

Price Schedule Cum BOQ for Erection Testing and Commissioning (ETC) Works						
Project:	Retrofit package associated with $\pm 800\text{kV}$, 6000MW, HVDC MULTI-TERMINAL NER/ER – NR/WR INTERCONNECTOR-I PROJECT					
Customer:	Powergrid Corporation of India Limited					
Location:	Agra, Uttar Pradesh					
Sr No. (1)	Item Description (2)	Supply Sourcing (3)	Unit (4)	Quantity (5)	Unit Rate (6)	Total Amount (7)
1	CRP - (Testing and commissioning of CRP system is in the scope of ABB. Necessary manpower support, tools, tackles and testing equipment to be in ETC contractor's scope)					
1.1	Armored FO Cable for BBP - Cabling including laying in GI Pipes including Flexible, tagging, dressing, lugging, taping, crimping, termination and drilling/cutting holes in cable gland plates. Laying can be either in (existing/new) trays, supports, underground (In GI pipes), over ground, through wall etc. All erection materials viz. cable ties/straps, Al. tags, markers, GI wall sleeves with rubber/nylon bushes and flexible steel conduits shall be supplied by bidder. Removal of precast trench cover for cable laying and replenishing cover on trench after cable laying in case of existing trench is also in ETC scope.	ABB	Meter	10000	13.07	130700.00
1.2	Armored FO Cable for SCADA - - Cabling including laying in GI Pipes including Flexible, tagging, dressing, lugging, taping, crimping, termination and drilling/cutting holes in cable gland plates. Laying can be either in (existing/new) trays, supports, underground (In GI pipes), over ground, through wall etc. All erection materials viz. cable ties/straps, Al. tags, markers, GI wall sleeves with rubber/nylon bushes and flexible steel conduits shall be supplied by bidder. Removal of precast trench cover for cable laying and replenishing cover on trench after cable laying in case of existing trench is also in ETC Contractor scope.	ABB	Meter	2870	13.07	37510.90
1.3	Splicing for the FO cable- Splicing kit and all consumables required for splicing is in ETC Contractor's Scope	ETC Contractor	Nos.	100	115.50	11550.00
1.4	CRP Panels- Excluding Unloading	ABB	Nos.	40	5000.00	200000.00

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Sr No. (1)	Item Description (2)	Supply Sourcing (3)	Unit (4)	Quantity (5)	Unit Rate (6)	Total Amount (7)
1.5	Panel supporting angles/channels etc on cable trench in relay buildings including vertical support for cables(including supply)	ETC Contractor	MT	1	49050.00	49050.00
1.6	Telephone System	ABB				
1.6.1	Analog telephones	ABB	Nos.	6	350.00	2100.00
1.6.2	GI conduit -Insider Kiosk – From cable trench to RJ box	ABB	Meter	24	100.00	2400.00
1.6.3	MDF box with 2 Krone	ABB	No	1	5050.00	5050.00
1.6.4	RJ Box for each telephone	ABB	Nos.	6	350.00	2100.00
1.6.5	20 Pair cable -From telephone room to MDF box at field - single run	ABB	Meter	500	15.00	7500.00
1.6.6	CAT 6 cable From MDF box to RJ box - 6 runs	ABB	Meter	2000	15.00	30000.00
2	Cables - Power and Control Cabling					
2 A	Control Cables (New): Cabling including laying, passing through cable transit frames in relay buildings, tagging, dressing, ferruling, lugging, soldering, taping, jointing, crimping, termination and drilling/cutting holes in cable gland plates. Laying can be either in (existing/new) trays, supports, underground (buried in ground or in PVC/GI pipes), over ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties/straps, Al. tags, markers, GI/PVC wall sleeves with rubber/nylon bushes and flexible steel conduits shall be supplied by bidder. Glands shall be quoted separately. Removal of precast trench cover for cable laying and replenishing cover on trench after cable laying in case of existing trench is also in ETC Contractor scope. Minor repair of trench wall is also in ETC Contractor contractor's scope.					
1	2C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	1000	10.70	10700.00
2	5C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	22650	10.70	242355.00
3	7C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	1000	12.70	12700.00
4	10C x 2.5sqmm PVC/ Cu	BHEL	Meter	11000	15.70	172700.00
5	14C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	3500	18.70	65450.00
6	19C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	5750	20.70	119025.00

