Bharat Heavy Electricals Limited

(A Govt. of India Undertaking)
Transmission Business Group
Materials Management, 5th Floor, Plot No.25,
Sector-16A, Noida, Uttar Pradesh, PIN No: 201301
Phone: 0120-6748543, Email: gaurav.agarwal@bhel.in

CORRIGENDUM - 05 TO NIT NO-84687

Dated 16-09-2024

Subject: Corrigendum-05 to Tender enquiry for Pre-Bid Tie up with the GIS OEM for Supply & Services of 220 kV GIS for IOCL's Panipat 220kV GIS S/stn Tender / Project.

Project	: IOCL's Panipat 220kV GIS S/stn Tender
Equipment / Item	: Supply & Services of 220kV GIS
Enquiry No/Date	: Enquiry No_61Q2500228 Dtd: 16-08-2024
BHEL NIT NO	: 84687
Original Tender due date	**: 28-08-2024**
Extended due date	**: 16-09-2024**

This Corrigendum is issued by BHEL TBG against above mentioned NIT/ enquiry for-

A) Issuance of Technical Corrigendum Rev-02 (enclosed). Due to change in BOQ, Revised price bid format (unpriced) is also enclosed and same need to be followed for bid submission.

B) Extension of due date of tender upto **19.09.2024**. All bids received till 14:00 Hrs on 19-09-24 shall be opened on 16:00 Hrs on same day through Tender Box.

All other terms and conditions for this tender enquiry shall remain unchanged.

Bidder to ensure submission of offer on or before due date.

Note: Tender ID on CPP Portal is **2024_BHEL_39053_1.**

Thanking you

-------Sd/------
Gaurav Agarwal
BHEL TBG, NOIDA

Ref. No. **Technical Corrigendum-02**

Project: **Pre-Bid Tie up for, EPCC 03 Package 220KV GIS AND ASSOCIATED WORKS for Maleic Anhydride Project at Panipat Refinery Petrochemical Complex of M/s. Indian Oil Corporation Limited.t**

Item/ Material: 220kV Gas Insulated Switchgear (GIS) with itsaccessories

Date: **14.09.2024**

Sl. No.	Volume/ Section/ Clause	Volume/ Section/ Clause as Existing	Volume/ Section/ Clause as Amended/ Added in Technical Corrigendum-02
1	'Technical Specification/ Section-1	Please refer Section-1 of Technical Specification along with Technical Corrigendum-01/ BOQ_220kV GIS_SUPPLY_IOCL PANIPAT REV02 & BOQ_220kV GIS_SERVICES_IOCL PANIPAT REV02 (Please refer revised BOQ).	Please refer BOQ_220kV GIS_SUPPLY_IOCL PANIPAT REV03 & BOQ_220kV GIS_SERVICES_IOCL PANIPAT REV03 (Please refer revised BOQ).
2	'Technical Specification/ Section-1	Please refer Technical Specification along with Technical Corrigendum-01/ Single Line Diagram REV00 with additional details	Please refer Technical Specification/ Single Line Diagram REV01 along with other layout drawings.
3	'Technical Specification/ Section-1	Please refer Section-2 of Technical Specification.	Please refer Customer AMENDMENT NO. 05 (TECHNICAL) DATED 02-SEP-2024.
4			Please refer Reply of Pre-bid queries (technical).

Note:

1. The changes/ revision are marked/ highlighted in yellow/ rectangle box.
2. Amendment/ addendum/ clarification/ corrigendum issued herein shall form part of Technical Specification.

Bidders to please note that amendment/addendum/ clarification/ corrigendum issued shall supersede the respective Volume/ Section/ Clause of Technical Specification Document to the extent for the Volume/ Section/ Clause or part thereof the amendment is issued.

ANNEXURE: BOQ_220kV GIS_SUPPLY_IOCL PANIPAT

REV No: 03

DATE: 14.09.2024

Sl. No.	Item Description	Unit	Qty.	Remarks
1.0	**SUPPLY- GIS: 220KV, 50KA FOR 3S, GAS INSULATED SWITCHGEAR (GIS) AS PER TS (Two/ Double bus scheme)**			
1.01	GIS SUPPLY: 220KV, 2000A, 50kA, SF6 GIS BUS BAR MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	SET	4	
1.02	GIS SUPPLY: 220KV, 50kA, SF6 BUS PT/ VT BAY MODULE WITH BUS EARTH SWITCH (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	SET	4	220kV PT/ VT BAY MODULE shall include following but not limited to, (a) 1 SET- 1 NO x3 phase Disconnector, complete with operating mechanism. (b) 1 SET- 1 NO x3 phase Maintenance Grounding Switch, complete with operating mechanism (c) 1 SET- 1 NO x3 phase High Speed make proof Earthing Switch, complete with operating mechanism. (d) 3 NO- 1 phase multi winding Voltage Transformer In addition to above, Gas device, UHF sensors, Pressure Switches, Expansion joints/ Flexible connections, Insulators etc. as applicable shall be included, however, Online PD Monitoring System, Local Control Cubicle and End Terminations, if applicable shall be covered separately. GIS shall be complete with all necessary terminal boxes, inspection windows, SF6 gas, grounding connection, pipings for gas monitoring system, trays, support structures with mounting hardwares, walkways, interconnecting cables with glands, ferrules, lugs etc. Please refer section-2 (TS for 220kV GIS)- Technical Specification.
1.03	GIS BAY SUPPLY: 220kV, 2000A, 50 kA, SF6 INCOMING GIS LINE FEEDER BAY MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	SET	2	220kV INCOMING GIS LINE FEEDER BAY MODULE shall include following but not limited to, (a) 1 SET- 1 NO x3 phase Circuit Breaker, compatible for Controlled Switching Facility (if applicable), complete with operating mechanism (b) 3 SET- 1 NO x3 phase Disconnector, complete with operating mechanism. (c) 2 SET- 1 NO x3 phase Maintenance Grounding Switch, complete with operating mechanism. (d) 1 SET- 1 NO x3 phase High Speed make proof Earthing Switch, complete with operating mechanism. (e) 6 NO- 1 phase multi ratio Current Transformer In addition to above, Gas device, UHF sensors, Pressure Switches, Expansion joints/ Flexible connections, Insulators etc. as applicable, however, Controlled Switching Device (CSD), Online PD Monitoring System, Local Control Cubicle and End Terminations, if applicable shall be covered separately. GIS shall be complete with all necessary terminal boxes, inspection windows, SF6 gas, grounding connection, pipings for gas monitoring system, trays, support structures with mounting hardwares, walkways, interconnecting cables with glands, ferrules, lugs etc. Please refer section-2 (TS for 220kV GIS)- Technical Specification.
1.04	GIS BAY SUPPLY: 220kV, 2000A, 50kA, SF6 GIS BUS COUPLER BAY MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	SET	2	220kV GIS BUS COUPLER BAY MODULE shall include following but not limited to, (a) 1 SET- 1 NO x3 phase Circuit Breaker, compatible for Controlled Switching Facility (if applicable), complete with operating mechanism (b) 2 SET- 1 NO x3 phase Disconnector, complete with operating mechanism. (c) 2 SET- 1 NO x3 phase Maintenance Grounding Switch, complete with operating mechanism. (d) 6 NO- 1 phase multi ratio Current Transformer In addition to above, Gas device, UHF sensors, Pressure Switches, Expansion joints/ Flexible connections, Insulators etc. as applicable, however, Controlled Switching Device (CSD), Online PD Monitoring System (OPMS), Local Control Cubicle (LCC) and End Terminations, if applicable shall be covered separately. GIS shall be complete with all necessary terminal boxes, inspection windows, SF6 gas, grounding connection, pipings for gas monitoring system, trays, support structures with mounting hardwares, walkways, interconnecting cables with glands, ferrules, lugs etc. Please refer section-2 (TS for 220kV GIS)- Technical Specification.
1.05	GIS BAY SUPPLY: 220kV, 2000A, 50kA, SF6 GIS BUS SECTIONALISER BAY MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	SET	2	220kV GIS BUS SECTIONALIZAER BAY MODULE shall include following but not limited to, (a) 1 SET- 1 NO x3 phase Circuit Breaker, compatible for Controlled Switching Facility (if applicable), complete with operating mechanism (b) 2 SET- 1 NO x3 phase Disconnector, complete with operating mechanism. (c) 2 SET- 1 NO x3 phase Maintenance Grounding Switch, complete with operating mechanism. (d) 6 NO- 1 phase multi ratio Current Transformer In addition to above, Gas device, UHF sensors, Pressure Switches, Expansion joints/ Flexible connections, Insulators etc. as applicable, however, Controlled Switching Device (CSD), Online PD Monitoring System (OPMS), Local Control Cubicle (LCC) and End Terminations, if applicable shall be covered separately. GIS shall be complete with all necessary terminal boxes, inspection windows, SF6 gas, grounding connection, pipings for gas monitoring system, trays, support structures with mounting hardwares, walkways, interconnecting cables with glands, ferrules, lugs etc. Please refer section-2 (TS for 220kV GIS)- Technical Specification.
1.06	GIS BAY SUPPLY: 220kV, 2000A, 50 kA, SF6 OUTGOING GIS TRANSFORMER FEEDER BAY MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	SET	8	220kV GIS LINE FEEDER BAY MODULE shall include following but not limited to, (a) 1 SET- 1 NO x3 phase Circuit Breaker, compatible for Controlled Switching Facility (if applicable), complete with operating mechanism (b) 3 SET- 1 NO x3 phase Disconnector, complete with operating mechanism. (c) 2 SET- 1 NO x3 phase Maintenance Grounding Switch, complete with operating mechanism. (d) 1 SET- 1 NO x3 phase High Speed make proof Earthing Switch, complete with operating mechanism. (e) 6 NO- 1 phase multi ratio Current Transformer In addition to above, Gas device, UHF sensors, Pressure Switches, Expansion joints/ Flexible connections, Insulators etc. as applicable, however, Controlled Switching Device (CSD), Online PD Monitoring System, Local Control Cubicle and End Terminations, if applicable shall be covered separately. GIS shall be complete with all necessary terminal boxes, inspection windows, SF6 gas, grounding connection, pipings for gas monitoring system, trays, support structures with mounting hardwares, walkways, interconnecting cables with glands, ferrules, lugs etc. Please refer section-2 (TS for 220kV GIS)- Technical Specification.

