

E1- DADRI PROJECT - ISG LHP GHP AREA- ELECTRICAL SCOPE MATRIX

Date - 08.05.18- R1

	Equipments	Design & Engineering	Supply	Erection	Commissioning	Unloading/Storage	Remarks
1	11/3.3kV HT switchboard	BHEL Bhopal	BHEL Bhopal	BHEL PS	Vendor	BHEL PS	Shall be supplied by PEM through Ranipet. ISG shall furnish HT load list to Ranipet.Commissioning support shall be provided by BHEL PS/ISG
2	11kV HT power cable (outgoing from 11kV board to transformer incomers (11/0.415kV))	BHEL PEM	BHEL PEM	Vendor	Vendor	BHEL PS	
3	3.3 kV (UE) HT power cable (Crusher/Conveyor motors)	Vendor	Vendor	Vendor	Vendor	Vendor	PJB in vendors scope along with flexible HT cable as required
4	HT Motors- Free issue motors (Crushers/Conveyors - as per annexure)	BHEL Bhopal/IS	BHEL Bhopal/IS	Vendor	Vendor	BHEL PS	HT Motor ordering input details (viz. Speed, mounting arrangements, TS-curves, Starting method etc.) shall be furnished in attached format by bidder within 15 days of LOI Temperature transmitters as required for RTD,BTD of HT Motors(free issue to vendor) also in scope of vendor. Zero speed limit switch shall be provided for Crushers by vendor. It shall sense the speed of rotor and shall trip the rotor when actual speed falls below the design speed.
4.a	All HT Motors, if required except above	Vendor	Vendor	Vendor	Vendor	Vendor	
5	LT Transformers	BHEL PEM	BHEL PEM	Vendor	Vendor	BHEL PS	For machine mounted items, scope for all shall be read as Vendor.
6	LT bus ducts	BHEL EPD	BHEL EPD	Vendor	Vendor	BHEL PS	
7	LT PMCC/PDB/MCC for 415V feeders located in FGD Electrical buildings	BHEL EPD	BHEL EPD	Vendor	Vendor	BHEL PS	Load list & other required details for ordering shall be furnished by bidder within 15 days of LOI. In case of requirement of single phase supply or any other voltage levels, vendor shall provide control transformer in the local panel /PDB for generation of the required voltage levels. For tripper panels, only one Power feeder shall be considered by BHEL, further distribution as required shall be in vendors scope
8	All LT Motors including machine mounted LT motors, scoop coupling for HT motors, brakes, electro mechanical actuators, oil pumps, sump pumps, hoists, cranes, elevators, any other miscellaneous LT motors etc	Vendor	Vendor	Vendor	Vendor	Vendor	
9	All electrical panels (like scoop coupling/ tripper panels/ local starter panel/ local control panel /VVVF panels , Power and Control JB's /Local Panels/Distribution boards/ local push button stations etc as applicable)	Vendor	Vendor	Vendor	Vendor	Vendor	Complete scope from these panels till final equipment is in scope of vendor Colored Mimic, Hardwired Annunciation system, Push buttons and Indication lamps shall be provided in all scoop coupling/ local starter panel/ local control panel/ local push button stations etc.
10	Local Push Button stations for all equipment supplied by bidder, emergency push button station as applicable & Selector switches as required. This is applicable for all HT motors handed as free issue to vendor also	Vendor	Vendor	Vendor	Vendor	Vendor	Complete scope from these panels till final equipment is in scope of vendor.
11	Variable Voltage Variable Frequency (VVFD) Drives and panels, as applicable	Vendor	Vendor	Vendor	Vendor	Vendor	Complete scope from these panels till final equipment is in scope of vendor
12	Power JB's as required for termination of power cables for motors/drives/equipment	Vendor	Vendor	Vendor	Vendor	Vendor	Complete scope from these panels till final equipment is in scope of vendor Vendor to design the JB's for termination of incoming/outgoing cables.
13	Control JB's as required for termination of control/signal cables	Vendor	Vendor	Vendor	Vendor	Vendor	Complete scope from these panels till final equipment is in scope of vendor Vendor to design the JB's for termination of incoming/outgoing cables.
14	Field devices/safety switches/solenoid valves / actuators / limit/temperature/ pressure / flow switches/ instruments/ transmitters/transducers /temperature elements/ etc. which are required for the safe and satisfactory operation of the system and integration with the rest of the plant and to implement the control philosophy	Vendor	Vendor	Vendor	Vendor	Vendor	Vendor shall wire all the field instruments/equipments to nearest control JB's (supplied by bidder). Strategic location to be proposed by vendor to optimize cable lengths & no. of JB's. Multicore cables shall be used from JB's to DCS. Cabling from control JB's to DCS in vendors scope. Instruments/ field devices and any other equipment shall be as per NTPC specification.

