5,76,166.50	The requirement as per detailed engineering and design of the four substation projects.
76		Supplying, laying and jointing 110mm PVC for laying power cables.	m	8,000.00	10,941.32	136.77%	177.63	14,21,040.00	19,43,505.78	The quantity required as per the detailed engineering and appr dwg.

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item	Sl. No.	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)					Specific Reason for Variation	
				Quantity			Agreed	Amount -Rs (Excluding GST)		
				BOQ	Revised	% Deviation	Rate Rs	Agreement		Revised
									11	
Labour	78	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 metres.	sqm	6,000.00	9,350.00	55.83%	122.85	7,37,100.00	11,48,647.50	The quantity required as per the detailed engineering and appr dwg.
Labour	85	Supply and fixing of 90lbs rail in lines and levels for transformer as directed by dept.staff at site (Data as per sanctioned estimate, Kattoor Substation)	Qtl	50.00	165.31	230.62%	11,252.79	5,62,639.50	18,60,198.71	The intial proposal was to erect the transformer directly on the transformer plinth. But additional rail provided in the space between the plinth and access road by considering the future requirement of transformer movement.
Labour	99	Labour charges for Erection and commissioning of 220kV, 110kV transformer / feeder C&R panels, 110V battery charger, OLTC cubicle, LT panel as per specifications	No.	71.00	75.00	5.63%	7,370.83	5,23,328.93	5,52,812.25	
Labour	111	Labour charges for Uncoiling 20/19 core 2.5sqmm, 12 core 4 sqmm control cable (Armoured or un armoured), 4/2x10sqmm from cable drums cutting to required length and laying through trench/pipe/cable tray grouping the same neatly using cable tie and carefully including for providing loop wherever necessary and providing cable marker at both ends of cable as per direction of departmental staff at site.	m	11,700.00	12,408.00	6.05%	35.01	4,09,617.00	4,34,404.08	The item exceeded due to the actual requirement of cable as per the detailed engineering and design. The cable provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.The location of BCC & Equipment layout, Bay position etc. resulted in the excess quantity
Labour	112	Labour charges for Uncoiling 12/7/6 core 2.5 sq mm control cable (armoured and un armoured) from cable drums and cutting to required length and laying through trench/pipe/cable tray grouping the same neatly using cable tie and carefully including for providing loops wherever necessary and cable marker, at both ends of cable as per direction of departmental staff at site.	m	22,000.00	44,292.00	101.33%	35.01	7,70,220.00	15,50,662.92	The item exceeded due to the actual requirement of cable as per the detailed engineering and design. The cable provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.The location of BCC & Equipment layout, Bay position etc. resulted in the excess quantity
Labour	113	Labour charges for Uncoiling 4/2 core 2.5sqmm control cable (armored or unarmored) from cable drums and cutting to required length and laying through trench/pipe/cable tray neatly and carefully including for providing loops wherever necessary and cable marker at both ends of cable as per direction of departmental staff at site.	m	14,000.00	74,599.00	432.85%	35.01	4,90,140.00	26,11,710.99	The item exceeded due to the actual requirement of cable as per the detailed engineering and design. The cable provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.The location of BCC & Equipment layout, Bay position etc. resulted in the excess quantity
Labour	114	Labour charges for Uncoiling 5/4/3/2 core 4sqmm control cable (armoured or un armoured) from cable drums and laying through trench/pipe/cable tray neatly and carefully including for providing loops wherever necessary and cable marker at both ends of cable as per direction of departmental staff at site.	m	6,500.00	34,875.00	436.54%	35.01	2,27,565.00	12,20,973.75	The item exceeded due to the actual requirement of cable as per the detailed engineering and design. The cable provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.The location of BCC & Equipment layout, Bay position etc. resulted in the excess quantity
Labour	116	Charges for Doing Termination of 12/7/6 core 2.5 sqmm cable (using gland of size 25mm) cables in panel by using cable glands of fixing the cable rigidly by any means as per direction of departmental staff at site charges include for providing necessary suitable hole in the gland plate etc includingSupplying aluminium cable tags punching number and alphabets up to 7 digits and binding to cable using copper wire including cost of all materials as per the direction of Board Officials at site..	No.	860.00	1,066.00	23.95%	26.63	22,901.80	28,387.58	The item exceeded due to the actual requirement of cable as per the detailed engineering and design. The cable provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.The location of BCC & Equipment layout, Bay position etc. resulted in the excess quantity
Labour	117	Charges Doing Termination of 4/2 core 2.5 sq mm cable/4/2 core 4 sq mm cable (using gland of size 16-22mm) cables in panel by using cable glands of fixing the cable rigidly by any means as per direction of departmental staff at site charges include for providing necessary suitable hole in the gland plate etc includingSupplying aluminium cable tags punching number and alphabets up to 7 digits and binding to cable using copper wire including cost of all materials as per the direction of Board Officials at site..	No.	1,200.00	3,409.00	184.08%	25.80	30,960.00	87,952.20	The item exceeded due to the actual requirement of cable as per the detailed engineering and design. The cable provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.The location of BCC & Equipment layout, Bay position etc. resulted in the excess quantity