ANNEXURE: BOQ_220kV GIS_SUPPLY_IOCL PANIPAT

REV No: 03

DATE: 14.09.2024

Sl. No.	Item Description	Unit	Qty.	Remarks
1.07	GIS BAY SUPPLY: 220kV, 2000A, 50kA, SF6 OUTGOING GIS SPARE FEEDER BAY (FULLY EQUIPPED) MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	SET	2	220kV OUTGOING GIS SPARE FEEDER BAY MODULE shall include following but not limited to, (a) 1 SET- 1 NO x3 phase Circuit Breaker, compatible for Controlled Switching Facility (if applicable), complete with operating mechanism (b) 3 SET- 1 NO x3 phase Disconnector, complete with operating mechanism. (c) 2 SET- 1 NO x3 phase Maintenance Grounding Switch, complete with operating mechanism. (d) 1 SET- 1 NO x3 phase High Speed make proof Earthing Switch, complete with operating mechanism. (e) 6 NO- 1 phase multi ratio Current Transformer In addition to above, Gas device, UHF sensors, Pressure Switches, Expansion joints/ Flexible connections, Insulators etc. as applicable, however, Controlled Switching Device (CSD), Online PD Monitoring System, Local Control Cubicle and End Terminations, if applicable shall be covered separately. GIS shall be complete with all necessary terminal boxes, inspection windows, SF6 gas, grounding connection, pipings for gas monitoring system, trays, support structures with mounting hardwares, walkways, interconnecting cables with glands, ferrules, lugs etc. Please refer section-2 (TS for 220kV GIS)- Technical Specification.
1.08	GIS BAY SUPPLY: ONLINE TEMPERATURE MONITORING & PARTIAL DISCHARGE SYSTEM	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification.
1.09	GIS SUPPLY: 220KV, CONTROLLED SWITCHING DEVICE (CSD) FOR 220KV, 3- PH CIRCUIT BREAKER	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification.
1.10	SUPPLY- GIS : 220KV, 2000A, 1 PHASE GAS INSULATED BUS DUCT (INCLUDING SF6 GAS, STRUCTURE WITH HARDWARES AND EARTHING MATERIALS)	MTRS	~~800/ 1200/~~ 10	Please refer section-2 (TS for 220kV GIS)- Technical Specification. Only for reference unit price.
1.11	GIS SUPPLY: 220KV, 2000A, 1 PHASE SF6 TO AIR BUSHING (POLYMER) (INCLUDING SF6 GAS, STRUCTURE WITH HARDWARES AND EARTHING MATERIALS)	NO	~~6/~~ 1	Please refer section-2 (TS for 220kV GIS)- Technical Specification. ~~It is considered for INCOMING BAYS only~~. Only for reference unit price.
1.12	GIS SUPPLY: 390KV, 1 PHASE SURGE ARRESTER WITH SURGE COUNTER (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS)	NO	42	Please refer section-2 (TS for 220kV GIS)- Technical Specification. It is considered for ALL OUTGOING BAYS (30nos.) & BUS BAR MODULE (12nos.) only.
1.13	GIS SUPPLY: 220KV, 2000A, 1 PHASE SF6 TO OIL BUSHING (POLYMER) (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS)	NO	~~30/ 12/~~ 1	Please refer section-2 (TS for 220kV GIS)- Technical Specification. ~~It is considered for OUTGOING BAYS- STYRENE & MAH S/stn~~ Only for reference unit price.
1.14	GIS SUPPLY: 220KV, 2000A, 1 PHASE CABLE CONNECTION MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS)	NO	~~18/~~ 42	Please refer section-2 (TS for 220kV GIS)- Technical Specification. 1 phase, Cable connection module shall be suitable upto 1000sqmm cable. It is considered for All BAYS including Spare bays (12nos for line bays & 30nos for outgoing bays).
1.15	GIS SUPPLY: 220KV, 1 PHASE VOLTAGE TRASNFORMER (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS)	NO	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification. Only for reference unit price.
1.16	GIS SUPPLY: LOCAL CONTROL CUBICLES	SET	16	Please refer section-2 (TS for 220kV GIS)- Technical Specification. It is considered for ALL BAYS only.
2.0	**SUPPLY- GIS: SPECIAL TOOLS AND TESTING & MAINTENANCE INSTRUMENTS AS PER TS**			
2.01	GIS SUPPLY: SF6 GAS LEAKAGE DETECTOR	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification.
2.02	GIS SUPPLY: SF6 GAS FILLING AND EVACUATING PLANT	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification.
2.03	GIS SUPPLY: SF6 GAS ANALYSER	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification.
2.04	GIS SUPPLY: PORTABLE PARTIAL DISCHARGE MEASUREMENT SET	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification. Only for reference unit price.
2.05	GIS SUPPLY: SF6 TOPPING SYSTEM	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification.
2.06	GIS SUPPLY: SF6 GAS HANDLING PLANT/ SERVICE CART	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification.
2.07	GIS SUPPLY: PORTABLE LADDER WITH ADJUSTABLE HEIGHT	SET	1	Please refer section-2 (TS for 220kV GIS)- Technical Specification.
3	**SPARES- GIS: 220KV, 50KA FOR 3S, GAS INSULATED SWITCHGEAR (GIS) AS PER TS**			
3.01	GIS SPARES: NUMERICAL RELAYS	NO.	2	Each type and rating
3.02	GIS SPARES: CT/ PT/ CONTROL TRANSFORMER (ALL TYPES AND RATINGS)	NO.	3	Each type and rating
3.03	GIS SPARES: POWER & CONTROL FUSES	NO.	10	Each rating
3.04	GIS SPARES: SF6 GAS LEAKAGE DETECTOR	SET	1	Each type and rating
3.05	GIS SPARES: DIGITAL MULTIFUNCTION METERS	NO.	1	Each bus
3.06	GIS SPARES: INDICATING LAMPS	NO.	5	Each colour

ANNEXURE: BOQ_220kV GIS_SUPPLY_IOCL PANIPAT

REV No: 03

DATE: 14.09.2024

Sl. No.	Item Description	Unit	Qty.	Remarks
4.0	**SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS** (Unit Prices of Individual Equipment included here or in manadatory spares are required for any Addition/Deletion of Equipment and replacement of damaged items. Bidder to ensure that the unit prices have a logical relationship with prices of assemblies in main items. Quoting for unit prices is mandatory and shall be considered for evaluation)			
4.01	SUPPLY- GIS: SPARES: 220KV, OPERATING MECHANISM FOR CIRCUIT BREAKER COMPLETE IN ALL RESPECT	Set	1	1set= operating mechanism for complete 3 phase of Circuit Breaker.
4.02	SUPPLY- GIS: SPARES: 220KV, OPERATING MECHANISM FOR DISCONNECTOR COMPLETE IN ALL RESPECT	Set	1	1set= operating mechanism for compplete 3 phase of Disconnector.
4.03	SUPPLY- GIS: SPARES: 220KV, OPERATING MECHANISM FOR MAINTENANCE EARTHING SWITCH COMPLETE IN ALL RESPECT	Set	1	1set= operating mechanism for compplete 3 phase of Maintenance Earthing Switch.
4.04	SUPPLY- GIS: SPARES: 220KV, OPERATING MECHANISM FOR FAST ACTING/ HIGH SPEED GROUNDING SWITCH COMPLETE IN ALL RESPECT	Set	1	1set= operating mechanism for compplete 3 phase of Fast Acting/ High Speed Grounding Switch.
4.05	SUPPLY- GIS: SPARES: 220KV, DISCONNECTOR COMPLETE IN ALL RESPECT	Set	1	1 set= 3 phase Disconnector complete in all respect.
4.06	SUPPLY- GIS: SPARES: 220KV, MAINTENANCE EARTHING SWITCH COMPLETE IN ALL RESPECT	Set	1	1 set= 3 phase Maintenance Earthing Switch complete in all respect.
4.07	SUPPLY- GIS: SPARES: 220KV, FAST ACTING/ HIGH SPEED GROUNDING SWITCH COMPLETE IN ALL RESPECT	Set	1	1 set= 3 phase Fast Acting/ High Speed Grounding Switch complete in all respect.
4.08	SUPPLY- GIS: SPARES: 220KV, SINGLE PHASE BUS BAR	Mtrs	1	Complete in all respect.
4.09	SUPPLY- GIS: SPARES: 220KV, GIS METALLIC ENCLOSURE	Kgs	50	
4.10	SUPPLY- GIS: SPARES: 220KV, EXPANSION JOINTS	Set	1	1set= 1 nos. of each type and each rating.
4.11	SUPPLY- GIS: SPARES: 220KV, FLEXIBLE CONNECTIONS	Set	1	1set= 1 nos. of each type and each rating.
4.12	SUPPLY- GIS: SPARES: 220KV, BARRIER INSULATOR	Set	1	1set= 1 nos. of each type and each rating.
4.13	SUPPLY- GIS: SPARES: 220KV, NON-BARRIER INSULATOR	Set	1	1set= 1 nos. of each type and each rating.
4.14	SUPPLY- GIS: SPARES: 220KV, GAS SEALS	Set	1	1set= 1 nos. of each type and each rating.
4.15	SUPPLY- GIS: SPARES: 220KV, GAS DENSITY MONITOR SWITCH	Set	1	1set= 1 nos. of each type and each rating.
4.16	SUPPLY- GIS: SPARES: 220KV, GAS PRESSURE SWITCH	Set	1	1set= 1 nos. of each type and each rating.
4.17	SUPPLY- GIS: SPARES: 220KV, TEE BEND	Set	1	1set= 1 nos. of each type and each rating.
4.18	SUPPLY- GIS: SPARES: 220KV, ANGLE BEND	Set	1	1set= 1 nos. of each type and each rating.
4.19	SUPPLY- GIS: SPARES: 220KV, L-BEND	Set	1	1set= 1 nos. of each type and each rating.
4.20	SUPPLY- GIS: SPARES: 220KV, VOLATGE DETECTORS	Set	1	1set= 1 nos. of each type and each rating.

ANNEXURE BOQ_220kV GIS_SERVICE_IOCL PANIPAT
REV No: 03
DATE: 14.09.2024

Sl. No.	Description	Unit	Quantity	Remarks
5.0	**SERVICES- GIS : 220KV, 50KA FOR 3S, GAS INSULATED SWITCHGEAR (GIS) AS PER TS**			
5.01	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF GIS	Bays	16	Supervision of erection of GIS with main bus, complete as per TS in all respect including LCC and its accessories. It also includes verification of materials for proper storage at site for final storage. Earthing, SF6 Gas Filing works, Internal Cabling from GIS to LCC, including Structure Works are covered under this item. GIS Bus Duct, SF6 to Air Bushing (SAB)/ SF6 to Oil Bushing (SOB), Surge Arrester, VT are not covered in this BOQ item.
5.02	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1-PHASE GAS INSULATED BUS DUCT	MTR	~~800/ 1200/~~ 10	Supervision of erection of GIB complete as per TS in all respect. GIB shall be considered from first equipment of GIS. Earthing, SF6 Gas Filing works, Internal Cabling with tray work including Structure Works are covered under this item. Only for reference unit price.
5.03	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE SF6 TO AIR BUSHING	SET	~~6/~~ 1	Supervision of erection of SF6 to Air Bushing complete as per TS in all respect. Earthing, SF6 Gas Filing works, Internal Cabling with tray work, including Structure Works are covered under this item. Only for reference unit price.
5.04	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE SF6 TO OIL BUSHING (POLYMER)	SET	~~30/ 12/~~ 1	Supervision of erection of SF6 to Oil Bushing complete as per TS in all respect. Earthing, SF6 Gas Filing works, Internal Cabling with tray work, including Structure Works are covered under this item. Only for reference unit price.
5.05	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE CABLE CONNECTION MODULE	SET	~~18/~~ 42	Supervision of erection of Cable connection module complete as per TS in all respect. Earthing, SF6 Gas Filing works, Internal Cabling with tray work, including Structure Works are covered under this item.
5.06	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE SURGE ARRESTER WITH SURGE COUNTER	SET	42	Supervision of erection of Surge Arrester complete as per TS in all respect. Earthing, SF6 Gas Filing works, Internal Cabling with tray work, including Structure Works are covered under this item.
5.07	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE VOLTAGE TRASNFORMER	SET	1	Supervision of erection of Voltage Transformer complete as per TS in all respect. Earthing, SF6 Gas Filing works, Internal Cabling with tray work, including Structure Works are covered under this item. Only for reference unit price.
5.08	SERVICES- 220kV GIS: TESTING & COMMISSIONING OF GIS	Bays	16	Testing and commissioning of complete GIS system including main bus, LCC and associated system (LA, VT, CSD etc.) is to be executed by bidder. All the special testing instruments, kits, T&P etc. are to be arranged by bidder on returnable basis. Please refer relevant section of technical specification for details.
5.09	SERVICES- 220kV GIS : TESTING & COMMISSIONING OF GAS INSULATED BUS DUCT	MTR	~~800/ 1200/~~ 10	Testing and commissioning of GIB complete as per TS in all respect. GIB shall be considered from first equipment of GIS. All the special testing instruments, kits, T&P etc. are to be arranged by bidder on returnable basis. Please refer relevant section of technical specification for details. Only for reference unit price.
5.10	SERVICES- 220kV GIS : FINAL SUCCESSFUL HV/ POWER FREQUENCY TESTING OF GIS INCLUDING ARRANGING OF HV TEST KIT ALONG WITH OPERATOR	Bays	16	Carrying out successful HV/ Power Frequency Testing of GIS as per IEC including Arrangement of HV Test kit with operator (on returnable basis) shall be in scope of bidder, which includes charges of HV test kit with operator, accessories & tools required for completion of HV testing. The quoted price shall include GIS bays including Main Bus, GIB, SAB/SOB and other common items as per TS complete in all respect. In this BOQ item, mobilization and demobilization for HV test kit is considered for once. In case of more, for reasons not attributable to bidder, same shall be paid extra as per BOQ Item.
5.11	SERVICES- 220kV GIS : 3D MODEL FOR 220KV GIS	LOT	1	Please refer TS.
5.12	SERVICES- 220kV GIS : INSULATION CO-ORDINATION STUDIES FOR GIS SYSTEM	LOT	1	1 Lot means Complete study report as per technical specification, Including VFTO report.
5.13	SERVICES- 220kV GIS : TRAINING FOR GIS AT SITE	DAY	7	Training of ten OWNER's personnel & two BHEL's personnel for a period of at least Seven days at site
5.14	SERVICES- 220kV GIS : TRAINING FOR GIS AT MANUFACTURER WORKS	DAY	7	Training of two OWNER's personnel & two BHEL's personnel for a period of at least Seven days at manufacturer's works