15	Chute jam switch/indicators, chute vibrators, Zero speed switches	Vendor	Vendor	Vendor	Vendor	Vendor	
16	Pull cord Switches, pull cord rope, Belt sway switches, Belt Watch System/panel (for belt watch indicators), any other switches as required and Cables & Cabling (along with all required accessories) between the field switches and belt watch panel	Vendor	Vendor	Vendor	Vendor	Vendor	PULL CORD & BELT SWAY INDICATION SYSTEM (Belt watch/monitoring panel) shall be installed at respective RIO/MCC location. Pull cord switches, Belt sway switches and ZSS shall be of intelligent/ addressable type.
17	All the limit switches such as Limit switches to prevent over travel, zero-speed switches, emergency stop switches, safety switches , any kind of anti-collision devices etc. and any other devices required for the safe and satisfactory operation of the system.	Vendor	Vendor	Vendor	Vendor	Vendor	All brakes, rail clamps must have physical limit switches so that respective motors cannot start unless brakes are released. It should not be possible to start travel motors unless cable reeling drums are rotating.
18	All limit switches (for position, travel, flap gate, brake, rail clamp, CRD, anti collision device etc.) as per specification required for safe and satisfactory operation of the system and to implement control philosophy	Vendor	Vendor	Vendor	Vendor	Vendor	
19	Complete LT Power/control/instrumentation Cables	Vendor	Vendor	Vendor	Vendor	Vendor	Complete Cable schedule to be submitted for approval by vendors
20	Cable trays & supports	Vendor	Vendor	Vendor	Vendor	Vendor	Terminal point- From Outgoing of FGD MCC/control building till equipment terminals. Route to be properly checked by Vendor - Through Ranipet Pipe rack to LS mill area, ISG Conveyor galleries, Building cable cellars etc
21	Complete Cable laying & cabling activities for HT/LT Power Cables, control/instrumentation cables including erection of cable trays along with support & accessories from HT/LT MCC/DCS RIO panels to motors/Local starter panel/local control panels/JB's etc. as applicable	Vendor	Vendor	Vendor	Vendor	Vendor	Cabling implies cable laying along with termination at both ends with all accessories like supply of conduits,tags,ferrules,lugs, glands,termination kits etc. as per specifications. This is also applicable for all machine mounted equipments upto power/control JB.
22	Complete Cable laying & cabling activities for HT/LT Power Cables, control/instrumentation cables from Local starter panel/local control panels/JB's etc to machine mounted instruments/motors/field devices/between all bidders supplied equipments etc.	Vendor	Vendor	Vendor	Vendor	Vendor	Terminal point- From Outgoing of FGD MCC/control building till equipment terminals. Route to be properly checked by Vendor - Through Ranipet Pipe rack to LS mill area, ISG Conveyor galleries, Building cable cellars etc
23	Cable and Cabling for Festooning/trailing/flexible and any special cables and their arrangements (including trailing arrangement, trolley, motorized Power & control cable reeling drums,trays, conduits, JB's,lugs,ferrules including termination etc) for both land mounted & machine mounted equipments	Vendor	Vendor	Vendor	Vendor	Vendor	Complete scope for special cables including flexible HT power cables is in vendors scope
24	Earthing materials - Below ground earthing	Vendor	Vendor	Vendor	Vendor	Vendor	Construction of electrical/electronic earth pits is in vendors scope.
25	Earthing materials - Above ground earthing	Vendor	Vendor	Vendor	Vendor	Vendor	Complete earthing of machine mounted equipments including supply of earthing material is in vendors scope
26	Lightning protection	Vendor	Vendor	Vendor	Vendor	Vendor	
27	Main control system (LHP-DCS)	BHEL EDN	BHEL EDN	Vendor	Vendor	BHEL PS	Complete Control Philosophy along with logics to be furnished by vendor. IO details to be furnished by vendor in BHEL format along with location/type of signal etc. Also drive logic for each system to be submitted by vendor Commissioning support by BHEL EDN/ISG
28	Lime Sampling Unit	Vendor	Vendor	Vendor	Vendor	Vendor	All the required interfaces with Main LHP DCS shall be in vendors scope including necessary hardwares/softwares etc.
29	UPS for BHEL supplied DCS/RIO panels	BHEL EDN	BHEL EDN	Vendor	BHEL EDNs Vendor	BHEL PS	Commissioning support shall be in vendors scope
30	UPS for all other equipments(like LSU etc.) as required	Vendor	Vendor	Vendor	Vendor	Vendor	
31	220V Battery & Battery charger	BHEL PEM	BHEL PEM	Vendor	BHEL PEMs Vendor	BHEL PS	DC requirement as required by vendor to be furnished within 15 days of LOI. Commissioning support shall be in vendors scope
32	ACDB/ACFB & DCDB/DCFB	Vendor	Vendor	Vendor	Vendor	Vendor	TWO nos. 220V DC & 24V DC supply feeders shall be provided by BHEL ISG in FGD MCC building. Further distribution from outgoing of these feeders to DCDB boards(Vendor scope) including cable etc. shall be in vendors scope. Lighting DC requirement also shall be taken care by vendor in these DB's