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item	Sl. No.	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)			Agreed Rate Rs	Amount -Rs (Excluding GST)		Specific Reason for Variation
				Quantity				Agreement	Revised	
				BOQ	Revised	% Deviation				
1	2	3	4	5	6	7	8	9	10	11
Labour	118	Charges for Doing termination of all sizes of PVC insulated copper control cable 2.5 mm ² , peeling, providing number and letter ferrules in the wire, stripping ends, crimping with suitable lugs and connecting to the terminals in the panel board and marshalling kiosk etc., neatly and carefully including cost of copper sockets and ferrules as per the direction of Departmental Officers at site.	No.	12,720.00	16,142.00	26.90%	25.80	3,28,176.00	4,16,463.60	The item exceeded due to the actual requirement of cable as per the detailed engineering and design. The cable provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project. The location of BCC & Equipment layout, Bay position etc. resulted in the excess quantity
Labour	123	Providing droppers and connecting to lines / equipments or jumper between two buses with necessary suspension insulators for 33kV/66kV/110kV/220kV using ACSR Moose/ Kundah/ wolf Double conductor at both ends with compressed/ bolted ends, fixing spacedrs at regular intervals as directed, including uncoiling and cutting of conductor as per the direction of departmental officers. (For one phase)	No.	153.00	325.00	112.42%	276.41	42,290.73	89,833.25	The droppers were finalised as per the detailed engineering and design and hence the quantity variation
Labour	124	Providing droppers and connecting to lines / equipments or jumper between two buses with necessary suspension insulators for 33kV/66kV/110kV/220kV using ACSR Moose/ Kundah/ wolf Single conductor at both ends with compressed/ bolted ends including uncoiling and cutting of conductor as per the direction of departmental officers. (For one phase)	No.	135.00	408.00	202.22%	276.41	37,315.35	1,12,775.28	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Labour	129	Hot oil circulation after draining oil from transformer, evacuating the transformer by using vacuum pump after providing LT connection to the pump, connecting the hose to transformer, operating carefully and continuously for attaining sufficient vacuum and keeping in vacuum for 24 hours and operating filter unit carefully and continuously for 24 hours except halt due to poor voltage and trouble in filter plant etc complete as per the direction of dept. officers.	Day	74.00	94.00	27.03%	9,213.53	6,81,801.22	8,66,071.82	Actual estimate based on the site condition. The estimate provision was lesser side/
Labour	138	EARTHMAT - Welding the ground electrode with the main electrode, after cleaning the surface neatly. Charges includes cost of low hydrogen content DC electrodes (No. E7018), hire charges of DC arc welding set, tools and plants, current charges, labour charges for holding MS rod in position and applying two coats of anti corrosive paints at the welded joints etc. complete as per the directions of departmental officers.	No.	1,060.00	1,107.00	4.43%	95.82	1,01,569.20	1,06,072.74	
Labour	139	EARTHING - Laying of GI strip/Copper strip of suitable size including cleaning and neatly bending of strips, cutting, removing of metal/earth in the yard and burying earth strip to the required depth re-doing the yard metalling as per the direction of the departmental officers.	m	8,918.00	17,607.00	97.43%	56.02	4,99,586.36	9,86,344.14	The GI Strip quantity not sufficient in the estimate. Additional earthing was also necessary to meet the technical requirement and the materials and labour items increased proportionally.
Labour	141	EARTHING - Welding overlapping joints of 50x6mm GI strip with 50mm long, 6mm thick welding on all three sides after doing 2 Nos. bolted joints at the centre as specified after cleaning the surface. Charges includes hire charges of DC arc welding set, current charges, cost of low hydrogen content DC arc welding electrodes (No.E7018) cost of anti corrosive paint etc. complete.	No.	498.00	556.00	11.65%	56.02	27,897.96	31,147.12	
Labour	142	EARTHING - Welding one end of the GI strip 50x6mm with the structure with a welding length of 50mm & 6mm thickness on both sides & end of the strip and connecting other end with bolts & nuts if required including hire charges of DC arc welding set, current charges, cost of low hydrogen DC arc welding electrodes (No.E7018) cost of anti corrosive paint etc. complete.	No.	2,476.00	3,122.00	26.09%	56.02	1,38,705.52	1,74,894.44	The item necessary as per the detailed engineering and design approval

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

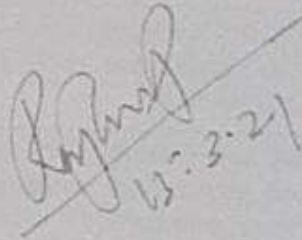
Item	Sl. No.	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)							Specific Reason for Variation
				Quantity			Agreed Rate Rs	Amount -Rs (Excluding GST)			
				BOQ	Revised	% Deviation		Agreement	Revised		
1	2	3	4	5	6	7	8	9	10	11	
Labour	143	Doing out door/indoor cable termination of 3x300 mm ² 11KV XLPE cable very carefully observing directions of manufactures and departmental staff including crimping of socket	No.	12.00	16.00	33.33%	3,132.60	37,591.20	50,121.60	The item exceeded as per the cable quantity also increased	
Labour	144	Doing out door/indoor cable termination of 1x500 mm ² 11KV XLPE cable very carefully observing directions of manufactures and departmental staff including crimping of socket	No.	14.00	26.00	85.71%	3,132.60	43,856.40	81,447.60	The item exceeded as per the cable quantity also increased	
Labour	148	Labour Charges For mounting 3 x 300 mm ² out door / indoor cable termination	No.	12.00	28.00	133.33%	3,685.41	44,224.92	1,03,191.48	The item exceeded as per the cable quantity also increased	
Labour	149	Laying LT/DC cables in trench including drawing through pipes wherever necessary.	m	4,000.00	4,204.00	5.10%	73.71	2,94,840.00	3,09,876.84	The item exceeded as per the cable quantity also increased	
Labour	150	Glanding LT / DC cable of various sizes after removing insulation, armour etc. and making necessary holes on gland plates numbering cable etc. complete including supply of gland numbering plate etc.	No.	300.00	854.00	184.67%	552.81	1,65,843.00	4,72,099.74	The item exceeded due to the actual requirement of cable as per the detailed engineering and design. The cable provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.	
Labour	151	Erection of one set 11KV Isolator / AB switch (station class) on the already erected structure including opening crates and conveyance of all accessories from the place of storage to the place of erection to lines and levels including erection of mechanism box checking operation and aligning properly as per the direction of departmental officers.	No.	2.00	6.00	200.00%	2,211.25	4,422.50	13,267.50	The DP structure & Associated items eliminated during detailed engineering and design. The item not necessary and scope reduced	
Labour	161	Supplying, laying, jointing and commissioning of following sizes of M.S. "C" class pipes conforming to IS: 1239 with all accessories like all fittings (standard MS fittings with welded joint shall be used on the pipes) including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer, including supporting/fixing the pipe on floor/wall/ceiling with clamps, hangers, angles, channels (using anchor fastners) as per specification complete with painting of one coat primer and 2 or more coats of synthetic enamel paint of approved make / shade complete as per specification complete. all hangers, clamps, brackets etc. shall be of galvanized iron welding of any kind on the galvanized support/ hanger not be permitted. 80mm dia.	m	400.00	560.00	40.00%	749.58	2,99,832.00	4,19,764.80	The hydrant design included in the contract. The quantity exceeded as part of the actual design as per the site conditions	
Labour	163	Supplying, laying, jointing and commissioning of following sizes of M.S. "C" class pipes conforming to IS: 1239 with all accessories like all fittings (standard MS fittings with welded joint shall be used on the pipes) including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer, including supporting/fixing the pipe on floor/wall/ceiling with clamps, hangers, angles, channels (using anchor fastners) as per specification complete with painting of one coat primer and 2 or more coats of synthetic enamel paint of approved make / shade complete as per specification complete. all hangers, clamps, brackets etc. shall be of galvanized iron welding of any kind on the galvanized support/ hanger not be permitted. 150mm dia.	m	600.00	742.00	23.67%	1,836.48	11,01,888.00	13,62,668.16	The hydrant design included in the contract. The quantity exceeded as part of the actual design as per the site conditions	
Labour	165	Providing, fixing, testing and commissioning of Weather proof standard fire hose cabinet wall mounting type (900 mm x 600 mm x 300 mm deep) having single or double opening with necessary locking arrangement by allan key suitable for housing 2 nos. hose pipe, 1no. Branch pipe & nozzle spanner.	No.	40.00	46.00	15.00%	5,139.99	2,05,599.60	2,36,439.54		

