



**INDIAN BANK,
CORPORATE OFFICE,
No.254 - 260, Avvai Shanmugam Salai,
Royapettah, Chennai - 600 014.
Ph: 044-28134306, Fax: 044-28134021**

PART II: PRICE BID

Tender Document for the work of Supply, installation, testing and commissioning of 2 Nos. DG Sets in the place of existing old DG sets at Indian Bank, Head Office Building No. 66, Rajaji Salai, Chennai – 600 001.

ISSUED TO

M/s. _____

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(This document contains 17 pages)

**INDIAN BANK, CORPORATE OFFICE,
NO.254-260, AVVAI SHANMUGAM SALAI, ROYAPETTAH, CHENNAI - 600 014.**

PH: 044-28134306, FAX: 044-28134021

**Bill of Quantities for Supply, installation, testing and commissioning of 2 Nos. DG Sets in the place of existing old DG sets at
Indian Bank, Head Office Building No. 66, Rajaji Salai, Chennai – 600 001.**

PART II - PRICE BID

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	625KVA DG Set						
	GENERAL:						
1	Supply, installation, testing and commissioning of 625KVA Diesel Generator set complete with all accessories like engine, alternator, batteries with leads control panel, base frame, antivibration mounts, civil foundation for erection of the DG set, residential silencer, 900 litres fuel tank, intake & exhaust piping, fuel oil Motor operated pump, other miscellaneous accessories for the total set including test trial run at load for 24 hrs at factory . (Inclusive of consumables, vide clause 51.2 of General conditions of contract.) Control wiring, annunciation etc. as per specifications give below:	1	Set				
	Supply: a) Engine: The engine shall be of continuous rated, turbo charged, water cooled, electric starting, multi cylinders, 1500 RPM, 4 stroke to be coupled to 625 KVA alternator. The engine shall be of radiator water cooled, high tensile strength steel						

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	<p>forged crank shaft, induction hardened bearings, alloy cast iron removable wet liner cylinder block, corrosion resistant cylinder heads with supply and return lines and valves, crank shaft actuated injectors with integral fly wheel, ball type governor for fuel system, forced feed gear type pump for lubrication, aluminum alloy ring carrier piston with provision for thermal expansion, exhaust gas driven turbocharger for fuel economy and low smoke and noise, heat and corrosion resistant intake and exhaust valves etc. It shall also be fitted with standard components like breather crank case, air filter, coolant filter, oil filter, fuel filter, electronic governor, central pump, panel instruments provided with ammeter, hour meter, water temperature gauge, lubricating oil temperature gauge, lubricating oil pressure gauge, starting key switch, belt driven centrifuged coolant, heavy duty radiator, supports to engine from base frame with pedestal type support in the front and rear, residential silencer, alternator directly coupled to the engine, complete painting, lubricating oil measuring lever, base frame with cushion / antivibration pads, 24 volts electric static equipment complete with starter motor alternator and batteries with cable etc.</p>						
	<p>b) Alternator</p> <p>625KVA rated for continuous duty single ended, brush less, self excited, totally enclosed IP 21/22 enclosure, class of insulation H, regulation $\pm 5\%$, terminal box suitable for 3 runs of 3.5 core 400 Sq.mm. PVC insulated aluminum armoured cable, terminal voltage 415 volts, 50 Hz, 3 phase, 4 wire</p>						

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	system, automatic voltage regulator, suitable mounting arrangements and coupling with the base frame and engine etc. and painting in suitable colour.						
	<p>c) Control Panel</p> <p>The Control panel shall be made of 14 & 16 SWG sheet steel mounted on a channel frame, floor mounting, free standing, dust proof, cubical type, front operated etc. It shall be provided with 800A TPN ACB with U/V coil and thermal magnetic realise, current transformers with suitable ratio for metering and protection, earth fault relay, square digital type ammeter (0 – 800A), square digital type voltmeter (0 - 600V), digital type frequency meter, KWH meter, indicating lamps, fuses, etc.</p>						
	The panel shall be equipped with tinned copper bus bars of suitable size, duly provided with heat shrink PVC sleeves mounted on suitable support insulators. Separate bus bars for incoming and outgoing with cable entry at bottom of panel with removable gland plate separately for incoming and outgoing cables, panel lifting hooks, base frame etc.						
	a) Transformer						
	b) Rectifier						
	c) DC Ammeter						
	d) DC Voltmeter						
	e) Charging rate selector						
	f) Circuit Breaker						