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Sr No. (1)	Item Description (2)	Supply Sourcing (3)	Unit (4)	Quantity (5)	Unit Rate (6)	Total Amount (7)
2 B.1	Control Cables (Old -Removing): Cabling including removing, cutting till point of termination after measurement. Removing will be mainly in existing trenches/Control Room with trays, supports, underground (buried in ground or in PVC/GI pipes), over ground, through wall etc. Removal of precast trench cover for cable removal and replenishing cover on trench after cable removal in case of existing trench is also in ETC scope. Handling of the cables left after length modification will be in ETC contractor's scope which includes handing over of the left over material to customer					
1	2C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	1500	5.35	8025.00
2	5C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	33975	5.35	181766.25
3	7C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	1500	6.35	9525.00
4	10C x 2.5sqmm PVC/ Cu	BHEL	Meter	16500	7.85	129525.00
5	14C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	5250	9.35	49087.50
6	19C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	8625	10.35	89268.75
7	27C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	1500	12.50	18750.00
2B.2	Control Cables (Old -Relaying): Re- laying of old cables, passing through cable transit frames in relay buildings, tagging, dressing, ferruling, lugging, soldering, taping, jointing, crimping, termination and drilling/cutting holes in cable gland plates.Removing and Re-Laying will be mainly in existing trenches with trays, supports, underground (buried in ground or in PVC/GI pipes), over ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties/straps, Al. tags, markers, GI/PVC wall sleeves with rubber/nylon bushes and flexible steel conduits shall be supplied by bidder. Glands shall be quoted separately. Removal of precast trench cover for cable laying and replenishing cover on trench after cable laying in case of existing trench is also in ETC scope. Handling of the cables left after length modification will be in ETC contractor's scope which includes handing over of the left over material to customer . Minor repair of trench wall is also in ETC contractor's scope.					
1	2C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	1000	10.00	10000.00
2	5C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	22650	10.00	226500.00
3	7C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	1000	12.00	12000.00
4	10C x 2.5sqmm PVC/ Cu	BHEL	Meter	11000	15.00	165000.00

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Sr No. (1)	Item Description (2)	Supply Sourcing (3)	Unit (4)	Quantity (5)	Unit Rate (6)	Total Amount (7)
5	14C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	3500	18.00	63000.00
6	19C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	5750	20.00	115000.00
7	27C x 2.5 sq mm PVC/ Cu.	BHEL	Meter	1000	25.00	25000.00
2 C	Power Cables (New): Cabling including laying, passing through cable transit frames in relay building, tagging, dressing, ferruling, lugging, soldering, taping, jointing, crimping, termination and drilling/cutting holes in cable gland plates. Laying can be either in (existing/new) trays, supports, underground (buried in ground or in PVC/GI pipes), over ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties/straps, Al. tags, markers, GI/PVC wall sleeves with rubber/nylon bushes and flexible steel conduits shall be supplied by bidder. Glands shall be quoted separately. Removal of precast trench cover for cable laying and replenishing cover on trench after cable laying in case of existing trench is also in ETC Contractor scope.					
1	3.5 C x 70 sq.mm PVC/ Al.	BHEL	Meter	5500	21.00	115500.00
2	2 C x 6 sq.mm PVC/ Al.	BHEL	Meter	1000	10.70	10700.00
3	4 C x 16 sq.mm PVC/ Al.	BHEL	Meter	15000	12.70	190500.00
4	3.5 C x 35sq.mm PVC/ Al.	BHEL	Meter	1000	18.80	18800.00
5	4 C x 6 sq.mm PVC/ Al.	BHEL	Meter	1000	10.70	10700.00
2D	Cable Glands : Nickel plated (coating thickness not less than 15 microns) Brass cable glands, double compression heavy duty type complete with necessary armour clamp and tapered washers etc for the following cables. Supply and fixing in in bidder's scope. Quantity may vary +/- 100%. (Cable glands to be procured from POWERGRID approved vendors only.) - Detailed Specification Attached.					
2	2CX2.5 sq mm PVC/ Cu.	ETC Contractor	Nos.	950	170.00	161500.00
4	5CX2.5 sq mm PVC/ Cu.	ETC Contractor	Nos.	1061	170.00	180370.00
5	7CX2.5 sq mm PVC/ Cu.	ETC Contractor	Nos.	125	200.00	25000.00
6	10CX2.5 sq mm PVC/ Cu.	ETC Contractor	Nos.	242	250.00	60500.00
7	14X2.5 sq mm PVC/ Cu.	ETC Contractor	Nos.	203	250.00	50750.00
8	19CX2.5 sq mm PVC/ Cu.	ETC Contractor	Nos.	138	300.00	41400.00
9	27CX2.5 sq mm PVC/ Cu.	ETC Contractor	Nos.	34	350.00	11900.00