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item	Sl No	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)						Specific Reason for Variation
				Quantity			Agreed Rate Rs	Amount -Rs (Excluding GST)		
				BOQ	Revised	% Deviation		Agreement	Revised	
1	2	3	4	5	6	7	8	9	10	11
Labour	166	Providing & fixing swinging type First Aid hose reel in red colour drum with 36 mts long and 25 mm dia heavy duty rubber water hose, 25 mm dia ball valve stop cock, terminating with G.M. coupling & nozzle of 6mm outlet with shut off valve conforming to IS 8090 - 1976 complete with MS socket for tap-off, drum and brackets (including painting) for fixing on wall with anchor fastner, bolts & nuts conforming to IS:884-1969 complete as required.	No	40.00	44.00	10.00%	12,100.40	4,84,016.00	5,32,417.60	The hydrant design included in the contract. The quantity exceeded as part of the actual design as per the site conditions
Labour	174	Providing and laying of NP3 class R.C.C Hume pipe (IS-458) with mortise - tension jointed with cement and with RCC collar to cover and overlap the joints laid to correct levels below ground of size 350 mm dia. For underground hydrant pipe at road crossings..	m	80.00	149.00	86.25%	4,408.06	3,52,644.80	6,56,800.94	The hydrant design included in the contract. The quantity exceeded as part of the actual design as per the site conditions
Labour	176	Fire Hydrant Butterfly Valve - Supply Installation Testing and commissioning of butterfly valve Audco or equivalent reputed make of wafer type Stainless steel/SG iron disc , lever operated as per IS:13095 in PN 16 , teflon or nylon bushing, nitrile O rings in standard mounting flanges with hand lever type. - 100 mm dia	No	4.00	5.00	25.00%	7,576.14	30,304.56	37,880.70	The hydrant design included in the contract. The quantity exceeded as part of the actual design as per the site conditions
Labour	177	Fire Hydrant Butterfly Valve - Supply Installation Testing and commissioning of butterfly valve Audco or equivalent reputed make of wafer type Stainless steel/SG iron disc , lever operated as per IS:13095 in PN 16 , teflon or nylon bushing, nitrile O rings in standard mounting flanges with hand lever type - 80 mm dia	No	8.00	9.00	12.50%	5,579.03	44,632.24	50,211.27	The hydrant design included in the contract. The quantity exceeded as part of the actual design as per the site conditions
Labour	184	Providing AUTOGLOW Signages in Block / Small Letters of Specified Sizes: DCP Extinguisher: 8" X 4"	No	20.00	25.00	25.00%	588.96	11,779.20	14,724.00	The hydrant design included in the contract. The quantity exceeded as part of the actual design as per the site conditions
Labour	185	Providing AUTOGLOW Signages in Block / Small Letters of Specified Sizes: CO2 Extinguisher: 8" x 4"	No	20.00	25.00	25.00%	588.96	11,779.20	14,724.00	The hydrant design included in the contract. The quantity exceeded as part of the actual design as per the site conditions
Labour	213	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.	Point	380.00	720.00	89.47%	644.95	2,45,081.00	4,64,364.00	The item exceeded as the requirement finalised after final design of the control room building
Labour	214	Supplying and fixing 20mm size of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	m	456.00	1,418.00	210.96%	154.81	70,593.36	2,19,520.58	The quantity exceeded as per the actual requirement at site. The additional space contructed in the CRM and BCC construction etc. were resulted in the quantity excess.
Labour	215	Supplying and fixing 25mm size of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	m	210.00	3,055.00	1354.76%	175.69	36,894.90	5,36,732.95	The quantity exceeded as per the actual requirement at site. The additional space contructed in the CRM and BCC construction etc. were resulted in the quantity excess.
Labour	218	Supplying and drawing 3x2.5 mm2 sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/recessed steel/ PVC conduit as required.	m	415.00	4,290.00	933.73%	94.61	39,263.15	4,05,876.90	The quantity exceeded as per the actual requirement at site. The additional space contructed in the CRM and BCC construction etc. were resulted in the quantity excess.
Labour	219	Supplying and drawing 3x4 mm2 sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/recessed steel/ PVC conduit as required.	m	180.00	1,060.00	488.89%	184.32	33,177.60	1,95,379.20	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Labour	220	Supplying and drawing 3x6 mm2 sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/recessed steel/ PVC conduit as required.	m	70.00	915.00	1207.14%	190.46	13,332.20	1,74,270.90	The cable estimated was lumpsum during estimation stage. The detailed engineering and design was included in the scope of the project. When the actual design proposal approved, the quantity found higher than the estimated quantity.
Labour	221	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc as required. - 1 or 2 Module (75mmX75mm)	No	35.00	90.00	157.14%	153.59	5,375.65	13,823.10	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.

OVERALL VARIATION STATEMENT - EXCESS EXECUTED ITEMS

Item	Sl. No.	Item Description	Units	220kV AIS Package (Manjeri, Chithirapuram, Kothamangalam and Chalakudy)						Specific Reason for Variation
				Quantity			Agreed Rate Rs	Amount -Rs (Excluding GST)		
				BOQ	Revised	% Deviation		Agreement	Revised	
				5	6	7	8	9	10	
Labour	222	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc as required.- 3 Module (100mmX75mm)	No	40.00	52.00	30.00%	199.66	7,986.40	10,382.32	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Labour	223	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc as required.- 4Module (125mmX75mm)	No	40.00	52.00	30.00%	291.79	11,671.60	15,173.08	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Labour	224	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc as required.- 6 Module (200mmX75mm)	No	35.00	67.00	91.43%	337.86	11,825.10	22,636.62	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Labour	225	Supplying and fixing 15/16 amp modular switch on the existing modular plate & switch box including connections but excluding modular plate etc. as required.	Each	36.00	58.00	61.11%	135.18	4,866.48	7,840.44	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Labour	226	Supplying and fixing 5/6 amp modular switch on the existing modular plate & switch box including connections but excluding modular plate etc. as required.	Each	360.00	400.00	11.11%	110.60	39,816.00	44,240.00	
Labour	231	Supplying and fixing 6 pin 15/16A socket outlet on the existing modular plate & switch box including connections but excluding modular plate etc. as required.	Each	10.00	48.00	380.00%	147.47	1,474.70	7,078.56	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Labour	235	Supplying and fixing extra conduit down rod of 20cm length G.I pipe, 15mm dia, heavy guage including painting, etc as required (note: more than 5cm length shall be rounded to the nearest 10cm and 5cm or less shall be ignored)	Each	55.00	126.00	129.09%	61.44	3,379.20	7,741.44	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Labour	236	Installation of exhaust fan in the existing opening, including making good the damage, connection, testing, commissioning etc. as required. - Upto 510 mm sweep	Each	8.00	14.00	75.00%	184.27	1,474.16	2,579.78	The item exceeded due to the actual requirement as per the detailed engineering and design. The provision in the estimate was a lumpsum, which is not sufficient for the successful completion of the project.
Part B		Sub Total - Labour & Erection Charge		8,83,62,542.97	17,59,16,763.10			8,83,62,542.97	17,59,16,763.10	
Total		Total - Part A + Part B		10,56,83,881.17	21,55,38,448.44			10,56,83,881.17	21,55,38,448.44	
OVERALL VARIATION - EXCESS EXECUTED ITEMS				12.963 Crores (Including GST)						