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	d) 900 litres fuel oil tank complete with strainer, breather cum filter, drain plug, delivery line with gate valve, fuel level indicator. Motorised fuel oil pump is to be supplied.						
	e) Acoustic hood for housing the above DG set to be mounted on a concrete platform. The acoustic enclosure shall be of suitable size as per norms prescribed by Central Pollution Control Board (CPCB). The guaranteed noise level shall be of 75 decibals at 1 mtr. distance.						
	The enclosure shall be of totally weather, vermin and dust proof to enable the generator to operate at an ambient temperature of 48oC. The outer casing of the container shall be of sheet steel of suitable thickness. The total container shall be of powder coated.						
	f) The base frame shall be of fabricated MS channel frame of rigid welded construction for mounting the generator set.	1	Set				
	Erection, Testing and commissioning of 625KVA Diesel generator set.						
2	Dismantling & Removing the existing 625KVA DG set with all accessories	1	Job				
3	Providing ducting for hot air and modification in the existing ducting system on the suction side for the proposed new 625KVA DG set.	1	Job				

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
4	Providing suitable foundation for accommodating the 625 KVA DG set.	1	Job				
5	Transportation of proposed DG set and un-loading by crane and positioning over the foundation.	1	Job				
6	Supply and laying of MS fuel line connection between fuel tank and the engine with suitable supports and concealing the same in the floor if necessary.	10	Mtrs				
7	Insulation for the residential silencer (supply of residential silencer to be included under item for DG Sets).	1	Set				
8	Mounting of starting batteries on 0.5" thick hylam sheet base with suitable angle iron frame work support on the floor by the side of the generator set.	1	No				
9	Supply and installation of M.S. cable adopter box (made of 14 SWG sheet steel) with suitable copper bus extension link from alternator. The adopter box shall have tinned copper bus bar of suitable size for phases and neutral with suitable holes for cable termination (3R x 3.5 core, 400 Sq.mm). Necessary rubber gaskets between alternator and cable box shall be provided to avoid vibration between adopter box and alternator.	1	No				

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	CABLE AND END TERMINATION						
10	Supply and laying / clamping of 3.5 core 400 Sq.mm. PVC / XLPE insulated LT UG armoured cable from alternator to control panel and control panel to main panel.	150	Mtrs				
11	Supply and providing cable end termination of 3.5 x 400Sq. mm PVC / XLPE insulated LT UG Aluminium armoured cable with necessary aluminium cable sockets by crimping etc. with electrical connection complete.	12	Nos				
12	Supply and fixing of brass cable gland for 3.5 core x 400 Sq.mm PVC / XLPE armoured LT UG cable with earth connection.	12	Nos				
	EXHAUST PIPE						
13	Supply and installation of MS exhaust pipe of suitable thickness with 150mm dia upto 7m from the silencer complete with necessary supports, brackets etc. The support shall have intervals of not more than 2.5m.	30	Mtrs				
14	Supply and installation of MS exhaust pipe of suitable thickness with 200mm dia complete with MS wall / ceiling support, etc.	30	Mtrs				
15	Supply and installation of exhaust pipe thermal insulation lagging with mineral wool as per IS 3677 / 1973 reinforced with chicken mesh and cladded with aluminium sheet of 26 SWG and 50mm thick with 64 Kg/Cu. Mtr. Density.	60	Mtrs				

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
16	Supply and installation of stainless steel rain hood / rain cap / bend at top of the exhaust pipe to prevent rain water entry to exhaust pipe with provision of drain plug in the system.	1	Set				
	EARTHING & EARTH CONNECTION						
17	Supply and run of 25mm x 6mm tin coated copper flat from the earthing to the neutral earthing and interconnection of earthings.	40	Mtrs				
18	Supply and run of 25mm x 3mm tin coated copper flat from the earthing to the control panel alternator body earthing and interconnection of earthings.	120	Mtrs				
19	Supply and run of 2 of No.8 tin copper for earth connection.	100	Mtrs				
20	Earthing as per the ISI specification with an earth electrode of 2.1 mtr class 'B' GI pipe of dia not less than 40mm, with copper earth plate of size 125mm x 50mm x 6mm with necessary funneling arrangements with necessary masonry work and with 40mm RCC cover / CI cover slab for the brick masonry.	3	Nos				
21	600 x 3 mm as per the ISI specification with an earth electrode of 2.1 mtr class 'B' GI pipe of dia not less than 40mm, with copper earth plate of size 125mm x 50mm x 6mm with necessary funneling arrangements with necessary masonry work and with 38mm RCC cover slab for the brick masonry.	2	Nos				
	Excise duty						
	Service taxes						
	Any other taxes						

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	MISC. ITEMS						
22	Trial run of DG set with consumables (including first charging of lubricating oil & necessary fuel) for 8 hrs. at load for 7 days		LS				
	SUB TOTAL - I : (Supply +Erection)						