ANNEXURE BOQ_220kV GIS_SERVICE_IOCL PANIPAT
REV No: 03
DATE: 14.09.2024

Sl. No.	Description	Unit	Quantity	Remarks
6.0	**SERVICES- GIS : REFERENCE UNIT PRICE FOR ADDITION / DELETION OF SERVICES:** (UNIT PRICES OF INDIVIDUAL SERVICES INCLUDED HERE ARE REQUIRED FOR ANY ADDITION/DELETION OF EQUIPMENT AND REPLACEMENT OF DAMAGED ITEMS. VENDOR TO ENSURE THAT THE UNIT PRICES HAVE A LOGICAL RELATIONSHIP WITH PRICES OF ASSEMBLIES IN MAIN ITEMS. QUOTING FOR UNIT PRICES IS MANDATORY AND SHALL BE CONSIDERED FOR			
6.01	SERVICES- 220kV GIS: REF. UNIT PRICE OF GIS INDIVIDUAL ITEM/ EQUIPMENT - SERVICES FOR SUPERVISION OF ERECTION OF GIS	MANDAY	10	Charges for repetition of services - (if required due to reasons not attributed to the bidder) This item will be executed only if repetition of services is required by BHEL.
6.02	SERVICES- 220kV GIS: REF. UNIT PRICE OF GIS INDIVIDUAL ITEM/ EQUIPMENT - SERVICES FOR TESTING & COMMISSIONING OF GIS	MANDAY	10	Charges for repetition of services - (if required due to reasons not attributed to the bidder) This item will be executed only if repetition of services is required by BHEL.
	DEMOBILIZATION AND REMOBILIZATION CHARGES			
6.03	SERVICES- 220kV GIS: DEMOBILIZATION AND REMOBILIZATION CHARGES FOR GIS ERECTION SUPERVISION TEAM	Set	2	THIS BOQ ITEM SHALL BE PAYABLE IF REQUIRED FOR REASONS NOT ATTRIBUTABLE TO BIDDER.
6.04	SERVICES- 220kV GIS: DEMOBILIZATION AND REMOBILIZATION CHARGES FOR GIS TESTING & COMMISSIONING TEAM	Set	2	BOQ ITEM SHALL BE PAYABLE IF REQUIRED FOR REASONS NOT ATTRIBUTE TO BIDDER. HV TESTING IS NOT PART OF THIS ITEM.
6.05	SERVICES- 220kV GIS: DEMOBILIZATION & REMOBILIZATION CHARGES OF HV TEST KIT ALONG WITH OPERATOR	Lot	1	In this BOQ item, mobilization and demobilization chages for HV test kit is considered for second time or more , for reasons not attributable to bidder. HV testing charges shall be paid per bay basis as per main HV testing charge.

AMENDMENT NO. 05 (TECHNICAL) DATED 02-SEP-2024

TO

BIDDING DOCUMENT NO. TENDER NO.: 359755-MDR-000-EPCC-TEN-0003/002

FOR

MALEIC ANHYDRIDE PROJECT

AT

PANIPAT REFINERY PETROCHEMICAL COMPLEX OF M/S. INDIAN OIL CORPORATION LIMITED

TENDER: "EPCC 03 PACKAGE 220KV GIS AND ASSOCIATED WORKS ON LSTK BASIS"

PMC: CB&I India Limited (McDermott)

AMENDMENT NO. 05 (TECHNICAL)

Bidding Document No. : 359755-MDR-000-EPCC-TEN-0003/002

Name of Work : EPCC 03 PACKAGE 220KV GIS AND ASSOCIATED WORKSON LSTK BASIS

Project : MALEIC ANHYDRIDE (MAH) PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX

Tender ID : 2024_REFHQ_177729_1

The terms, conditions and specifications of Bidding Document stand modified to the extent indicated under column "MODIFICATIONS/ ADDITIONS/ DELETIONS". All other terms & conditions, stipulations, specifications etc. of Bidding Document including Amendments, if any, issued earlier shall remain unaltered.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
GENERAL							
1.	Volume-1/ Section-3.1	359755-MDR-000-PRM-LST-0002	1757 of 5756	-	Common Project Master Supplier list	-	**Modification:** Refer to updated Common project Master Supplier list issued by IOCL for the month of September 2024. **Addition:** Note: Bidder shall note that Common project Master Supplier list (CPMSL) shall be followed for supply of equipment, packages, Electrical, Instrument, piping material is attached with the bidding documents, which is a dynamic document, and the latest document shall be followed. However, for equipment and packages for which no vendor is specified in CPMSL, the vendor and package shall be considered based on past prove track

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							record of the manufacturer / OEM for similar application which shall have been completed with one year of successful operation after Commissioning. In such case, PMC/IOCL approval shall be taken prior to proceeding with any procurement activities.
2.	Volume-1 / Section-1.23	359755-MDR-000-INS-SPC-0003	-	-	IOCL M&I Guidelines	New	**Addition:** Refer to the IOCL Maintenance & Inspection Guidelines attached with this Amendment
3.	Volume-2 / Section-2.1	359755-MDR-000-PRM-SOW-0003	2079 of 5756	2.33	Compliance	The materials, design and workmanship shall satisfy the applicable relevant Indian Standard (IS), API, ASTM, OISD, IBR, BS, CEA, SMPV, PESO & OSHA standards. In the event of any conflict between the codes and the standards referred to elsewhere in the specification and the requirements of this specification, more stringent of the two shall govern.	**Modifications:** The materials, design and workmanship shall satisfy the applicable relevant Indian Standard (IS), API, ASTM, OISD, IBR, BS, CEA, SMPV, PESO & OSHA standards. In the event of any conflict between the codes and the standards referred to elsewhere in the specification and the requirements of this specification, more stringent of the two shall govern. Contractor shall also ensure compliance to recommendations of OISD, IOCL RTF guidelines etc. for all disciplines during the Detailed Engineering.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
4.	-	-	-	-	RTF Recommendations	New	**Addition:** Bidder to ensure compliance to enclosed latest IOCL RTF guidelines for M&I, Instrumentation and Electrical attached with this amendment.
ELECTRICAL							
5.	Volume -2 Section 5.3.2	359755-MDR-000-ELE-31A3-0001	3045 of 5756	-	ECS	-	**Modification:** Refer to updated ECS System Block Diagram <u>Additional Clarification:</u> EPCC-03 bidder shall note that complete Electrical Control system (ECS) including main system, RTU, interface panels, engineering and operator consoles, laptops, power supply systems, etc. as required for status monitoring, controls, data acquisition, etc. shall be supplied for the entire MAH Project including free issue equipment and material for other Contractors as listed below. This new ECS shall be extension of the existing ECS (Make: ABB). The EPCC-03 scope shall include design & engineering, supply, installation, testing & commissioning of the complete package including free issued ECS equipment (systems I/O's, convertor, data concentrator, RTU/ processor, power supply modules, Ethernet switches, LIU's etc.) in 220kV GIS Substation,

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							Substation-01 & 02 of MAH, RODM Substation, ETP Substation (installation to be performed by respective Contractors, including civil works inside each substation). Supply, laying, termination, testing, pre-commissioning and commissioning of all ECS cables from various equipment to ECS system within other Contractor substations shall be by respective contractors including required cable trays with supports. EPCC-03 Contractor shall be responsible for testing, pre-commissioning and commissioning of entire ECS system including Hook-up and integration of main ECS system at 220kV GIS system to existing central ECS system (ABB) at CPP Substaion-09 including all hardware & software (as required) for seamless integration. **EPCC-01 Requirements (Free Issue)** Substation-01 • RTU – min. 1 no. • I/O points (Softwired) – 1975 nos. • I/O points (Hardwired) – 1550 nos. • Interface panel – As required. Substation-02 • RTU – min. 1 no. • I/O points (Softwired) – 975 nos.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							• I/O points (Hardwired) – 800 nos. • Interface panel – As required. **EPCC-02 Requirements (Free Issue)** RODM Substation • RTU – min. 1 no. • I/O points (Softwired) – 1375 nos. • I/O points (Hardwired) – 850 nos. • Interface panel – As required. ETP Substation • RTU – min. 1 no. • I/O points (Softwired) – 1000 nos. • I/O points (Hardwired) – 800 nos. • Interface panel – As required. CPU Substation • RTU – min. 1 no. • I/O points (Softwired) – 475 nos. • I/O points (Hardwired) – 450 nos. • Interface panel – As required. **NCU-II Requirement for equipment located in 220kV GIS Building** • I/O points (Softwired) – 950 nos. • I/O points (Hardwired) – 1600 nos.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							• Interface panel – As required. Contractor shall consider 20% overall spare for designing the ECS system.
6.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2154 of 5756	1.18		Design and engineering of grid connected rooftop solar…….	**Deletion:** Clause 1.18 deleted
7.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2158 of 5756	1.52.1, 1.52.3	Overhead conductor	Integration of 220KV Overhead lines from point of tap off to 220KV outdoor switchyard. Any required items/structures…… Outdoor switchyard - The Switchyard…….	**Modification:** Overhead conductor (HTLS) shall be used for stringing from HVPNL tower to the 220kV switchyard. **Addition:** All hardware (including gantry)/ software along with accessories required for interconnection between nearest tap-off point (from transmission line tower) to 220kV Switchyard for complete integration of protection, control & telemetery FO network, OPGW network and ECS interface with the upstream HVPNL substation shall be by EPCC-03 Contractor. **Addition (at end of clause no.1.52.3):** Complete design, supply, installation, testing and commissioning of PLCC system and its associated hardware / equipment / software like CVT, wavetrap, 48V DC Charger, LMU, PLCC panel etc. shall be by EPCC-

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							03 Contractor. Make list of HVPNL to be followed by the vendor. Prior approval for procurement also to be taken by HVPNL.
8.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2160 of 5756	1.52.4	220kV Cables	220KV cables from outdoor switchyard to 220KV……..	**Modification:** Cables shall be used between switchyard and 220kV GIS
9.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2160 of 5756	1.52.5	220 KV GIS	220KV GIS - 1 No., 220KV GIS, 2000A, 50KA (3 sec.) Double Bus bar Gas Insulated Switchgear with Local Control……	**Modification:** Bidder shall note that SCAP panel shall be free standing type and shall include synchronization & controls, metering of Incomers, Bus-couplers, Bus-sectionliser of 220kV system including mimic diagram, annunciation for all the breaker feeders of 220kV, 33kV. This panel shall be located adjacent to ECS control system. The details will be finalized based on the specifications and SLD attached with the bidding documents. Addition: Bidder to supply cable-sealing end for all outgoing bays of 220kV GIS.
10.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2160 of 5756	1.52.6	6.6kV ICOG panels	Substation building - Design, engineering……	**Addition:** 2 nos. 6.6kV, 630A ICOG panels

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							Civil works within 220kV GIS Building for installation of panels in Other Contractor's scope shall be done by EPCC-03 Contractor.
11.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2162 of 5756	1.52.7	220kV Cables	GIS Bus ducts - 220KV, 2000A……	**Modification:** Cable shall be used between 220kV GIS and primary of 220/66kV or 220/33kV power transformers
12.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2163 of 5756	1.52.8	Transformers	Transformers - 2 Nos., 220/66KV, 60/75 MVA ONAN/……	**Modification:** 2 nos. 220/66kV and 4 nos. 220/33kV Transformers will be supplied and installed by others. However, EPCC-03 Contractor shall include the firewall, transformer gate, transformer foundation including oil soak pit, trenches within transformer bays and connectivity with cable cellars, oil drain pipe upto oil collecting pits for each transformer bay, etc. The scope covers all associated civil works in all respect required for installation of Transformers. Further installation, testing, commissioning and associated works (fire fighting system, E-Stop Push button etc.) by Others/ respective Contractors. For fire fighting system, main header for water and air shall be made available for all the transformers bays within battery limit by EPCC-03 Contractor. Tap-off point including valve to be in the scope of EPCC-03 and rest

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							fire-fighting system shall be by respective contractors for their transformers. **Deletion:** Transformer shed stands deleted for all transformer bays. **Modification:** For 66kV feeder cable, EPCC-03 contractor shall supply and install required Line differential protection CTs in 66kV secondary side of 220/66kV Transformers and associated relays in 220kV GIS panels at 220kV GIS substation. Other end CT's and relays, connecting FO cables, shall be supplied and installed by EPCC-01 Contractor. Complete testing and commissioning of the line differential protection scheme shall be by EPCC-01 Contractor. EPCC-03 Contractor shall coordinate with EPCC-01 for the relay details i.e., make and model no, matching CT details.
13.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2165 of 5756	1.52.10	Auxiliary Transformers	Auxiliary transformers - 2 Nos., 6.6/0.415KV, 125…….	**Modification:** Bidder shall note that 2 nos. 6.6kV power supply feeders will be provided from MAH Substations. Power supply feeders from CPP Substation-09 stands deleted.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							For 6.6kV feeder cable, EPCC-03 contractor shall supply and install the required Line differential protection CTs and associated relays including patch cord & LIUs required for interfacing in 6.6kV ICOG panel at 220kV GIS substation (receiving end). Other end (sending end) CT's and relays, connecting FO cables and its associated auxiliaries, shall be supplied and installed by EPCC-01 Contractor. Complete testing and commissioning of the line differential protection scheme shall be by EPCC-01 Contractor. EPCC-03 Contractor shall coordinate with EPCC-01 for the relay details i.e., make and model no, matching CT details.
14.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2166 of 5756	1.52.12 (1st para)		No., 415 V, 2000*A, 3-phase TPN, 50 kA single front draw-out type……..	**Modification:** 1 No., 415 V, 2000*A, 3-phase TPN, 50 kA single front draw-out type Power Control Centre (PCCs) and bus ducts for interconnection between distribution transformers and PCCs as required for both the substations. PCC shall have two incomers from transformers and provision to connect incomer from rooftop solar photovoltaic system in future.