 15.3.21
 DIRECTOR
 (T & S O)

Annexure II to B.O 206/2021/DCE/ASO/T6/AIS Package - 1/2020-21, T.V.M. dated 18.02

KERALA STATE ELECTRICITY BOARD LIMITED											
AIS Substation Package - 1 - Construction of 220kV Substations at Manjeri, Kothamangalam, Chithirapuram and Chalakudy											
Contract No: E- Tender No. DCE/ TransGrid (N)/02/2018-19											
Name of Contractor		M/s. Siemens Ltd, Gurgaon (India)									
Work Order		15/2018-19/DCE/TGN/SRR dated 05-07-2018 of DCE									
Agreement		30/18-19/Transgrid (N)/SRR dated 16-07-2018									
Tender Excess		4.97%		Average		Applied					
				1.371		1.3106					
Item	Sl. No.	Item Description	Units	Quantity		Rate -Rs			Total Amount - Rs Excluding GST	Specific Reason for Extra Item & Rate	Item Category
				Total	DSR or KSEBL Rate / DSR+TE/LMR	Siemens Ltd Final Rate	Agreed Rate (Lowest Rate)				
1	2	3	4	9	10	11	12	18	20	21	
Extra Supply		Extra Items -Supply									
Extra Supply	1	Fabrication, Supply of Cleat clamp to suit Earthwire 7/3.66 as per specification and direction of KSEBL Engineer	No	1,466.00	800.00	110.00	110.00	161,260.00	Market Rate - No DSR/KSEBL data Omission in the original estimate Required to clamp the earthwire with the tower body. Siemens Quoted Rate is lower than LMR	Category-4	
Extra Supply	2	Fabrication, Supply PG clamp for earthwire as per specification and direction of KSEBL Engineer	No	443.00	795.00	109.00	109.00	48,287.00	Market Rate - No DSR/KSEBL data Omission in the original estimate Required for connecting earthwire to earth wire in DLSP	Category-4	
Extra Supply	3	Fabrication, Supply of Pad clamp to suit Earthwire 7/3.66 as per specification and direction of KSEBL Engineer	No	189.00	1,000.00	350.00	350.00	66,150.00	Market Rate - No DSR/KSEBL data Omission in the original estimate Required for connecting earthwire with the GI Strip to connect to ground rod	Category-4	
Extra Supply	4	Fabrication, Supply T clamp for Twin Moose/Panther to Single moose as per specification and direction of KSEBL Engineer	No	129.00	1,100.00	770.00	770.00	99,330.00	Market Rate - No DSR/KSEBL data Omission in the original estimate For line tappings	Category-4	
Extra Supply	5	Fabrication, Supply PG clamp for Moose/Kundah/Wolf to Moose as per specification and direction of KSEBL Engineer	No	440.00	960.00	640.00	640.00	281,600.00	Market Rate - No DSR/KSEBL data Omission in the original estimate For giving addl connection in the jumper connections from jack bus	Category-4	
Extra Supply	6	Supply & Installation of 150W LED Outdoor Yard / Street Lights for Lighting Mast in Switchyard and Road as per specification and direction of KSEBL Engineer	No	160.00	8,500.00	8,000.00	8,000.00	1,280,000.00	Market Rate - No DSR/KSEBL data This item resulted due to selection of LM for outdoor lighting. 150 Watts used in place of 60W as per the approved lighting design in some places. As per the Lux calculation of the yard, 150W LED is required at site.	Category-4	
Extra Supply	7	Supply and installation of wall mounted LED light for AC Supply - Upto and including 15 Watts capacity -240VAC - Indoor and Outdoor use as per specification and direction of KSEBL Engineer	No	60.00	3,000.00	2,800.00	2,800.00	168,000.00	Market Rate - No DSR/KSEBL data The light used in place of DC light - emergency In the estimate only Panel LEDs are available. For Emergency lights and LEDs for no panelled area, item is not available.	Category-4	
Extra Supply		Sub Total		2,104,627.00	3,818,285.00	2,104,627.00	2,104,627.00	2,104,627.00			

Item	Sl. No.	Item Description	Units	Quantity	Rate -Rs			Total Amount - Rs	Specific Reason for Extra Item & Rate	Item Category
				Total	DSR or KSEBL Rate / DSR+TE/LMR	Siemens Ltd Final Rate	Agreed Rate (Lowest Rate)	Excluding GST		
1	2	3	4	9	10	11	12	18	20	21
Extra Labour		Extra Items - Labour & Erection								
Extra Labour	1	Earth work in excavation by mechanical means (Hydraulic excavator) in all kinds of soil including disposal of excavated earth, lead upto 50m and lift from 3.0m to 4.5m	cum	505.00	300.72	300.72	300.72	151,862.17	Presented in PMC-1 DSR Item This item was not envisaged in the original estimate, but required during actual execution of work between 3.0 m to 4.5 m depth. The original estimate had only excavation upto 3m depth. The excavation above 3.0 was also necessary as per the foundation design of the tower & BOT as per site condition.	Category-1
Extra Labour	2	Earth work in excavation by mechanical means (Hydraulic excavator) in all kinds of soil including disposal of excavated earth, lead upto 50m and lift from 4.5m to 6.0m -- For all kinds of soil	cum	50.00	386.86	386.86	386.86	19,342.86	Presented in PMC-1 DSR + Tender Excess Allowed This item was not envisaged in the original estimate, but required during actual execution of work between 4.5 m to 6.0m depth. The original estimate had only excavation upto 3m depth. The excavation above 3.0 was also necessary as per the foundation design of the tower & equipment. The tower & equipment foundation had to be carry out in back filled area and hence the extra item	Category-2
Extra Labour	3	Earth work in excavation in Ordinary Rock by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in-charge - Ordinary Rock	cum	300.00	304.11	964.00	304.11	91,231.99	Presented in PMC-1 DSR + Tender Excess Allowed This item was not envisaged in the original estimate, but required during actual execution as per the site specific condition. The actual soil condition found was different from that anticipated during estimation. The soil strata upto 1.5 m (appx) depth was soft rock and hence the extra item was necessary to carry out work.	Category-2
Extra Labour	4	Earth work in excavation in Ordinary Rock by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift above 1.5 m, as directed by Engineer-in-charge - Ordinary Rock above 1.5 depth	cum	1,200.00	447.37	964.00	447.37	536,848.02	Presented in PMC-1 DSR + Tender Excess Allowed This item, additional lift to the item 3 above, was not envisaged in the original estimate, but required during actual execution as per the site specific condition. The actual soil condition was found different from that anticipated during estimation. The soil condition between 1.5m to 3.0m depth was soft rock and hence the extra item was necessary to carry out work	Category-2
Extra Labour	5	Excavation in rock and boulders above 500 dm3 in size by controlled and protected blasting in wet/dry condition in all elevations using modern explosives with jackhammer etc drilling conveying and disposing the unserviceable materials upto 1km and all lift and cost of compressed air, jack hammer, water line etc. as per specifications and direction of KSEBL Engineer in-charge	cum	825.00	2,600.00	2,600.00	2,600.00	2,145,000.00	Presented in PMC-1 Actual Cost incurred for the work. The old item 5& 6 combined and taken as a single item in line KSEBL specification. The blasting item was not included in the original BOQ and hence an extra item. The soil strata was rock and normal excavation couldn't be carried out in the project locations. Since the excavations had to be done within the limited space between the already cast equipment foundations, which was not envisaged in the original estimate. The actual cost incurred by Siemens was admitted by considering the actual cost and volume of work. The rate approved subject to the negotiation at various level including Director (T&SO) on 02-03-2021	Category-3