400KVA DG set

	GENERAL:						
23	Supply, installation, testing and commissioning of 400KVA Diesel Generator set complete with all accessories like engine, alternator, batteries with leads control panel, base frame, antivibration mounts, civil foundation for erection of the DG set, residential silencer, 900 litres fuel tank, intake & exhaust piping, fuel oil Motor operated pump, other miscellaneous accessories for the total set including test trial run at load for 24 hrs at factory . (Inclusive of consumables, vide clause 51.2 of General conditions of contract.) Control wiring, annunciation etc. as per specifications give below:.	1	Set				
	SUPPLY:						
	a) Engine The engine shall be of continuous rated, turbo charged, water cooled, electric starting, multi cylinders, 1500 RPM, 4 stroke to be coupled to 400 KVA alternator. The engine shall be of radiator water cooled, high tensile strength steel forged crank shaft, induction hardened bearings,						

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	alloy cast iron removable wet liner cylinder block, corrosion resistant cylinder heads with supply and return lines and valves, crank shaft actuated injectors with integral fly wheel, ball type governor for fuel system, forced feed gear type pump for lubrication, aluminum alloy ring carrier piston with provision for thermal expansion, exhaust gas driven turbocharger for fuel economy and low smoke and noise, heat and corrosion resistant intake and exhaust valves etc. It shall also be fitted with standard components like breather crank case, air filter, coolant filter, oil filter, fuel filter, electronic governor, central pump, panel instruments provided with ammeter, hour meter, water temperature gauge, lubricating oil temperature gauge, lubricating oil pressure gauge, starting key switch, belt driven centrifuged coolant, heavy duty radiator, supports to engine from base frame with pedestal type support in the front and rear, residential silencer, alternator directly coupled to the engine, complete painting, lubricating oil measuring lever, base frame with cushion / antivibration pads, 24 volts electric startic equipment complete with starter motor alternator and batteries with cable etc.						
	b) Alternator 400KVA rated for continuous duty single ended, brush less, self excited, totally enclosed IP 21/22 enclosure, class of insulation H, regulation $\pm 5\%$, terminal box suitable for 3 runs of 3.5 core 400 Sq.mm. PVC insulated aluminum armoured cable, terminal voltage 415 volts, 50 Hz, 3 phase, 4 wire system, automatic voltage regulator, suitable mounting arrangements and coupling with the base						

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	frame and engine etc. and painting in suitable colour.						
	<p>c) Control panel</p> <p>The Control panel shall be made of 14 & 16 SWG sheet steel mounted on a channel frame, floor mounting, free standing, dust proof, cubical type, front operated etc. It shall be provided with 630A 50KA TPN MCCB with U/V coil and thermal magnetic realise, current transformers with suitable ratio for metering and protection, earth fault relay, square digital type ammeter (0 – 800A), square digital type voltmeter (0 - 600V), digital type frequency meter, KWH meter, indicating lamps, fuses, etc.</p>						
	The panel shall be equipped with tinned copper bus bars of suitable size, duly provided with heat shrink PVC sleeves mounted on suitable support insulators. Separate bus bars for incoming and outgoing with cable entry at bottom of panel with removable gland plate separately for incoming and outgoing cables, panel lifting hooks, base frame etc.						
	a) Transformer						
	b) Rectifier						
	c) DC Ammeter						
	d) DC Voltmeter						
	e) Charging rate selector						
	f) Circuit Breaker						
	d) 900 litres fuel oil tank complete with strainer,						

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	breather cum filter, drain plug, delivery line with gate valve, fuel level indicator. Motor operated fuel oil pump is to be supplied.						
	e) Acoustic hood for housing the above DG set to be mounted on a concrete platform. The acoustic enclosure shall be of suitable size as per norms prescribed by Central Pollution Control Board (CPCB). The guaranteed noise level shall be of 75 decibals at 1 mtr. distance. Necessary certificate to this effect from CPCB agencies is to be obtained and produced.						
	The enclosure shall be of totally weather, vermin and dust proof to enable the generator to operate at an ambient temperature of 48oC. The outer casing of the container shall be of sheet steel of suitable thickness. The total container shall be of powder coated.						
	f) The base frame shall be of fabricated MS channel frame of rigid welded construction for mounting the generator set.	1	Set				
	Erection, Testing and commissioning of 400KVA Diesel generator set.						
24	Dismantling & Removing the existing 400KVA DG set with all accessories .	1	Job				

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
25	Providing ducting for hot air and modification in the existing ducting system on the suction side for the proposed new 400KVA DG set.	1	Job				
26	Providing suitable foundation for accommodating the 400 KVA DG set.	1	Job				
27	Transportation of DG set and un-loading by crane and positioning over the foundation	1	Job				
28	Supply and laying of MS fuel line connection between fuel tank and the engine with suitable supports and concealing the same in the floor if necessary.	10	Mtrs				
29	Insulation for the residential silencer (supply of residential silencer to be included under item for DG Sets).	1	Set				
30	Mounting of starting batteries on 0.5" thick hylam sheet base with suitable angle iron frame work support on the floor by the side of the generator set.	1	No				
31	Supply and installation of M.S. cable adopter box (made of 14 SWG sheet steel) with suitable copper bus extension link from alternator. The adopter box shall have tinned copper bus bar of suitable size for phases and neutral with suitable holes for cable termination (3R x 3.5 core, 300 Sq.mm). Necessary rubber gaskets between alternator and cable box shall be provided to avoid vibration between adopter box and alternator.	1	No.				