<table>
<tr><th>Sl. No.</th><th>Part of Bidding Document</th><th>Document Reference</th><th>Page no</th><th>Clause / Item No.</th><th>Subject</th><th>Existing Clause</th><th>Modifications/Additions/Deletions</th></tr>
<tr><td>15.</td><td>Volume -2 Section 5.3.4</td><td>359755-MDR-000-ELE-51A1-0002</td><td>3047 of 5756</td><td>-</td><td>220kV GIS Substation layout</td><td>-</td><td>Modification:

Bidder shall note that the building size as indicated in drawing no. 359755-MDR-000-ELE-51A1-0002 is minimum and the dimensions of switchgears (supplied by others) shall be as shown in the layout. RTCC panels for all the transformers shall be installed in the switchgear hall. The expansion of the switchgears (minimum 2 nos. bays on both sides of 220kV and 33kV) shall be on both sides.</td></tr>
<tr><td>16.</td><td>Volume- 2 Section 2.8</td><td>359755-MDR-000-ELE-SOW-0003</td><td>2167 of 5756</td><td>1.52.17</td><td>220 V DC</td><td>2 nos. 220V DC, _A (rating to……..</td><td>Modification:

Bidder shall consider common DC supply system for all the switchgears (including supplied by others) in the 220kV substations. Details of DC load and supply feeders for others shall be as indicated below :

<table>
<tr><th>DC Load</th><th>No. of feeders (nos.)</th><th>Feeder rating (A)</th><th>Remarks</th></tr>
<tr><td rowspan="3">50 kW</td><td>12</td><td>32</td><td rowspan="3">DC Load / fuse rating for each feeder will be defined during detailed engineering</td></tr>
<tr><td>4</td><td>63</td></tr>
<tr><td>20</td><td>16</td></tr>
</table>

Cable supply and installation shall be by respective EPCC Contractors.
Contractor to verify and validate the above input in coordination with other Contractor’s during detail</td></tr>
</table>

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							engineering.
17.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2169 of 5756	1.52.29	EOT Crane	1 No. of EOT cranes for GIS hall of 10T (Minimum……..	**Modification:** 1 No. of EOT cranes for switchgear hall of 10T (Minimum) capacity shall be provided for erection & maintenance of largest GIS component/assembly.
18.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2163 of 5756	1.52.8	Trenches	Transformers - 2 Nos., 220/66KV, 60……..	**Clarification:** Bidder shall consider cable trays and trenches as required for the package including requirement of other contractors for laying of cables within battery limit of EPCC-03. 1. All cable trenches within transformer bays, cable cellar and from battery limit upto the 220 kV GIS Substation building. 2. Cable tray for installation of cables by others. 3. Cable trays and trenches for interfacing within the building.
19.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2167 of 5756	1.52.19	ECS	ECS system for Substation, complete with……	**Modification:** Bidder shall include integration of ECS with DCS of MAH for the purpose of status and monitoring. Details for integration will be finalized post award, keeping overall I/Os as indicated in the Amendment.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
20.	Volume -2 Section 5.3.3	359755-MDR-000-ELE-21A1-0003	3046 of 5756	-	OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP), Notes -15	-	**Modification:** Bidder shall consider 2 sets of CTs, each CT with 3 cores for incomer, Bus coupler, Bus sectionliser and outgoing of the 220kV GIS. CT ratio shall be based on the protection and load connected to respective CTs. VA burden / class / knee point voltage shall be selected by the bidder / OEM considering the technical specifications, protection requirements and engineering design basis. Metering class for grid metering shall be as per HVPNL requirements.
21.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2154 of 5756	1.17	Overhead bridge	Basic and detail engineering activities for design of Civil and Structural works, Underground facilities, Substation building…….	**Modification:** Bidder shall note that there is no bridge connectivity between 220kV GIS and existing CPP control room.
22.	Volume- 2 Section 6.4.30	359755-MDR-000-ELE-SPC-0036	4376 of 5756	7.7.3	Cable box	Cable box up to 66 kV shall be phase segregated air insulated type in single phase or three phase arrangement……..	**Modification:** Cable box shall be oil filled type for 66 kV as per OEM recommendation.
23.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2154 of 5756	1.16	E3D & ETAP	The electrical system studies shall be carried out in ETAP latest version. Output……	**Modification:** EPCC-03 Contractor shall include supply of 01 no. E3D and 01 no. ETAP with validity of three years from the date of supply.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
24.	Volume- 2 Section 2.8	359755-MDR-000-ELE-SOW-0003	2170 of 5756	1.52.35	Cable size	-	**Addition:** Bidder shall consider following minimum cable sizes for 2 nos. 66kV cable circuits and 2 nos. 6.6kV cable circuits for sizing of cable tray/ trench within battery limit of 220kV GIS building: **66kV cables** • 2runs of 1C X 800mm2 per phase for each 66kV circuit. • 2 nos. 12 fiber single mode FO cable for protection, metering & control between upstream and downstream systems. **6.6kV cables** • 2runs of 3C X 240mm2 for each 6.6kV circuit. • 2 nos. 12 fiber single mode FO cable for protection, metering & control between upstream and downstream systems. Contractor to verify and validate the above input in coordination with other Contractor's during detail engineering.
25.	Volume- 2 Section 2.8	359755-MDR-000-	2170 of 5756	1.52.36	Cable size	-	**Addition:** EPCC-03 Contractor to consider minimum cable trays

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
		ELE-SOW-0003					within 220kV GIS Building cable cellar for Others/ HDPE / NCU-II Contractor as per below details: <u>For MAH EPCC-01 Contractor cables:</u> • 4 no. 750mm cable tray for power cables • 1 no. 750mm cable tray for control cables <u>For Styrene Contractor cables:</u> • 4 no. 750mm cable tray for power cables • 1 no. 750mm cable tray for control cables <u>For NCU-II Contractor cables:</u> • 4 no. 750mm cable tray for power cables • 1 no. 750mm cable tray for control cables <u>For HDPE Contractor cables:</u> • 7 no. 750mm cable tray for power cables • 1 no. 750mm cable tray for control cables Contractor to verify and validate the above input in coordination with Other's (HDPE / NCU-II Contractor) during detail engineering.
26.	Volume- 2 Section 6.4.7	359755-MDR-000-ELE-SPC-0007	4376 of 5756	New	Specification for ECS system	Updated Typical I/O List, Annexure-1	**Modification:** Refer to enclosed revised Specification for ECS system with this amendment.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
27.	Volume -2 Section 5.3.3	359755-MDR-000-ELE-21A1-0003	3046 of 5756	-	Overall Key SLD – Integrated MAH & PNCP	-	**Modification:** Refer to enclosed revised Overall Key SLD – Integrated MAH & PNCP with this amendment.
28.	Volume -2 Section 5.3.1	359755-MDR-000-ELE-53A1-0001	3044 of 5756	-	OVERALL CONCEPTUAL CABLE ROUTING - MAH	-	**Modification:** Refer to enclosed revised Overall Conceptual cable routing layout with this amendment. Physical checking to be ensured within Plant.
29.	Volume -2 Section 5.3.4	359755-MDR-000-ELE-51A1-0002	3047 of 5756	-	SUBSTATION LAYOUT - 220kV GIS		**Modification:** Refer to enclosed revised 220kV GIS Substation Layout with this amendment. Re-orientation for Operator room to be discussed during detail engineering.
30.	-	Electrical Datasheets	New		General update in all electrical equipment datasheets	Existing datasheets	**Modification:** Service Condition: Design ambient temperature for Electrical Equipment shall be as 46.6°C, in line with Engineering Design Basis. The minimum design temperature for electrical heat tracing shall be (-)0.7°C or as per Process requirements. The minimum temperature for battery sizing shall be 5°C, as per bidding document.

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
31.			New		220kV circuit design	General	Each 220kV circuit and associated components shall be designed to cater to 350MW power demand.
INSTRUMENTATION							
32.	Volume 2 / Section 5.4	359755-MDR-000-ICS-04A3-0001	-	-	CCTV Block Diagram	-	**Addition:** Refer to CCTV System Block Diagram <u>Additional Clarification:</u> EPCC-03 bidder shall note that complete CCTV system including panels, storage servers, DVR, media converters etc. shall be supplied for the entire MAH project by EPCC-01 Contractor. This CCTV panel shall be located in PBR / MAH Control Room (existing). The scope shall include providing power supply from UPS, installation, making cut-outs in the existing floor, cable laying & termination, pre-commissioning and commissioning including deployment of OEM engineers during site works for the complete system (including free issue items). OEM expert/ engineer shall be deployed for Pre-commissioning & Commissioning work / as per site requirement. EPCC-03 Contractor shall design and carry out the detail engineering including development of block diagram, coverage study, cable connectivity, cable schedule,

Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							installation drawings and documents including Bill of Quantities for the system and accessories required EPCC-03 scope. The following equipment and material for EPCC-03 shall be free issued: EPCC-3 Requirements – 220kV GIS: • CCTV Cameras with Junction Box and installation brackets – 8 nos. The above stated quantities are minimum. Additional requirement (if any) needs to be bought out by EPCC-03 without any cost and time implication.
33.	Volume 2 / Section 5.4	359755-MDR-000-ICS-04A3-0002	-	-	PA System Block Diagram	-	**Addition:** Refer to PA System Block Diagram <u>Additional Information:</u> EPCC-03 bidder shall note that complete PA system including exchange, Master Call Stations, Field Call Stations, beacons, speakers, acoustic hoods, etc. shall be supplied for the entire MAH project by EPCC-01 Contractor. This exchange shall be extension of existing PA system (Make: Industronic) located in Main Control Room (existing). Scope shall include modification of the existing system, processor, IO modules, cards, power supply system, etc. and panel size, colour shade, height shall be similar to the existing panels. The scope shall include providing power supply from existing source,

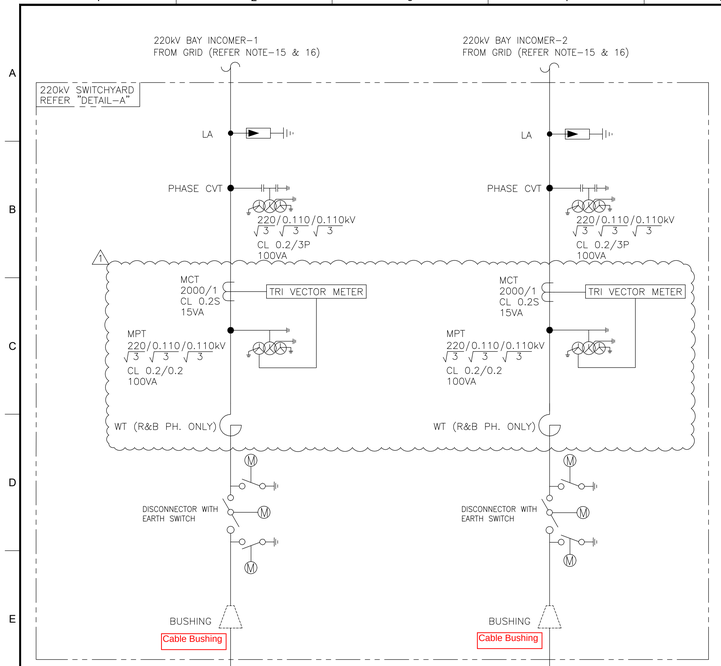
Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							installation, making cut-outs in the existing floor, cable laying & termination, pre-commissioning and commissioning including deployment of OEM engineers during site works for the complete system (including free issue items). OEM expert/ engineer shall be deployed for Pre-commissioning & Commissioning work / as per site requirement. EPCC-03 Contractor shall design and carry out the detail engineering including development of block diagram, coverage study, cable connectivity, cable schedule, installation drawings and documents including Bill of Quantities for the system and accessories required for EPCC-03 scope. The following equipment and material for EPCC-03 shall be free issued: EPCC-3 Requirements – 220kV GIS: • Master Control Station (16 keys) – 1 no. • Desk type master control station – 1 no. • Field Call station (safe area) – 8 nos. • Acoustic Hoods – 1 no. • Beacon lamp – 1 no. The above stated quantities are minimum. Additional requirement (if any) needs to be bought out by EPCC-03 without any cost and time implication.
34.	Volume 2 / Section 5.4	359755-MDR-000-	-	-	Telephone system Block Diagram	-	**Addition:** Refer to Telephone System Block Diagram