Item	SL No.	Item Description	Units	Quantity		Rate -Rs			Total Amount - Rs Excluding GST	Specific Reason for Extra Item & Rate	Item Category
				Total	DSR or KSEBL Rate / DSR+TE/LMR	Siemens Lid Final Rate	Agreed Rate (Lowest Rate)				
1	2	3	4	9	10	11	12	14	20	21	
Extra Labour	6	Earth work in excavation in hard rock using non-explosive agent (Chemical) or any other method without resorting to the use of conventional explosive materials in all lifts, leads, conveying and depositing the excavated rock etc. complete as per specifications, as directed by the Engineer in Charge	cum	950.00	3,500.00	4,550.00	3,500.00	3,325,000.00	Presented in PMIC-1 Actual Cost incurred for the work (Blasting could not be done at the site due to the presence of buildings and structures in the nearby area. The rock cannot be removed by drilling. The rate already approved by KSEBL for substation level letting at Kothamangalam (WC) copy attached)	Category-3	
Extra Labour	7	Dry rubble masonry for foundation and basement including levelling with cost of all materials, conveyance, labour charges etc. complete as per specification and as directed KSEBL Engineer	cum	15.00	2,729.54	2,865.00	2,729.54	40,943.00	Presented in PMIC-1 KSEBL Cost Data-Section 3 of Chapter VII The item was not available in the original BQQ. But the item was necessary for constructing a stump tank and cable trench in the yard at Marjery and Kothamangalam. The item also necessary at Chalakudy and Chithirapuram for levelling course of bottom foundation of main gate pillar	Category-1	
Extra Labour	8	Boring, providing and installation bored cast-in-situ reinforced cement concrete piles of grade M-25 of specified diameter and length below the pile cap, to carry a safe working load not less than specified, excluding the cost of steel reinforcement but including the cost of boring with bentonite solution and temporary casing of appropriate length for setting out and removal of same and the length of the pile to be embedded in the pile cap etc. by percussion drilling using Direct mud circulation (DMC) or Bailer and chisel technique by tripod and mechanical Winch Machine all complete, including removal of excavated earth with all its lifts and leads (length of pile for payment shall be measured up to bottom of pile cap) Including rock socketing	Rmt	80.00	4,935.01	5,700.00	4,935.01	394,800.70	Presented in PMIC-1 DSR + Tender Excess Allowed This item was not envisaged in the original estimate, but required during actual execution as per the site specific condition and design requirements. The item necessitated for the foundation for P1 tower at 110kV yard at elevation +95m level where no hard strata were available. The location of the P1 tower for 110kV Yard at elevation 95 was filled at varying depth upto 10m with retaining walls by considering the load of the tower structures and to avoid to scope out the filled and natural soil upto hard strata, it was decided to construct the structure with pile foundation	Category-2	
Extra Labour	9	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete	Sq mtr	1,100.00	155.57	159.00	155.57	171,125.04	Presented in PMIC-1 DSR Item This item was not envisaged in the original estimate, but required during actual execution as per the site specific condition and design requirements.	Category-1	
Extra Labour	10	12mm thick plain cement mortar bands (raised bands) 10 cm wide in CM 1:4	Sq.mtr	260.00	557.01	591.00	557.01	144,821.30	Presented in PMIC-1 DSR Item The item is proposed below the end of the sunshade, roof slab, parapet walls to arrest the rain water to the building wall. The item not envisaged in the original estimate	Category-1	
Extra Labour	11	Providing edge moulding to 18 mm thick marble stone counters, vanities etc., including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.	Rmt	1,110.00	322.01	330.00	322.01	357,436.01	Presented in PMIC-1 DSR Item This item was not envisaged in the original estimate, but required during actual execution as per the site specific condition and design requirements. The item executed for avoiding sharp edges in the skirting	Category-1	
Extra Labour	12	Construction of granular sub-base by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tipper to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.	cum	2,725.00	2,726.24	2,901.00	2,726.24	7,429,016.51	Presented in PMIC-1 DSR Item The item due to the design change proposed by the contractor. The item replaced BQQ Item No. 78 for superior life and as per the recommendation in the Government circular. WBM road is being adopted everywhere nowadays and hence the design change proposed by the contractor. The approval for the road construction was also issued by TransGrid.	Category-1	