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Customer:	Powergrid Corporation of India Limited					
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Sr No. (1)	Item Description (2)	Supply Sourcing (3)	Unit (4)	Quantity (5)	Unit Rate (6)	Total Amount (7)
10	3.5CX70 sq.mm PVC/ Al.	ETC Contractor	Nos.	100	300.00	30000.00
11	2CX6 sq.mm PVC/ Al.	ETC Contractor	Nos.	86	170.00	14620.00
12	4CX16 sq.mm PVC/ Al.	ETC Contractor	Nos.	150	200.00	30000.00
13	3.5CX35 sq.mm PVC/ Al.	ETC Contractor	Nos.	12	200.00	2400.00
14	4CX6 sq.mm PVC/ Al.	ETC Contractor	Nos.	790	170.00	134300.00
2E	Cable Transit System - Unloading, storage and handling in ETC contractor's scope. Modules to be fixed by cable transit system supplier.					
1	Cable Transit System	BHEL	No. of Opening	16	1500.00	24000.00
2F	Cable Rack					
1	Cable Rack work includes welding of mild steel angles(50X50X6) and painted racks (paint supply and painting in scope of bidder) on inserts of trench walls in trenches in switchyard and control room. Cable rack assembly will be of 2/3/4 tier.	BHEL	MT	1	10300.00	10300.00
2	Removal of cable racks wherever required in existing trench	NA	MT	0.25	2060.00	515.00
3	Pipes (GI & PVC) & their accessories for laying of FO cable of busbar protection & new Power & Control cables (from equipments to Main Trench).					
3.1	GI Conduits - Laying of GI conduits in trenches or at a depth of 300mm including excavation, backfilling, marking and repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc complete. Both ends of GI conduit shall be closed by plastering.(Payment will be made for the erected pipe length).					
3.1.1	GI Pipe, 100 NB - Including Bends and other accessories.	BHEL	Meter	2500	140.00	350000.00
3.2	PVC Pipes - Laying of PVC conduits at a depth of 300 mm including excavation, back-filling, making and repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc complete. Both ends of the PVC conduits shall be closed by plastering.					

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Sr No. (1)	Item Description (2)	Supply Sourcing (3)	Unit (4)	Quantity (5)	Unit Rate (6)	Total Amount (7)
3.2.1	PVC Pipe, 63 NB - Including Bends and other accessories.	BHEL	Meter	500	27.00	13500.00
3.2.2	PVC Pipe, 110 NB - Including Bends and other accessories.	BHEL	Meter	500	27.00	13500.00
4	Earthing Material : The earthing includes earthing of all items like new cable trenches/ repair if required in the existing cable trenches, relay building panels and equipments using necessary connectors and lugs for earthing flats etc . GS strip cutting, bending, welding with 40mm dia MS rod riser/earth strip, applying zinc rich paint, clamping to building wall etc. Hardware required for connecting flat on pads of equipment included in the scope.					
4.1	75 x12 mm galvanised GI flat	BHEL	Meter	500	75.30	37650.00
4.2	50 x 6 galvanised GI flat	BHEL	Meter	500	65.30	32650.00
4.3	Laying and Connection of 40mm Dia MS Rod Riser from main earthmat to Relay Building Chicken Mesh Wire For Earthing of the buildings(two diagonally opposite corners)	BHEL	MT	0.50	14300.00	7150.00
5	Fire Protection System for Switchyard Panel room (Unloading, storage & handling in ETC contractor's scope)					
5.1	4.5 kg CO2 type Portable extinguishers	BHEL	Nos.	6	300.00	1800.00
5.2	Detectors (conventional)	BHEL	Nos.	14	100.00	1400.00
5.4	2Cx1.5 sq. mm Cable	BHEL	Meter	3000	1.00	3000.00
6	Air Conditioning System for switchyard panel room (Unloading, storage, handling to be in ETC contractor's scope)					
6.1	3 T Air Conditioning for Switchyard panel room	BHEL	Nos.	12	1943.00	23316.00
7	Illumination System: Lighting panels, fixtures, receptacles and other accessories/materials etc as required for complete installation and commissioning of illumination system(Only Unloading, storage AND handling in ETC contractor's scope)					
7.1	Illumination for Switchyard panel room (1 set for 1 Switchyard panel room)	BHEL	Set	5	4000.00	20000.00
8	Miscellaneous Works					

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8.1	Removal and re-laying of gravel (wherever required)	NA	Sqm	300	73.50	22050.00
8.2	Dismantling of PCC	NA	Cu.m	300	684.47	205341.30
Grand Total (Rs.)						40,58,450.70
Notes:						
1	Loading/ unloading, verification, proper storage, assembly, erection, testing, commissioning and handling of all material from storage to work area and vice-versa are in ETC contractor's scope. Necessary tools and tackles for material handling like hydra etc are also to be arranged by ETC contractor					
2	Since the work is for retrofitting of an old switchyard, the work fronts will be provided in a phased manner during shut-down availability from the customer.					