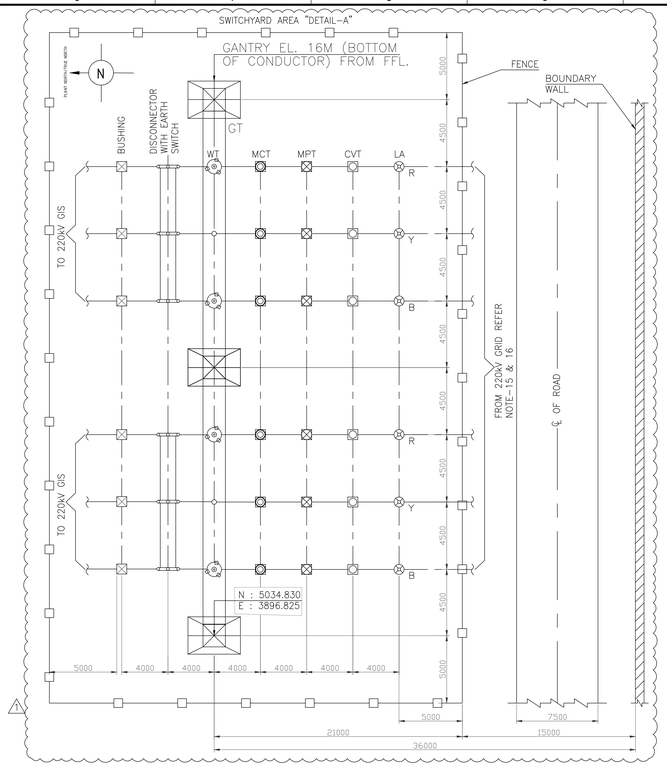
Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
		ICS-04A3-0003					Additional Information: EPCC-03 bidder shall note that complete Telephone system including extension of existing telephone exchange, desk and Field handsets, acoustic hoods, Junction boxes, etc. shall be supplied for the entire MAH project by EPCC-01 Contractor. This exchange shall be extension of existing telephone exchange (Make: Siemens) located in Telephone exchange building (existing). Scope shall include modification of the existing system, processor, IO modules, cards, power supply system, etc. and panel size, colour shade, height shall be similar to the existing panels. The scope shall include providing power supply from existing source, installation, making cut-outs in the existing floor, cable laying & termination, pre-commissioning and commissioning including deployment of OEM engineers during site works for the complete system (including free issue items). OEM expert/ engineer shall be deployed for Pre-commissioning & Commissioning work / as per site requirement. EPCC-03 Contractor shall design and carry out the detail engineering including development of block diagram, cable connectivity, cable schedule, installation drawings and documents including Bill of Quantities for the system and accessories required for EPCC-03 scope. The following equipment and material for EPCC-03 shall be free issued:

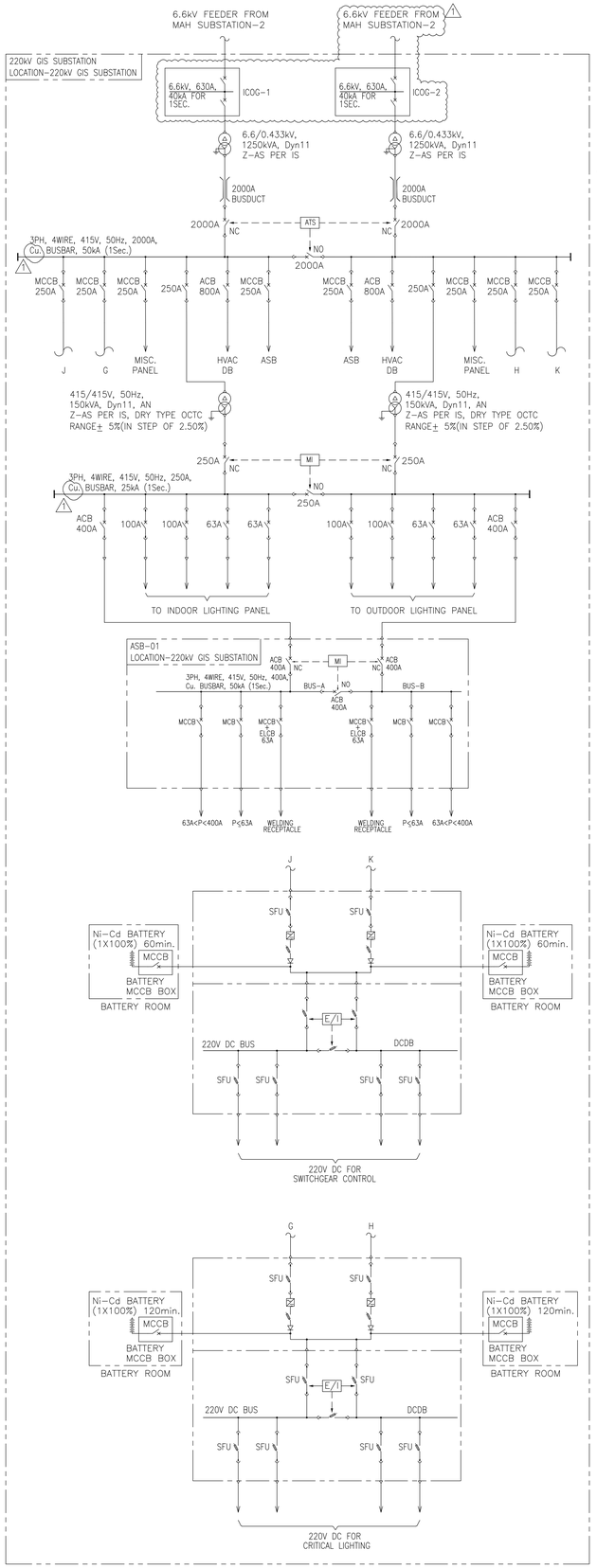
Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							EPCC-03 Requirements – 220kV GIS: • Desk type telephone handsets – 6 nos. • Field telephone handsets – 6 nos. • Acoustic Hoods – 2 nos. The above stated quantities are minimum. Additional requirement (if any) needs to be bought out by EPCC-03 without any cost and time implication.
35.	Volume 2 / Section 5.4	359755-MDR-000-ICS-08A3-0002	-	-	Fire Alarm System Block Diagram	-	**Addition:** Refer to Fire Alarm System Block Diagram <u>Additional Information:</u> EPCC-03 bidder shall note that complete Fire Alarm (FA) system including data gathering fire alarm panel (DGFAP), repeater FA panel, detectors with base frames, Junction Boxes, Manual Call points, hooters, exit signs, long range siren, etc. shall be supplied for the entire MAH project by EPCC-01 Contractor. This new fire alarm panel shall be interfaced with existing FA system (Make: EDWARDS) located in Main Fire Station (existing). Scope shall include retrofitting of the existing FA system for connectivity. The scope shall include providing power supply from existing source for the panel, installation, making cut-outs in the existing floor, cable laying & termination, pre-commissioning and commissioning

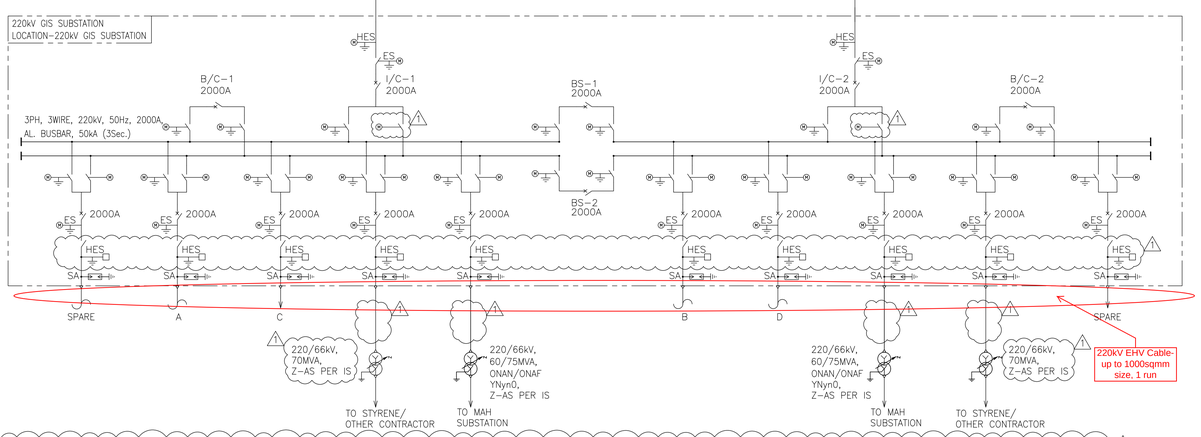
Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							including deployment of OEM engineers during site works for the complete system (including free issue items). OEM expert/ engineer shall be deployed for Pre-commissioning & Commissioning work / as per site requirement. Each DGFAP and repeater panel should be complete with battery backup & battery charger (as per standards), UPS, engineering and operator consoles. Engineering and operator consoles installed at main fire station (existing) shall have graphics for the entire MAH Project including other EPCC and same shall be repeated in the main console. All hardware & software (as required) for integration shall be in the scope of EPCC-01 Contractor. EPCC-03 Contractor shall design and carry out the detail engineering including development of block diagram, coverage study, cable connectivity, cable schedule, installation drawings and documents including Bill of Quantities for the system and accessories required for EPCC-03 scope. The following equipment and material for EPCC-03 shall be free issued: EPCC-03 Requirements – 220kV GIS: • DGFAP – 1 no. (16 loops) • Smoke detectors (optical / ionization / heat / rate of change) – 240 nos. • Manual Call points – 8 nos. • Hooters – 6 nos.

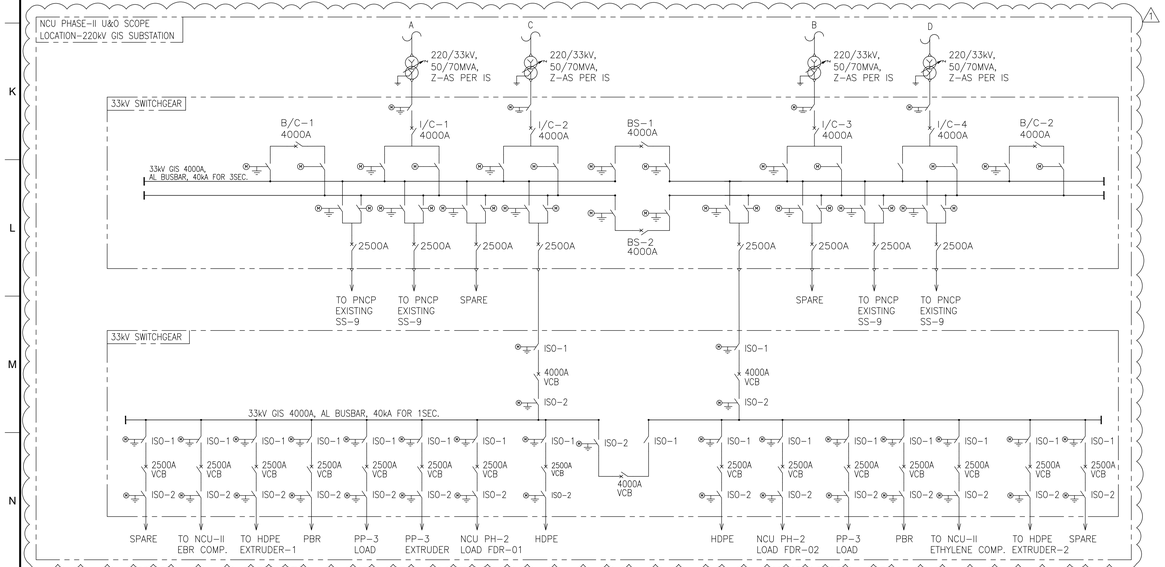
Sl. No.	Part of Bidding Document	Document Reference	Page no	Clause / Item No.	Subject	Existing Clause	Modifications/Additions/Deletions
							• Exit Signs – 10 nos. • Interface connectivity – 6 systems. The above stated quantities are minimum. Additional requirement (if any) needs to be bought out by EPCC-03 without any cost and time implication.
36.	Volume 2 / Section 5.4.1	359755-MDR-000-ICS-04A3-0005	3048 of 5756	-	-	-	**Deletions / Additions:** The document "359755-MDR-000-ICS-04A3-0005", 'System Block Diagram EPCC-03' shall be null & Void and Bidder shall not consider it as a part of the bidding document. Bidder shall refer to the Block diagram as attached with this addendum. CCTV Block Diagram: 359755-MDR-000-ICS-04A3-0001 PA System Block Diagram: 359755-MDR-000-ICS-04A3-0002 Telephone system Block Diagram: 359755-MDR-000-ICS-04A3-0003 Fire Alarm System Block Diagram: 359755-MDR-000-ICS-08A3-0002
CIVIL / STRUCTURAL / ARCHITECTURAL							