Item	Sl. No.	Item Description	Units	Quantity	Rate -Rs			Total Amount - Rs	Specific Reason for Extra Item & Rate	Item Category
				Total	DSR or KSEBL Rate / DSR+TE/LMR	Siemens Ltd Final Rate	Agreed Rate (Lowest Rate)	Excluding GST		
1	2	3	4	9	10	11	12	18	20	21
Extra Labour	13	Providing, laying, spreading and compacting graded stone aggregate (size range 53mm to 0.075 mm) to wet mix macadam (WMM) specification including premixing the material with water at OMC in for all leads & lifts, laying in uniform layers with mechanical paverfinisher in sub- base / base course on well prepared surface and compacting with vibratory roller of 8 to 10 tonne capacity to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.	cum	2,060.00	2,794.53	2,901.00	2,794.53	5,756,725.31	Presented in PMC-1 DSR Item The item due to the design change proposed by the contractor. The item replaced BOQ Item No. 81 for superior life and as per the recommendation in the government circular. WMM road is being adopted everywhere and hence the design change proposed by the contractor accepted. The approval for the road construction was also issued by TransGrid.	Category-1
Extra Labour	14	Providing and fixing M40 precast interlocking concrete paver blocks for road way, 8 cm thick, including preparation of sub grade with a hand rammer, laying 50mm thick leveling course of 6mm stone aggregates and filling the joints with fine sand etc complete as per direction of Engineer-in-charge.	Sq.mtr	10,550.00	837.41	987.00	837.41	8,834,653.03	Presented in PMC-1 DSR Item The item due to the design change proposed by the contractor. The item replaced BOQ Item No. 82 for superior life and also by considering the heavy weight of the equipment to be transported viz Transformers. The approval for the road construction was also issued by TransGrid.	Category-1
Extra Labour	15	Supplying and Installation of readymade PVC septic tank of size 2.5m long and 2.5m outer diameter with three chamber having top opening with cover of 500mm dia - 35 flushing per day	No	3.00	22,500.00	60,750.00	22,500.00	67,500.00	Presented in PMC-1 Market Rate This item executed for avoiding cable trench crossing in the substation. The additional septic tank was necessary at project location and the same provided by agreeing as an extra item	Category-4
Extra Labour	16	Providing and fixing water closet squatting pan (Indian type WC pan) with 100mm sand cast iron P or S strap, 10Litre low level white PVC flushing cistern including flush pipe with manually controlled device (Handle lever) conforming to IS 7231 with all fittings and fixtures complete including cutting and make good the walls and floor concerned -	No	2.00	4,579.50	6,169.00	4,579.50	9,159.00	Presented in PMC-1 DSR Item The provisions in the estimate was for Europeans closet. But one Indian type was required in the outside toilet by considering the common use of visitors and workmen. The item finalized along with the final design of the Control Room Building.	Category-1
Extra Labour	17	Fabrication, Supply & Fixing Galvanized Steel Cable Tray support for Indoor / Outdoor cable trenches complete as per specification and as directed by KSEBL Engineer	kg	35,510.00	131.22	144.00	131.22	4,659,717.13	Presented in PMC-1 Market Rate-The rate arrived based on BOQ Item No 51 (Part A - Labour) + Galvanising charge as per market rate (KSEBL PO Rate) There was no Galvanized Tray in the BOQ. The BOQ item available is site fabricated and painted MS Tray. Since the painted tray inside the UG Cable trench will not last due to corrosion, it was decided during detailed engineering and design that the outdoor trench tray to be Galvanized for the long life of the work. The Galvanized Tray is an extra item and approval given for the same foreseeing the warranty and life of the substation.	Category-4
Extra Labour	18	Supply and Fixing charges of M12/120mm and above anchor fastners (HILTI Make) for Galvanised Steel Cable Trays as per specification and as directed by KSEBL Engineer	No	8,560.00	220.00	220.00	220.00	1,883,157.20	Presented in PMC-1 Market Rate This item is the part of the Galvanised Tray for anchoring the tray into the cable trench wall, as welding is not allowed in the GI structure.	Category-4

Item	SL No.	Item Description	Units	Quantity	Rate -Rs			Total Amount - Rs	Specific Reason for Extra Item & Rate	Item Category
				Total	DSR or KSEBL Rate / DSR+TE/LMR	Siemens Ltd Final Rate	Agreed Rate (Lowest Rate)	Excluding GST		
1	2	3	4	9	10	11	12	18	20	21
Extra Labour	19	Design, Engineering, Lux level calculation, supply of 12m high mast shaft in one section suitable for 55 m/sec wind speed along with head frame, luminaires carriage, suitable for 08 luminaires in symmetrical arrangement and other accessories in factory, supply raising and lowering system comprising double drum winch 5mm diameter SS Wire rope, connector, integral power toll motor, manual handle, water proof junction box, lightning finial including supply of foundation bolts, nuts and washers, supply of the LED type single dome aviation obstruction light, erection, testing and commissioning of the high mast with special tools and plants as per the scope and technical specification and drawing approved by KSEBL. The civil excavation and foundation works, LED light fixtures is payable extra as part of the agreed BOQ	No	56.00	160,556.00	160,556.00	160,556.00	8,991,136.00	Market Rate The outdoor lightning was proposed with tubular type poles with LED light fittings during estimation time. But when the lux level worked out with low height tubular poles during detailed engineering by the contractor, a large number of tubular poles were found necessary to maintain the sufficient lux levels. This demanded excess quantity with heavy cost impact to KSEBL. Finally, the proposals made by the contractor for the installation of standard Lightning Mast (LM) were accepted during the review and discussions. The design change meets the latest construction standard in substation yard lighting and also provides sufficient illumination with minimum number of fittings. Further the maintenance of the Lightning Mast is easy compared to conventional type poles.	Category-4
Extra Labour	20	EARTHMAT - Drilling bore holes of sizes 150mm or nearest in ordinary rock / hard rock location, hire charges of plant and machinery, cost of oil, fuel, tool etc. and taking all necessary precautions for safety to the substation equipments etc. as per the direction of departmental officers at site (Depth as per the design approval by KSEBL)	No	757.00	5,470.78	5,873.00	5,470.78	4,141,380.46	KSEBL Cost Data This item was not envisaged in the original estimate, but required during actual execution as per the site specific condition and design requirements.	Category-1
Extra Labour	21	Designing, fabricating, testing, protection, installing and fixing in position semi (grid) unitized system of structural glazing (with open joints) for linear as well as curvilinear portions of the building for all heights and all levels, including	Sq.mtr	56.00	3,158.41	3,596.00	3,158.41	176,871.24	This item was not envisaged in the original estimate, but required during actual execution as per the site specific condition and design requirements. The item is only required at Chalakudy by considering the control room at First Floor and also by providing a better view to the switchyard by considering the grid substation having the connectivity of four generating stations. The control room being air conditioned, the IGU panel will provide cooling. The aluminium will be measured along with the available item in the BOQ	Category-1
Extra Labour		(a) Structural analysis & design and preparation of shop drawings for the specified design loads conforming to IS 875 part III (the system must passed the proof test at 1.5 times design wind pressure without any failure), including functional design of the aluminum sections for fixing glazing panels of various thicknesses, aluminium cleats, sleeves and splice plates etc. gaskets, screws, toggles, nuts, bolts, clamps etc., structural and weather silicone sealants, flashings, fire stop (barrier)-cum-smoke seals, microwave cured EPDM gaskets for water tightness, pressure equalisation & drainage and protection against fire hazard including:								
Extra Labour		(b) Fabricating and supplying serrated M.S. hot dip galvanised / Aluminium alloy of 6005 T5 brackets of required sizes, sections and profiles etc. to accommodate 3 Dimensional movement for achieving perfect verticality and 1598 SUB HEAD : 25- TRUCTURAL GLAZING ALUMINIUM COMPOSITE PANEL fixing structural glazing system rigidly to the RCC/masonry/structural steel framework of building structure using stainless steel anchor fasteners/ bolts, nylon separator to prevent bimetallic contacts with nuts and washers etc. of stainless steel grade 316, of the required capacity and in required numbers								