33	Vibration monitoring system for Crusher equipments covered in this package (including sensors, panel, special cables etc) *VMS applicable only for Crushers	Vendor	Vendor	Vendor	Vendor	Vendor	VMS panel shall be located in FGD control room. Necessary Cable & Cabling from field to the VMS panel shall be in bidders scope. Bidders equipment shall be provided with mounting pads for mounting of vibration detectors by bidder if required/applicable. Notch/ provision for mounting key phasor on bidders equipment shall be provided by the bidder for Vibration monitoring system as applicable
34	Welding receptacles & distribution board as applicable except as required on machines	Vendor	Vendor	Vendor	Vendor	Vendor	
35	Hooters/sirens as required	Vendor	Vendor	Vendor	Vendor	Vendor	BHEL will provide feeders in MCC and bidder to supply/lay power cables from MCC to siren motor as required
36	General illumination including Day Silo, Bucker elevators, Crusher,TPs, conveyors, LTP1/LTP2, pump houses, Gypsum Storage sheds, surface/box feeders etc	Vendor	Vendor	Vendor	Vendor	Vendor	Complete illumination including supply/erection of all required fixtures/LDP/ELDB/cables etc. along with required spares is in vendors scope. Illumination of FGD electrical MCC/Control building is excluded from vendors scope. LDP's shall be strategically located to illuminate complete area.
37	All the electrics required for dust suppression system along with motors , local starters panel , distribution board , local push button station etc as required under this package	Vendor	Vendor	Vendor	Vendor	Vendor	
38	ILMS, Suspended magnet & Metal Detector	Vendor	Vendor	Vendor	Vendor	Vendor	For ILMS and Suspended Magnet, separate rectifier panels and Local control panels shall be provided. Rectifier panels shall be located in Field with IP requirement as per specification. The other panels (which shall accommodate incomers and other controlling items) shall necessarily be located at field. For ILMS/SM, BHEL shall provide only one 415V 3phase supply (SFU / MCCB feeder from MCC panel in FGD MCC building) feeder for rectifier panel.Complete cabling from outgoing of this feeder is in bidders scope
39	Belt scale & belt weighing System (Electronic Microprocessor Based)	Vendor	Vendor	Vendor	Vendor	Vendor	DCS interface (for all required signals) shall be provided for the Remote totalizer pulse signal (potential free contact) and Remote flow rate indication (4-20mA DC signals). Bidder shall supply and lay cables required for remote indication of Belt Weigher signals from local panel to LHP control room (location of remote indicators). If any special cable is required for connecting the remote indicators then the cables and laying of cables shall be also in bidder's scope.
40	Sump Pumps & other water pumps(service/potable/cooling etc)	Vendor	Vendor	Vendor	Vendor	Vendor	Complete EPC including complet electrics, C&I as required
41	Electric Hoists, EOTs, and Manual hoists	Vendor	Vendor	Vendor	Vendor	Vendor	Complete EPC including complet electrics, C&I as required
42	Air condition for bidders equipment (like PLC, VVFD, UPS etc..)	Vendor	Vendor	Vendor	Vendor	Vendor	Complete EPC including complet electrics, C&I as required
43	Ventilation for silo area,storage silos etc.	Vendor	Vendor	Vendor	Vendor	Vendor	Complete EPC including complet electrics, C&I as required
44	Elevators - Complete Electrics is in Bidders scope	Vendor	Vendor	Vendor	Vendor	Vendor	Complete EPC including complet electrics, C&I as required