NOTES

1. THIS SINGLE LINE DIAGRAM IN INDICATIVE AND INTENDED TO HIGHLIGHT MAJOR ELECTRICAL EQUIPMENT. IT IS THE RESPONSIBILITY OF THE DETAIL ENGINEERING CONTRACTOR TO SIZE COMPONENTS AND DEVELOP DETAILED SLD BASED ON BID REQUIREMENT AND APPLICABLE CODES & STANDARDS.
2. ANY OTHER EQUIPMENT AS REQUIRED FOR MEETING FUNCTIONAL AND STATUTORY REQUIREMENT SHALL BE PROVIDED BY DETAIL ENGINEERING CONTRACTOR.
3. THE TERMINATION OF OVERHEAD CONDUCTOR THROUGH TIE-IN POINT OF TRANSMISSION SYSTEM UPTO GANTRY TOWER SHALL BE IN DETAIL ENGINEERING CONTRACTOR'S SCOPE OF WORK INCLUDING STRUCTURAL HARDWARE ETC.
4. WAVE TRAP, CVT, PLCC PANEL, 48V CHARGER, OPGW AND TELEMETRY HARDWARE AT BOTH ENDS (i.e. AT MAH 220kV SWITCHYARD AND AT HVPNL END) SHALL BE SUPPLIED AND INSTALLED BY DETAIL ENGINEERING CONTRACTOR'S.
5. ALL STATUTARY APPROVALS AND APPROVAL OF ALL OUTDOOR SWITCHYARD RELATED DOCUMENTS THROUGH HVPNL LIKE GELO, OUTDOOR CT, PT, CVT, METERS, AND WAVETRAP REQUIRED FOR THE GRID INTEGRATION SHALL BE BY DETAIL ENGINEERING CONTRACTOR.
6. 220kV GIS SHALL BE PROVIDED WITH ONLINE TEMPERATURE MONITORING SYSTEM AND PARTIAL DISCHARGE MONITORING SYSTEM.
7. 220kV/66kV TRANSFORMERS SHALL BE PROVIDED WITH ONLINE MOISTURE REMOVAL SYSTEM.
8. FOR 220kV GIS SUBSTATION BUILDING, 2 NOS. 6.6kV / 0.433kV, TRANSFORMERS SHALL BE CONSIDERED FOR AUXILIARY POWER REQUIREMENT. FOR THESE TRANSFORMERS, 2 NO. 6.6kV FEEDER SHALL BE PROVIDED FROM 6.6KV SWITCHGEAR AT MAH SUBSTATION-2 BY EPCC-01 CONTRACTOR.
9. SUPPLY, LAYING, TERMINATION, TESTING & COMMISSIONING OF 6.6kV POWER AND CONTROL CABLES FROM 6.6KV SWITCHGEAR AT MAH SUBSTTAION-2 TO 2 NO. 6.6KV ICOG PANEL IN 220kV SUBSTATION BUILDING SHALL BE BY EPCC-01 CONTRACTOR. CABLE TRENCH/ TRAY WITHIN EPCC-03 BATTERY LIMIT INCLUDING CABLE CELLAR SHALL BE BY EPCC-03 CONTRACTOR.
10. DELETED.
11. IN ADDITION TO ABOVE MENTIONED AUXILIARY TRANSFORMER, OTHER AUXILIARY FACILITIES IN 220kV GIS SUBSTATION BUILDING SHALL ALSO BE PROVIDED BY DETAIL ENGINEERING CONTRACTOR. ELECTRICAL EQUIPMENT FOR BUILDING FACILITIES SUCH AS 415V PCC, 415V DB, LIGHTING TRANSFORMER, DC BATTERY CHARGER AND BATTERIES, HVAC SYSTEM, ECS SYSTEM AS REQUIRED SHALL BE IN THE SCOPE OF DETAIL ENGINEERING CONTRACTOR.
12. 220kV GIS BUILDING SHALL BE SIZED BY EPCC-03 CONTRACTOR CONSIDERING FOLLOWING ADDITIONAL REQUIREMENT FOR NCU-II/OTHER PROJECT SCOPE OF WORK:
    a. SPACE TO PLACE 2 NOS. 33kV GIS.
    b. BAY SPACE FOR 2 NOS. 220kV/66kV TRANSFORMER (STYRENE/OTHER PROJECT) INCLUDING FIREWALLS, TRANSFORMER GATE, TRANSFORMER FOUNDATION INCLUDING OIL SOAK PIT, TRENCHES WITHIN TRANSFORMER BAYS AND CONNECTIVITY WITH CABLE CELLARS, OIL DRAIN PIPE UPTO OIL COLLECTING PITS FOR EACH TRANSFORMER BAY, ETC.
    FURTHER INSTALLATION, TESTING, COMMISSIONING AND ASSOCIATED WORKS (FIREFIGHTING SYSTEM, E-STOP PUSH BUTTONS ETC) FOR TRANSFORMERS SHALL BE BY STYRENE/ OTHER CONTRACTOR.
    c. BAY SPACE FOR 4 NO. 220kV/33kV TRANSFORMER (NCU-II PROJECT) INCLUDING FIREWALLS, TRANSFORMER GATE, TRANSFORMER FOUNDATION INCLUDING OIL SOAK PIT, TRENCHES WITHIN TRANSFORMER BAYS AND CONNECTIVITY WITH CABLE CELLARS, OIL DRAIN PIPE UPTO OIL COLLECTING PITS FOR EACH TRANSFORMER BAY, ETC.
    FURTHER INSTALLATION, TESTING, COMMISSIONING AND ASSOCIATED WORKS (FIREFIGHTING SYSTEM, E-STOP PUSH BUTTONS ETC) FOR TRANSFORMERS SHALL BE BY NCU-II CONTRACTOR.
    d. COMMON BUILDING FACILITIES FOR BOTH MAH AND NCU SUCH AS 6.6/0.433kV, 1250kVA TRANSFORMER, 415V PCC, 415V DB, LIGHTING TRANSFORMER, DC BATTERY CHARGER AND BATTERIES, HVAC SYSTEM, ECS SYSTEM AS REQUIRED SHALL BE IN EPCC-03 DETAIL ENGINEERING CONTRACTOR SCOPE OF WORK. INPUT REQUIRED FROM NCU CONTRACTOR SHALL BE COORDINATED DURING DETAIL ENGINEERING STAGE.
13. DESIGN, ENGINEERING & SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ALL EQUIPMENT INCLUDING CONNECTING POWER & CONTROL CABLES, ROUTING, TERMINATION FOR NCU PROJECT SHALL BE UNDER NCU PHASE-II CONTRACTOR SCOPE OF WORK.
14. SUPPLY, LAYING, TERMINATION, TESTING & COMMISSIONING OF 66kV CABLES FROM THE SECONDARY OF 2 NOS. 220/66kV POWER TRANSFORMERS IN 220kV SUBSTATION BUILDING TO 66kV GIS AT MAH SUBSTATION-1 INCLUDING CABLE TRENCHES / TRAYS WITH SUPPORTS SHALL BE BY EPCC-01 CONTRACTOR. CABLE TRENCH/ TRAY WITHIN EPCC-03 BATTERY LIMIT INCLUDING CABLE CELLAR SHALL BE BY EPCC-03 CONTRACTOR.
15. INTEGRATION OF 220kV OVERHEAD LINES FROM POINT OF TAP OFF (ON NEAREST 220kV TRANSMISSION TOWER) TO PNCP 220kV OUTDOOR SWITCHYARD SHALL BY EPCC-03 CONTRACTOR. ALSO, ANY REQUIRED ITEMS/STRUCTURES, AAAC/ACSR CONDUCTORS/BUSBARS, INSULATORS ETC. FOR CONNECTING TO 220kV OUTDOOR SWITCHYARD AND COORDINATION WITH STATE GRID AUTHORITIES (AS APPLICABLE) SHALL BE BY EPCC-03.
16. LOCATION OF 220kV GRID TRANSMISSION LINE TOWER ALONG WITH CONFIGURATION AND OTHER DETAILS SHALL BE PROVIDED DURING DETAIL ENGINEERING.
17. MINIMUM CLEARANCES FOR 220kV SYSTEM :
    a) BETWEEN PHASE : 2100MM
    b) BETWEEN PHASE TO EARTH : 2100MM
    c) SECTIONAL CLEARENCE : 5000MM
18. EPC CONTRACTOR SHALL DEVELOP VARIOUS OPTION OF SYNCHRONIZING INCOMERS, B/C's AND TAKE CONCURRENCE OF HVPNL/OWNER/PMC BEFORE IMPLEMENTATION OF THE SCHEME WITHOUT ANY COST AND TIME IMPLICATION TO THE PMC/OWNER.

REFERENCE

DOC. NO.	TITLE
359755-MDR-121-ELE-21A1-0001 & 0002	KEY SINGLE LINE DIAGRAM-MAH
359755-MDR-000-ELE-BOD-0001	ELECTRICAL ENGINEERING DESIGN BASIS
359755-MDR-000-ELE-SOW-0003	ELECTRICAL EPCC-03 220kV GIS AND ASSOCIATED WORKS
359755-MDR-000-PIP-01-0002	INTEGRATED OVERALL PLOT PLAN-PNCP AND MAH

LEGENDS

	MOTOR WITH SPACE HEATER		MOTOR WITHOUT SPACE HEATER
VFD	VARIABLE FREQUENCY DRIVE		CIRCUIT BREAKER VCB – VACCUM CIRCUIT BREAKER ACB – AIR CIRCUIT BREAKER MCCB – MOULDED CASE CIRCUIT BREAKER MCB – MINIATURE CIRCUIT BREAKER
	SWITCH FUSE UNIT		
	NEUTRAL GROUNDING RESISTOR		POWER TRANSFORMER WITH OLTC
	BUSDUCT		TARIFF METERING CT
	DISTRIBUTION TRANSFORMER (SOLIDLY EARTHED)		LIGHTNING ARRESTER
	WAVE TRAP		CVT
	SURGE ARRESTER		MOTORIZED DISCONNECT SWITCH WITH EARTH SWITCH (MOTORIZED)
	MOTORIZED DISCONNECT SWITCH WITHOUT EARTH SWITCH	ES	MOTORIZED WITH EARTH SWITCH
	MOTORIZED DOUBLE BREAK DISCONNECT SWITCH WITH 2 NOS. EARTH SWITCH (MOTORIZED)	HES	HIGH SPEED EARTHING SWITCH
MPT			BUSHING

REV NO	DATE	PURPOSE	PREP BY	CHKD BY	APPD BY
1	02-JUL-2024	ISSUED FOR USE	PUN	SAT	SAT
0	15-MAY-2024	ISSUED FOR USE	PUN	SAT	SAT