Item	Sl. No.	Item Description	Units	Quantity	Rate - Rs			Total Amount - Rs	Specific Reason for Extra Item & Rate	Item Category
				Total	DSR or KSEBL Rate / DSR+TE/LMR	Siemens Ltd Final Rate	Agreed Rate (Lowest Rate)	Excluding GST		
1	2	3	4	9	10	11	12	18	20	21
Extra Labour		(c) Providing and filling, two part pump filled, structural silicone sealant and one part weather silicone sealant compatible with the structural silicone sealant of required bite size in a clean and controlled factory / work shop environment, including double sided spacer tape, setting blocks and backer rod, all of approved grade, brand and manufacture, as per the approved sealant design, within and all around the perimeter for holding glass								
Extra Labour		(d) Providing and fixing in position flashings of solid aluminium sheet 1 mm thick and of sizes, shapes and profiles, as required as per the site conditions, to seal the gap between the building structure and all its interfaces with curtain glazing to make it watertight.								
Extra Labour		(e) Making provision for drainage of moisture/ water that enters the curtain glazing system to make it watertight, by incorporating principles of pressure equalization, providing suitable gutter profiles at bottom (if required), making necessary holes of required sizes and of required numbers etc. complete. This item includes cost of all inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&P, scaffolding and other incidental charges including wastages etc., enabling temporary structures and services, cranes or cradles etc. as described above and as specified. The item includes the cost of getting all the structural and functional design including shop drawings checked by a structural designer, dully approved by Engineer-in-charge. The item also includes the cost of all mock ups at site, cost of all samples of the individual components for testing in an approved laboratory, field tests on the assembled working structural lazing as specified, cleaning and protection till the handing over of the building for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge.								
Extra Labour	22	Providing, assembling and supplying vision glass panels (IGUs) comprising of hermetically-sealed 6-12- 6 mm insulated glass (double glazed) vision panel units of size and shape as required and specified, comprising of an outer heat strengthened float glass 6mm thick, of approved colour and shade with reflective soft coating on surface # 2 of approved colour and shade, an inner Heat strengthened clear float glass 6mm thick, spacer tube 12mm wide, dessicants, including primary seal and secondary seal (structural silicone sealant) etc. all complete for the required performances, as per the Architectural drawings, as per the approved shop drawings, as specified and as directed by the Engineer-in-Charge excluding Aluminium for frame work, which will be measured in Labour BOQ Item No. 25	Sq.mtr	56.00	4,889.46	6,124.00	4,889.46	273,809.50	This item was not envisaged in the original estimate, but required during actual execution as per the site specific condition and design requirements. The item is only required at Chalakudy by considering the control room at First Floor and also by providing a better view to the switchyard by considering the grid substation having the connectivity of four generating stations. The control room being air conditioned, the IGU panel will provide cooling	Category-1
Extra Labour		The IGUs shall be assembled in the factory/ workshop of the glass processor.(Payment for fixing of IGU Panels in the curtain glazing is included in cost of item No.26.2) For payment, only the actual area of glass on face # 1 of the glass panels (excluding the areas of the grooves and weather silicone sealant) provided and fixed in position, shall be measured in sqm.								

Item	Sl. No.	Item Description	Units	Quantity	Rate -Rs			Total Amount - Rs	Specific Reason for Extra Item & Rate	Item Category
				Total	DSR or KSEBL Rate / DSR+TE/LMR	Siemens Ltd Final Rate	Agreed Rate (Lowest Rate)	Excluding GST		
1	2	3	4	9	10	11	12	18	20	21
Extra Labour		(i) Coloured tinted float glass 6mm thick substrate with reflective soft coating on face # 2, + 12mm Airgap + 6mm Heat Strengthened clear Glass of approved make having properties as visible Light transmittance (VLT) of 25 to 35 %, Light reflection internal 10 to 15%, light reflection external 10 to 20 %, shading coefficient (0.25- 0.28) and U value of 3.0 to 3.3 W/m2 degree K etc. The properties of performance glass shall be decided by technical sanctioning authority as per the site requirement.								
Extra Labour	23	Fixing GI Strip 50 X 6 mm thick on parapet or on surface of wall for lightning conductor (DLSP) including cost of accessories complete as required (for Horizontal run) excluding cost of GI strip as per specification and as directed by KSEBL Engineer	M	588.00	85.19	85.19	85.19	50,091.13	Omission in the original estimate Rate proposed is from DSR - E & M - Item no 6.9	Category-1
Extra Labour	24	Fixing GI Strip 50 X 6 mm thick on parapet or on surface of wall for lightning conductor (DLSP) including cost of accessories complete as required (for Vertical run) excluding cost of GI strip as per specification and as directed by KSEBL Engineer	M	139.00	171.69	105.00	105.00	14,595.00	Omission in the original estimate Rate proposed is from DSR - E & M - Item no 6.10	Category-1
Extra Labour	25	Laying of HT XLPE UG cable of sizes beyond 3x185 sq.mm, 3x120sq.mm, 3x300, 1x500mm2 including conveyance from store yard & laying it carefully using rollers, providing identification tags, tying to cable tray supports, through the concrete trenches etc. complete including drawing through pipes wherever necessary as per specifications and as directed by KSEBL Engineer	Mtr.	2,503.00	197.98	275.00	197.98	495,543.94	Saving of cost- Transmission Cost data The item available in WO (Item 146) is for laying of the cable in soil. There is not item for laying of cable in the trench in the WO. Transmission Substation Cost Data Item 65A. The item available in WO (Item 146) is for laying of the cable in soil. There is no item for laying of cable in the trench in the WO. The Rate proposed is from Realistic Transmission Substation Data - 65A	Category-1
Extra Labour	26	Erection of 4 " AL pipe bus and connecting between equipment using rigid/expansion type connectors including connection of AL pipe to conductor wherever required and providing corona bell at end points. The work include cutting & bending of pipe and Welding of AL pipe including welding sleeve wherever required and testing of the welded points as directed by dept officeres.	Mtr.	436.00	696.05	1,296.00	696.05	303,477.80	Erection of AL pipe omission in estimation. This is required at 220kV Substation Elankur in 220 yard. Rate proposed is from Realistic Transmission Substation Data - 26	Category-1
Extra Labour	27	Supplying and fixing 20A , 240V , SPN industrial type socket outlet with 2 pole and Earth, metal enclosed plug top along with 20 A , C curve, SP, MCB, in sheet steel enclosure, on surface/recessed, with chained metal cover for socket outlet and complete with connections testing and commissioning etc as required as per specification and as directed by KSEBL Engineer	No	34.00	1,614.66	1,000.00	1,000.00	34,000.00	This item is required for power supply for A/C and is not included in the estimate. Hence extra item. Rate proposed is from DSR - E & M - Item no 2.18	Category-1
Extra Labour	28	Drilling holes for anchor /dowel bars 75cm depth and 16mm to 32mm dia in rock or concrete and cleaning the holes, grouting with cement grout 1:2 after fixing dowel bars of 1.5m length including cost of all materials labour etc complete as per specification etc complete	No	26.00	287.84	518.00	287.84	7,483.84	KSEBL Civil Data (KSEB data for Civil works- chapter IV- item No.1) This item is became necessary to the foundation of DG wherever the required depth of excavation as per design drawing is not possible due to rock in the foundation area.	Category-1
Extra Labour	29	Providing and fixing 225 mm wide, 8-11 mm thick serrated face PVC water stop of approved make in construction or expansion joints of concrete elements as shown in drawing as per specification and as directed by KSEBL Engineer	Mtr.	303.60	333.09	360.00	333.09	101,126.12	DSR Rate In the joints of the wall of BOT provided as per design drawing for prevention of leakage, not included in the original estimate. Also required for FFPH	Category-1