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	CABLE AND END TERMINATION						
32	Supply and laying / clamping of 3.5 core 300 Sq.mm. PVC / XLPE insulated LT UG armoured cable from alternator to control panel and control panel to main panel.	150	Mtrs				
33	Supply and providing cable end termination of 3.5 x 300Sq. mm PVC / XLPE insulated LT UG Aluminium armoured cable with necessary aluminium cable sockets by crimping etc. with electrical connection complete.	12	Nos				
34	Supply and fixing of brass cable gland for 3.5 core x 300 Sq.mm PVC / XLPE armoured LT UG cable with earth connection.	12	Nos				
	EXHAUST PIPE						
35	Supply and installation of MS exhaust pipe of suitable thickness with 150mm dia upto 7m from the silencer complete with necessary supports, brackets etc. The support shall have intervals of not more than 2.5m.	30	Mtrs				
36	Supply and installation of MS exhaust pipe of suitable thickness with 200mm dia complete with MS wall / ceiling support, etc.	30	Mtrs				
37	Supply and installation of exhaust pipe thermal insulation lagging with mineral wool as per IS 3677 / 1973 reinforced with chicken mesh and cladded with aluminium sheet of 26 SWG and 50mm thick with 64 Kg/Cu. Mtr. Density.	60	Mtrs				

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
38	Supply and installation of stainless steel rain hood / rain cap / bend at top of the exhaust pipe to prevent rain water entry to exhaust pipe with provision of drain plug in the system.	1	Set				
	EARTHING & EARTH CONNECTION						
39	Supply and run of 25mm x 6mm tin coated copper flat from the earthing to the neutral earthing and interconnection of earthings.	40	Mtrs				
40	Supply and run of 25mm x 3mm tin coated copper flat from the earthing to the control panel / alternator body earthing and interconnection of earthings.	120	Mtrs				
41	Supply and run of 2 of No.8 tin copper for earth connection.	100	Mtrs				
42	Earthing as per the ISI specification with an earth electrode of 2.1 mtr class 'B' GI pipe of dia not less than 40mm, with copper earth plate of size 125mm x 50mm x 6mm with necessary funneling arrangements with necessary masonry work and with 40mm RCC cover / CI cover slab for the brick masonry.	3	Nos				
43	Plate earthing with copper plate of size 600 x 600 x 3 mm as per the ISI specification with an earth electrode of 2.1 mtr class 'B' GI pipe of dia not less than 40mm, with copper earth plate of size 125mm x 50mm x 6mm with necessary funneling arrangements with necessary masonry work and with 38mm RCC cover slab for the brick masonry.	2	Nos				

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	Excise duty						
	Service taxes						
	Any other taxes						
	MISC. ITEM						
44	Trial run of DG set with consumables (including first charging of lubricating oil & necessary fuel) for 8 hrs. at load for 7 days		LS				
	APPROVAL FROM CEIG / CEA						
45	Preparation of necessary drawings for both DG sets approval by Chief Electrical Inspector to Government / CEA, obtain approval for the same, arrange for the inspection by the Electrical Inspectorate / CEA Officials and obtain safety certificate from them for commissioning the both DG sets (This building is fed by HT power supply).	1	Set				
	SUB TOTAL - II : (Supply +Erection)						
46	Buyback Value: Less: Buyback value for the existing (old) 625 KVA DG Sets including transportation. Less: Buyback value for the existing (old) 325 KVA DG Sets including transporation.	2	Set				
	SUB TOTAL – III						

Sl.No.	Description	Qty	Unit	Supply		Erection	
				Rate(Rs)	Amount(Rs)	Rate(Rs)	Amount(Rs)
	TOTAL (I+II)-(III)						
	ANNUAL MAINTENANCE CONTRACT (Non-Comprehensive) (to be considered for Tender Evaluation purposes)						
	Scope of AMC: AMC shall include supply of lub oil, greasing, oiling, replacement of filters viz., Air filter, Oil filter, Fuel filter, etc., periodically as per the norms prescribed by the Engine manufacturer(300 hours).						
47	AMC for the 1st year after the guarantee period / D.L.P. of two years.	1	Year				
48	AMC for the 2nd year after the guarantee period / D.L.P. of two years.	1	Year				
49	AMC for the 3rd year after the guarantee period / D.L.P. of two years.	1	Year				
	SUB TOTAL - IV						
	GRAND TOTAL (I+II+IV)-(III)						