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Project:	Retrofit package associated with $\pm 800\text{kV}$, 6000MW, HVDC MULTI-TERMINAL NER/ER – NR/WR INTERCONNECTOR-I, PROJECT - Extra Items NEA800				
Customer:	Powergrid Corporation of India Limited				
Location:	Agra, Uttar Pradesh				
Sr No. (1)	Item Description (2)	Unit (3)	Quantity (4)	Unit Rate (5)	Total Amount (6)
1	LAN & Patch Cord Cabling				
1A	LAN Cabling- InterPanel (Panels can be placed in different locations) and Workstation connection of LAN CAT 5/5e cables including cutting, laying in PVC/GI conduits, RJ45 connector fixing and termination.				
1A.1	LAN Cable - CAT 5/5e Cable	Mtrs	1000	13.07	13070.00
1B	Patch Cord Cabling: Unarmored 4 Core Glass Fiber Optic Cable				
1B.1	Interpanel Patch Cord connection in Switchyard Relay Buildings - Unarmored 4 Core Glass FOC with connectors at both ends. Laying and termination in ETC contractors scope	Mtrs	1000	13.07	13070.00
1B.2	Main Service and Additional Service Building - InterPanel (Panels can be placed in different locations) and Workstation connection of Patch Cord Unarmored 4 Core Glass FOC with connectors at both ends including laying in PVC/GI conduits and termination.	Mtrs	5000	13.07	65350.00
1B.3	Patch Cord - Cutting as per required length, splicing and Fixing of connectors at both ends	Nos.	50	115.50	5775.00
2	Exhausts Fans Wiring and Cabling - Mounted at heights				
2.1	Exhaust fans wiring and cabling in PVC Pipe/ encasing(encasing In ETC Contractor's Scope) over wall.	Nos.	28	500.00	14000.00
3	Testing of BHEL Scope DC Equipemnts as listed below				
3.1	Testing of DC neutral disconnecter, Neutral Bus Capacitor and DC Filter, DC Neutral and Electrode Line Arrester Current Transformers (Dry and Oil Filled Type). The testing team shall bring DCRM kit, timers ,LCR meter, Inductance measurement kit, 220V DC power pack, 415V /230V AC Variac, CBS 2000, Megger, primary injection kit, multi-meter, connecting leads, extension boards and other necessary meters.	PerTeam Days	15	5545.00	83175.00
Grand Total (Rs.)					1,94,440.00
Notes:					
1	Erection, Testing, Commisioning, handling of all material from storage to work area and vice-versa is in ETC contractor's scope. Necessary tools and tackles for material handling like hydra etc are also to be arranged by ETC contractor. Please note that unloading is not in the scope of ETC contractor.				
2	Note for item No. 3: Testing team consists of 01 Sr Engineer and 01 Engineer along with the necesaaray instruments will be in the scope of ETC contractor. Electrican and other unskilled manpower will be provided by BHEL				

(ANNEXURE-II)

**TRANSMISSION BUSINESS GROUP
(SUB- CONTRACTS MANAGEMENT)
TBG – NOIDA**

PRICE SCHEDULE FORMAT

**SUB: ERECTION, TESTING, COMMISSIONING AND HANDING OVER OF
RETROFIT PACKAGE ASSOCIATED WITH ± 800 KV, 6000MW,
HVDC MULTI- TERMINAL NER/ER– NR/WR INTERCONNECTOR- I
PROJECT.**

- (a) I/ We hereby agree to execute the above work at ----- % (in figure) ----- (in words) Above/ Below/At Par the rates of items given in BOQ (Annexure-I, Part-A & Part-B) of subject tender.

NOTE:

1. In this annexure the tenderer shall quote a percentage above or below or at par the rates shown in the BOQ (Annexure-I, Part-A & Part-B). The percentage quoted shall be clearly written both in words and figures In case of discrepancy in rates in figure and words, the minimum will be taken into account by BHEL.
2. The quoted percentage will apply to the individual items of BOQ (Annexure-I, Part-A & Part-B) uniformly.

Date:

Place

Signature of tenderer
Name & Designation of authorized person(s) with seal

ANNEXURE-III

SUMMARY OF PRICES FOR ERECTION, TESTING, COMMISSIONING AND HANDING OVER OF RETROFIT PACKAGE ASSOCIATED WITH ± 800 KV, 6000MW, HVDC MULTI- TERMINAL NER/ER– NR/WR INTERCONNECTOR- I PROJECT

Sl No.	Description	Amount (Rs.)
1	Total Amount for ETC works of retrofit package at HVDC Agra (Annexure-I, Part-A)	40,58,450.70
2	Total Amount for ETC works of retrofit package at HVDC Agra (Annexure-I, Part-B)	1,94,440.00
3	Total Amount (Annexure-I, Part-A + Annexure-I, Part-B)	42,52,890.70
4	Value of percentage above/below/at par (As indicated in Price Schedule Format, Annexure - II) applicable to the total amount of ETC BOQ (Annexure-I, Part-A & Part-B)% above/below/ at par
5	Total amount for ETC BOQ after consideration of percentage above/below/ at par.	