Item	Sl. No.	Item Description	Units	Quantity	Rate -Rs			Total Amount - Rs	Specific Reason for Extra Item & Rate	Item Category
				Total	DSR or KSEBL Rate / DSR+TE/LMR	Siemens Ltd Final Rate	Agreed Rate (Lowest Rate)	Excluding GST		
1	2	3	4	9	10	11	12	18	20	21
Extra Labour	30	Supplying, laying and jointing 50mm PVC pipes (6kgf/sqcm) with all fittings as per specification and as directed by KSEBL Engineer	Mtr.	131.20	430.60	446.00	430.60	56,494.77	Chapters - XI- SI No. 5 of KSEBL Data) LMR for PVC pipe Omission in the original Estimate. PWD LMR Rate For outlet pipe provided for cleaning purpose of overhead water tank and for waste water collecting pipe for wash basins.	Category-1
Extra Labour	31	Supplying, laying and jointing 63mm PVC pipes (6kgf/sqcm) with all fittings as per specification and as directed by KSEBL Engineer	Mtr.	92.00	420.66	535.00	420.66	38,700.72	Omission in the original Estimate. PWD LMR Rate Outlet pipes provided for conveying waste water from the floor of bathrooms	Category-1
Extra Labour	32	Supplying, laying and jointing 75mm PVC pipes (6kgf/sqcm) with all fittings as per specification and as directed by KSEBL Engineer	Mtr.	148.00	632.14	648.00	632.14	93,556.72	Omission in the original Estimate. PWD LMR Rate Pipes provided for the entry and exit of cables to the LM towers as per design drawings.	Category-1
Extra Labour	33	Providing and fixing double action hydraulic door / floor spring of approved brand and manufacture conforming to IS: 6315, having brand logo embossed on the body/plate with double spring mechanism and door weight upto 125kg, for doors including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S sheet outer box with slide plate etc complete with stainless steel cover plate minimum 1.25mm thick as per specification and as directed by KSEBL Engineer	No	22.00	2,692.50	1,800.00	1,800.00	39,600.00	The item used in place of door closer Instead of BOQ item No.31 and item No.32- ie- providing hanging door stopper and providing tubular type universal hydraulic door closer - Floor spring is used since as per item No.32, the universal hydraulic door closer is for doors having weight upto 35kg and door width upto 700mm only. It is not suitable for all the doors provided at site, since the width of doors are more than 700mm. Rate as per DSR 2016 with Cost	Category-1
Extra Labour	34	Demolishing stone rubble masonry manually/ by mechanical means including stacking of serviceable materials and disposal of unserviceable materials within 50m lead in CM as per specification and as directed by KSEBL Engineer	cum	21.00	1,318.07	480.00	480.00	10,080.00	This item is necessary for demolishing the RR Masonry at DG Side cable trench and main road access. The rate arrived as per DSR 2016 with cost index (Chalakudy) This item is become necessary for connecting cable trenches from Yard 99.000 to 96.000, yard 96.000 to 98.000 and from Yard 95.000 to 96.000 after demolishing the parapet of existing retaining walls and for connecting the Yard cable trenches and Power cable trenches to CRB by demolishing the existing RR wall along road to 95.000 Yard (Manjeri)	Category-1
Extra Labour	35	Demolishing RCC work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable materials within 50m lead as per specification and as directed by KSEBL Engineer	cum	4.00	1,906.33	2,147.00	1,906.33	7,625.32	DSR Rate For connecting Yard cable trench and Power cable trench to CRB, concrete belt in the RR wall along side of road to 95.000 yard to be demolished (Manjeri). The item necessary for constructing an access road near the main entrance (Chalakudy). For connecting Yard cable trench and Power cable trench to CRB, concrete belt in the RR wall alongside side of road to 95.000 yard to be demolished (Manjeri) The rate arrived as per DSR 2016 with cost index.	Category-1

Sl. No.	Item Description	Units	Quantity		Rate (Rs)		Total Amount (Rs)		Specific Reason for Extra Item & Rate	Item Category
			Total	Q&A or K&M&E Rate (Q&A - 15% L&M)	Excesses List Final Rate	Agreed Rate (Excess Rate)	Excluding GST	Incl		
1	2	3	4	5	6	7	8	9	10	11
Extra Labour	26	Supplying spreading 40mm metal in the stamp yard of transformers as per design drawings as per specification and as directed by K&M&E Engineer	man	276.00	1,134.00	1,137.00	1,134.00	311,696.50	As per item No.00 the item is for 100mm and 150mm in depth of 100mm and 150mm respectively for area of 200sq. mtr as per design drawing of transformer it is mentioned that metal spreading in stamp yard of transformers with 40mm only for a depth of 100mm and 150mm respectively is not possible to increase in area limits	Category-1
Extra Labour	27	Providing and fixing 10 inch CPVC gate valve with wheel of approved quality as per specification and as directed by K&M&E Engineer	No	12.00	172.00	176.00	172.00	2,083.00	As per item No.01 the item is for Gate valve with C.I. Wheel is not possible to fit with CPVC pipe hence changed as CPVC valve with wheel	Category-4
Extra Labour	28	Providing and fixing 10 inch CPVC gate valve with wheel of approved quality as per specification and as directed by K&M&E Engineer	No	26.00	176.00	176.00	176.00	7,277.00	As per item No.01 the item is for Gate valve with C.I. Wheel is not possible to fit with CPVC pipe hence changed as CPVC valve with wheel	Category-4
Extra Labour	29	Providing and fixing 1.5 inch single valve for back-suction and ground joints of approved quality conforming to IS:5951 as per specification and as directed by K&M&E Engineer	No	26.00	633.00	193.00	193.00	6,971.00	The valves are required for providing the back-suction for 1.5 inch inlet and 1 inch basin. The item was not include in the estimate	Category-1
Sub Total					31,276,792.00	37,362,918.00	31,487,316.71	31,487,316.71		
Gross Total (Appx) - Labour					39,089,277.17	38,361,386.18	33,941,543.71	33,941,543.71		
GST - 18%					7,070,705.86	13,908,134.11	6,040,637.87	6,040,637.87		
Gross Total (Rs)					46,159,983.03	52,269,520.29	40,002,181.58	40,002,181.58		
Net Total (Rs) (After)					42.75	499.00	431.74	431.74		


 DIRECTOR
 & S. O.