PROJECT

MALEIC ANHYDRIDE PROJECT AT
PANIPAT REFINERY & PETROCHEMICAL COMPLEX

OWNER

IndianOil

INDIAN OIL CORPORATION LIMITED

PMC

CB&I INDIA PRIVATE LIMITED

MCDERMOTT

PMC JOB NO.	359755	SDR Code	–

TITLE

OVERALL KEY SINGLE LINE DIAGRAM –
INTEGRATED MAH & PNCP

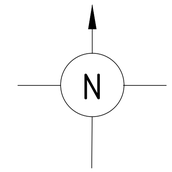
SCALE : NTS

DWG.NO. 359755-MDR-000-ELE-21A1-0003

REV. 1

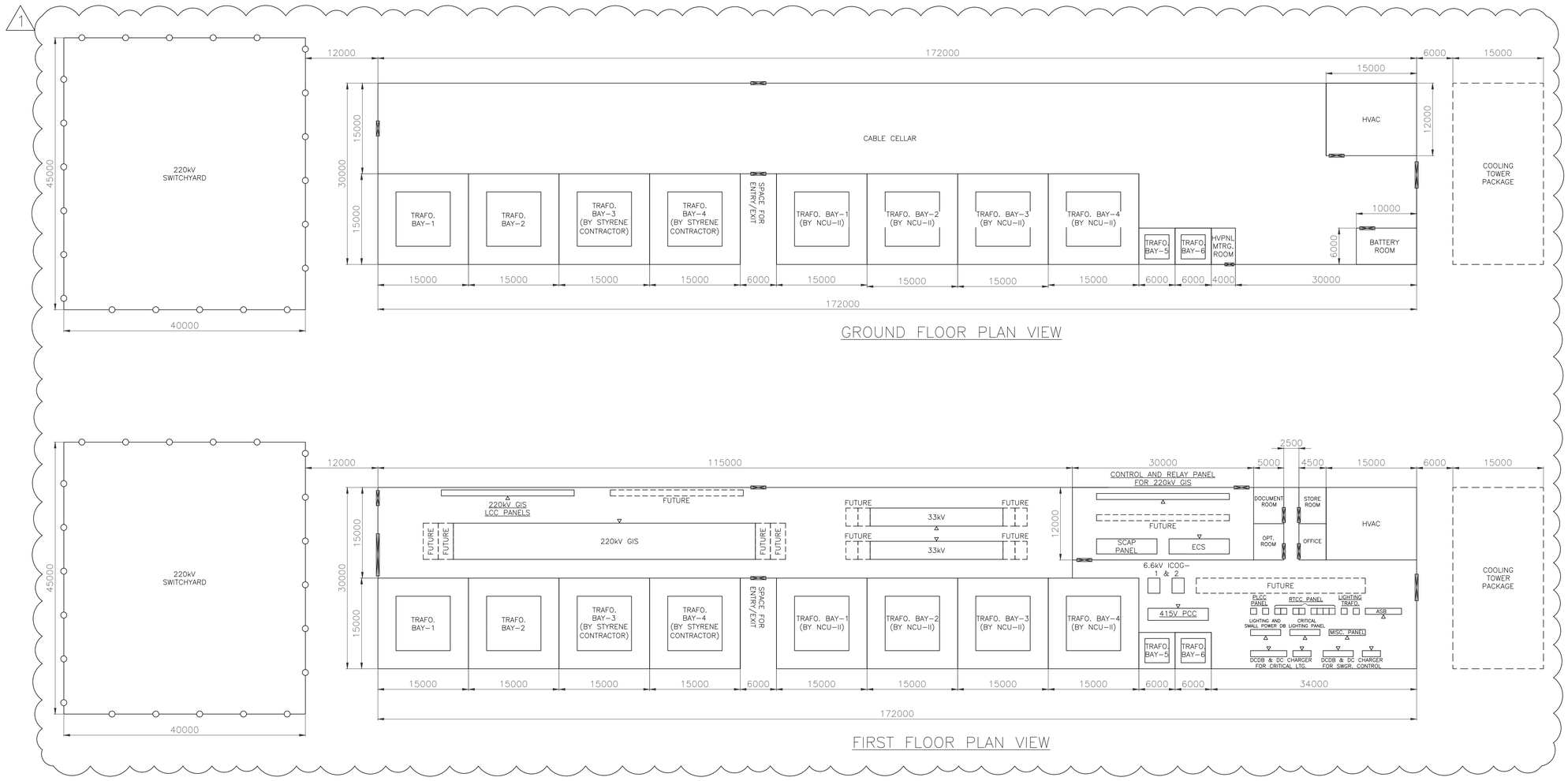
REV.	DWG NO		TITLE
1	359755-MDR-000-ELE-51A1-0002	1/1	SUBSTATION LAYOUT - 220kV GIS

PLANT NORTH/TRUE NORTH



NOTES:
1. ALL DIMENSION ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE NOTED.
2. BUILDING AND EQUIPMENT DIMENSIONS ARE PRELIMINARY AND SAME SHALL BE VERIFIED BY CONTRACTOR DURING DETAIL ENGINEERING.
3. SUBSTATION WALL ADJACENT TO THE TRANSFORMER BAY AND WALL SEPARATING TRANSFORMER'S SHALL BE 355MM THICK (INCLUSIVE OF PLASTERING) IN CASE OF BRICK CONSTRUCTION OR 230 MM THICK IN CASE OF RCC CONSTRUCTION.
4. ENTRY & EXIT LOCATION OF CABLES SHALL BE PLANNED DURING DETAIL ENGINEERING.
5. DESIGN, ENGINEERING AND CONSTRUCTION OF COMPLETE SUBSTATION BUILDING INCLUDING CABLE CELLAR, CABLE TRENCHES, SWITCHGEAR ROOM, TRANSFORMER FENCE, TRANSFORMER YARD, TRANSFORMER & CAPACITOR FOUNDATION AND COMPLETE BUILDING PERIPHERY FACILITIES IS IN DETAIL ENGINEERING CONTRACTOR SCOPE OF WORK.
6. THE COMPLETE SUBSTATION BUILDING ARRANGEMENT AND DIMENSION INDICATED IS MINIMUM AND TENTATIVE ONLY. CONTRACTOR SHALL VALIDATE THE SAME DURING DETAIL ENGINEERING STAGE.
7. VERTICAL CLEARANCE ABOVE THE TOP OF THE HIGHEST EQUIPMENT SHALL BE MINIMUM 1500MM MEASURED FROM BOTTOM OF ROOF SLAB (EXCEPT TRANSFORMER BAY WHERE SAME SHALL BE 1000MM) AND MINIMUM 500MM MEASURED FROM THE BOTTOM OF THE LOWEST ROOF BEAM. HOWEVER FOR THE AREAS WITH FALSE CEILING, MINIMUM CLEARANCE OF 750MM SHALL BE PROVIDED BETWEEN FALSE CEILING AND TOP OF ANY EQUIPMENT.
8. SUB-STATION BUILDING SHALL BE WITHOUT ANY COLUMNS WITHIN THE SWITCHGEAR ROOM TO THE EXTENT POSSIBLE TO ENSURE OPTIMUM SPACE UTILIZATION, UNLESS OTHERWISE SPECIFIED.

1
9. 220kV GIS BUILDING SHALL BE SIZED BY EPCC-03 CONTRACTOR CONSIDERING FOLLOWING ADDITIONAL REQUIREMENT FOR NCU-II/OTHER PROJECT SCOPE OF WORK:
   a. SPACE TO PLACE 2 NOS. 33kV GIS.
   b. BAY SPACE FOR 2 NOS. 220kV/66kV TRANSFORMER (STYRENE/OTHER PROJECT) INCLUDING FIREWALLS, TRANSFORMER GATE, TRANSFORMER FOUNDATION INCLUDING OIL SOAK PIT, TRENCHES WITHIN TRANSFORMER BAYS AND CONNECTIVITY WITH CABLE CELLARS, OIL DRAIN PIPE UPTO OIL COLLECTING PITS FOR EACH TRANSFORMER BAY, ETC.
      FURTHER INSTALLATION, TESTING, COMMISSIONING AND ASSOCIATED WORKS (FIREFIGHTING SYSTEM, E-STOP PUSH BUTTONS ETC) FOR TRANSFORMERS SHALL BE BY STYRENE/ OTHER CONTRACTOR.
   c. BAY SPACE FOR 4 NO. 220kV/33kV TRANSFORMER (NCU-II PROJECT) INCLUDING FIREWALLS, TRANSFORMER GATE, TRANSFORMER FOUNDATION INCLUDING OIL SOAK PIT, TRENCHES WITHIN TRANSFORMER BAYS AND CONNECTIVITY WITH CABLE CELLARS, OIL DRAIN PIPE UPTO OIL COLLECTING PITS FOR EACH TRANSFORMER BAY, ETC.
      FURTHER INSTALLATION, TESTING, COMMISSIONING AND ASSOCIATED WORKS (FIREFIGHTING SYSTEM, E-STOP PUSH BUTTONS ETC) FOR TRANSFORMERS SHALL BE BY NCU-II CONTRACTOR.
   d. COMMON BUILDING FACILITIES FOR BOTH MAH AND NCU SUCH AS 6.6/0.433kV, 1250kVA TRANSFORMER, 415V PCC, 415V DB, LIGHTING TRANSFORMER, DC BATTERY CHARGER AND BATTERIES, HVAC SYSTEM, ECS SYSTEM AS REQUIRED SHALL BE IN EPCC-03 DETAIL ENGINEERING CONTRACTOR SCOPE OF WORK. INPUT REQUIRED FROM NCU CONTRACTOR SHALL BE COORDINATED DURING DETAIL ENGINEERING STAGE.
10. BATTERY ROOM SHALL BE PROVIDED WITH THE NECESSARY EXHAUST SYSTEM AND WATER CONNECTION WITH SINK. FLOOR OF THE BATTERY ROOM AND WALLS UP TO 1.5M HEIGHT SHALL HAVE ACID/ALKALINE RESISTANT PROTECTIVE EPOXY COATING. THE BATTERY ROOMS SHALL BE PROVIDED WITH MINIMUM TWO FLP EXHAUST FANS AND LOUVERED OPENING IN OPPOSITE WALL.
11. IN ALL SUBSTATIONS/MCC ROOMS, SPACE FOR FUTURE EXTENSION OF SWITCHBOARDS SHALL BE PROVIDED. ONE PANEL EXTENSION SPACE ON EACH SIDE (FOR EACH BUS SECTION) SHALL BE PROVIDED FOR ALL HV SWITCHBOARDS, PCC'S, MCC'S AND ASB'S.
12. SUBSTATION BUILDING SHALL BE PROVIDED WITH AIR-CONDITIONING SYSTEM AND SHALL BE MAINTAINED AT A POSITIVE PRESSURE THROUGH PRESSURIZATION SYSTEM IN THE SWITCHGEAR ROOMS.
13. TRANSFORMER BAYS SHALL BE PROVIDED WITH OVERHEAD REMOVABLE TYPE SHED OF SHEET METAL. SHED HEIGHT SHALL BE AT SUBSTATION FLOOR LEVEL AND MUST HAVE MAN HEIGHT CLEARANCE (I.E. AT LEAST 7FT FROM CONSERVATORS/TANK WHICHEVER IS HIGHER) FOR ANY MAINTENANCE ACTIVITIES.
14. FOR 220kV SWITCHYARD LOCATION, REFER INTEGRATED OVERALL PLOT PLAN - PNCP AND MAH DRAWING NO. 359755-MDR-000-PIP-01-0002.



GROUND FLOOR PLAN VIEW

FIRST FLOOR PLAN VIEW

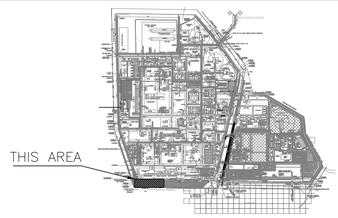
REFERENCE

DOC. NO.	TITLE
359755-MDR-000-PIP-01-0002	INTEGRATED OVERALL PLOT PLAN - PNCP AND MAH
359755-MDR-000-ELE-BOD-0001	ELECTRICAL ENGINEERING DESIGN BASIS
359755-MDR-000-ARC-02-0006	LAYOUT FOR SUBSTATION - 220kV

LEGENDS

△ : EQUIPMENT FRONT

KEY PLAN



REV NO	DATE		PREP BY	CHKD BY	APPD BY
1	02-JUL-2024	ISSUED FOR USE	PUN	SAT	SAT
0	15-MAY-2024	ISSUED FOR USE	PUN	SAT	SAT

PROJECT

MALEIC ANHYDRIDE PROJECT AT
PANIPAT REFINERY & PETROCHEMICAL COMPLEX

OWNER

INDIAN OIL CORPORATION LIMITED

PMC: MCDERMOTT — CB&I INDIA PRIVATE LIMITED

LOA. No. & TITLE	359755	SDR Code	-

TITLE

SUBSTATION LAYOUT - 220kV GIS

SCALE : 1:400 | DWG.NO. 359755-MDR-000-ELE-51A1-0002 | REV 1

TITLE: OVERALL CONCEPTUAL CABLE ROUTING - MAH

DWG NO: 359755-MDR-000-ELE-53A1-0001 | REV. 3

NOTES CONTINUED:

8. THE CABLES TO EXISTING REFINERY AREA SHALL BE LAID ON EITHER EXISTING PIPE RACK OR NEW PIPE RACK CONSTRUCTED AND SUPPLIED BY OTHERS. THE CABLE TRAYS ON THESE PIPE RACK SHALL BE SUPPLIED AND INSTALLED BY RESPECTIVE CONTRACTOR AS PER THEIR SCOPE OF CABLES. IN CASE THE PIPERACK IS NOT AVAILABLE, SUITABLE SLEEPER RACK/ TRENCH SHALL BE CONSIDERED BY RESPECTIVE CONTRACTOR ACCORDINGLY AFTER DUE APPROVAL FROM PMC/ IOCL.

3 9. FEEDERS FOR 2 NOS., 6.6/0.433kV, 1250kVA TRANSFORMERS FOR 220kV GIS BUILDING AUXILIARY FACILITIES SHALL BE PROVIDED FROM 6.6kV SWITCHGEAR OF MAH SUBSTATION-2.

10. SUPPLY, LAYING, TERMINATION, TESTING & COMMISSIONING OF 6.6kV POWER AND CONTROL CABLES FROM 6.6kV SWITCHGEAR AT MAH SUBSTTAION-2 TO 2 NO. 6.6kV ICOG PANEL IN 220kV SUBSTATION BUILDING SHALL BE BY EPCC-01 CONTRACTOR. CABLE TRENCH/ TRAY WITHIN EPCC-03 BATTERY LIMIT INCLUDING CABLE CELLAR SHALL BE BY EPCC-03 CONTRACTOR.

11. THE INCOMING AND OUTGOING CABLES (POWER & ASSOCIATED CONTROL/SIGNAL) FOR THE EQUIPMENT SUPPLIED AND INSTALLED BY OTHER CONTRACTOR IN 220kV GIS BUILDING SHALL BE SUPPLIED, INSTALLED, TESTED AND COMMISSIONED BY OTHER CONTRACTOR ONLY.

12. EPC CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS FOR ROUTING OF CABLES IN ABOVE GROUND/UNDERGROUND IN OSBL AREA FOR THEIR RESPECTIVE SCOPE OF CABLES.

13. OTHER CONTRACTOR TO PROVIDE INTERCONNECTING CABLE RACK FROM 220kV GIS BUILDING TO HDPE UNIT BATTERY LIMIT AND FURTHER CONNECTION TO EXISTING RACK. OTHER CONTRACTOR SHALL PROVIDE REQUIRED CABLE TRAYS ON THE NEW RACK FOR EPCC-01 AND EPCC-03 SCOPE OF CABLES. EPCC-01 AND EPCC-03 CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTOR FOR THE NO. OF CABLE TRAYS TO BE PROVIDED FOR THEIR RESPECTIVE SCOPE.

14. EPCC-01 CONTRACTOR SHALL SUPPLY, INSTALL, TERMINATE, TEST AND COMMISSION THE REQUIRED POWER AND CONTROL/ SIGNAL CABLES FROM NEW CPU SUBSTATION TO NEW 3 NOS. INSTRUMENT AIR COMPRESSORS.

15. EPCC-02 CONTRACTOR SHALL PROVIDE REQUIRED CABLE TRAY/TRENCH WITHIN EPCC-02 BATTERY LIMIT FOR POWER AND CONTROL/SIGNAL CABLES TO BE SUPPLIED, INSTALLED BY EPCC-01 CONTRACTOR.

16. EPCC-01/EPCC-02/EPCC-03 CONTRACTOR SHALL COORDINATE WITH OTHERS FOR LAYING OF ITS SCOPE OF CABLES THROUGH UNITS/AREAS BY OTHERS.

NOTES:

1. CABLE ROUTE PLAN, SIZE, ENTRY AND EXIT POINT OF TRENCH/TRAY SHOWN ON THIS DRAWING IS INDICATIVE ONLY. FURTHER DETAILING OF CABLE ROUTING AND SIZING OF RACEWAYS SHALL BE DONE BY CONTRACTOR DURING DETAIL ENGINEERING STAGE.
2. EPCC-01/ EPCC-03 CONTRACTORS SHALL COORDINATE FOR THE REQUIRED INPUT FOR DESIGN OF 66kV CABLE TRAYS/TRENCHES WITHIN EPCC-03 BATTERY LIMIT. SUPPLY, LAYING, TERMINATION, TESTING AND COMMISSIONING OF 2 NOS. OF 66kV CIRCUITS WITH ASSOCIATED POWER/CONTROL/FO CABLES SHALL BE BY EPCC-01 CONTRACTOR. CABLE TRENCH/ TRAY WITHIN EPCC-03 BATTERY LIMIT INCLUDING CABLE CELLAR SHALL BE BY EPCC-03 CONTRACTOR.
3. SEPARATE CABLE TRAYS FOR HV/MV POWER/CONTROL AND SIGNAL CABLES SHALL BE PROVIDED ON EACH ROUTE AS APPLICABLE.
4. FOR THE CABLE ROUTING IN EXISTING SUBSTATIONS CABLE CELLAR AREA, EXISTING TRAYS AND SUPPORTS SHALL BE UTILIZED FOR LAYING OF NEW CABLES ONLY AFTER APPROVAL FROM IOCL MAINTENANCE TEAM. NEW CABLE TRAYS/SUPPORTS SHALL BE PROVIDED INCASE THE EXISTING FACILITIES ARE NOT SUITABLE.
5. THE FEEDERS FOR THE EXPANSION LOADS ARE NOT DEFINED YET. HENCE CABLE ROUTE SHOWN HERE ARE TENTATIVE AND SHALL BE FINALIZED DURING DETAIL ENGINEERING PHASE.
6. FOR NEW ETP+ZLD AND NEW RODM AREA, NEW SUBSTATION/MCC BUILDING SHALL BE REQUIRED. THE LOCATION AND EXACT SIZES OF THE NEW SUBSTATION BLOCK SHALL BE FINALIZED DURING DETAIL ENGINEERING STAGE.
7. EPCC-01 CONTRACTOR SHALL PROVIDE 2 NOS. 6.6kV POWER SUPPLY FEEDERS FROM 6.6kV SWITCHGEAR AT MAH SUBSTATION-2 FOR THE NEW 3 ETP+ZLD SUBSTATION AND 2NOS. 6.6kV POWER SUPPLY FEEDERS FROM 6.6kV SWITCHGEAR AT MAH SUBSTATION-1 FOR THE NEW RODM SUBSTATION. EPCC-01 CONTRACTOR SHALL SUPPLY, INSTALL, TERMINATE, TEST AND COMMISSION THE 6.6kV CABLES AND ASSOCIATED CONTROL/ SIGNAL CABLES INCLUDING SUPPLY, INSTALLATION OF CABLE TRAYS WITH SUPPORTS FROM THE 6.6kV SWITCHGEAR AT MAH SUBSTATION-1 & 2 TO NEW RODM AND NEW 3 ETP+ZLD SUBSTATIONS UPTO THE BATTERY LIMIT/ OSBL AREA. 3

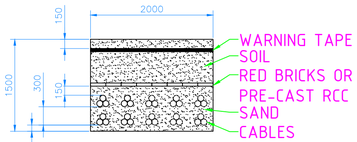
NOTES TO BE CONTINUED:

REFERENCE

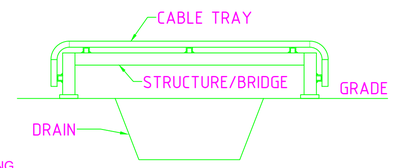
DOC. NO.	TITLE
359755-MDR-000-PIP-01-0002	INTEGRATED OVERALL PLOT PLAN – PNCP AND MAH
359755-MDR-121-ELE-LST-0001	ELECTRICAL LOAD LIST
359755-MDR-000-ELE-BOD-0001	ELECTRICAL ENGINEERING DESIGN
359755-MDR-000-ELE-SOW-0001	ELECTRICAL SCOPE OF WORK-LSTK1

LEGENDS

- : EPCC-01 CONTRACTOR SCOPE
- : EPCC-02 CONTRACTOR SCOPE
- : EPCC-03 CONTRACTOR SCOPE
- : OTHER CONTRACTOR (HDPE/NCU-II) SCOPE
- : EPC-01 SCOPE
- : EPC-02 SCOPE
- : EPC-03 SCOPE



TYPICAL DETAIL SECTION FOR 66kV IN DIRECT BURIED CABLE TRENCH



TYPICAL DETAIL SECTION FOR DRAIN CROSSING

PLAN VIEW

NO	DATE		PREP BY	CHKD BY	APPD BY
3	12-AUG-2024	RE-ISSUED FOR USE	PUN	SAT	SAT
2	26-APR-2024	RE-ISSUED FOR USE	PUN	SAT	SAT
1	29-JAN-2024	ISSUED FOR USE	PUN	SAT	SUL
0	11-JAN-2024	ISSUED FOR USE	PUN	SAT	SUL

PROJECT

MALEIC ANHYDRIDE PROJECT AT
PANIPAT REFINERY & PETROCHEMICAL COMPLEX

OWNER

IndianOil

INDIAN OIL CORPORATION LIMITED

PMC

MCDERMOTT

CB&I INDIA PRIVATE LIMITED

LOA. No. & TITLE	359755	SDR Code	-

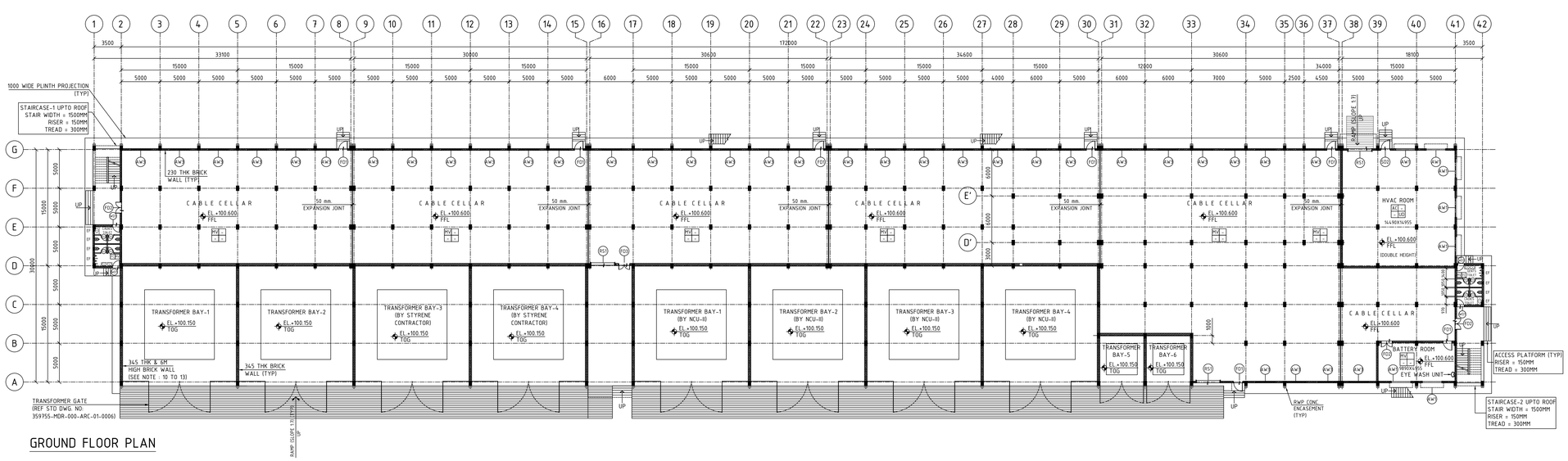
TITLE

OVERALL CONCEPTUAL CABLE ROUTING - MAH

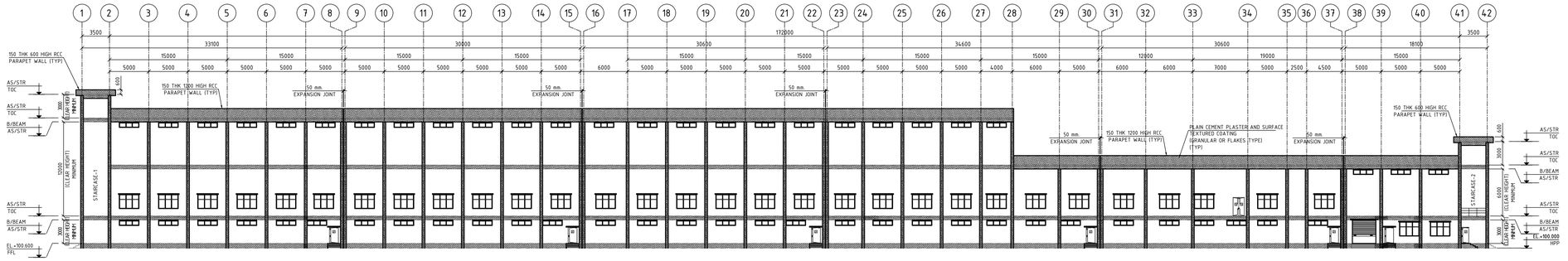
SCALE : 1:5000 | DWG.NO. 359755-MDR-000-ELE-53A1-0001 | REV 3

TITLE	DWG NO	REV.
LAYOUT_FOR_SUBSTATION_220KV_GIS	359755-MDR-000-ARC-02-0006	1
	1 / 2	

PLANT NORTH/TRUE NORTH



GROUND FLOOR PLAN



ELEVATION ALONG GRID G

NOTES:

1. ALL THE DIMENSIONS ARE IN MM & ELEVATIONS ARE IN METER UNLESS OTHERWISE NOTED.
2. DO NOT SCALE DRAWING ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. HIGHEST PAVEMENT LEVEL (HPP) 100.00M OF PROCESS UNIT CORRESPONDS TO LEVEL 238M ABOVE MSL.
4. THIS DRAWING SHALL IN CONJUNCTION WITH ARCHITECTURAL DESIGN BASIS DOC NO: 359755-MDR-000-ARC-BOD-0001.
5. ALL EXTERNAL WALLS SHALL BE 230mm BRICK MASONRY WALLS UNO.
6. WATER LOGGING AREAS SUCH AS TOILET, PANTRY, DRINKING WATER AREA, ENTRANCE LOBBY, PLATFORM SHALL BE SUNKEN WITH 12mm TILE DROP.
7. ALL TERRACES SHALL HAVE WATERPROOFING AS PER SPECIFICATIONS.
8. ELEVATIONS & SIZE OF THE BUILDING IS INDICATIVE ONLY. CONTRACTOR TO VERIFY AND CONFIRM DURING DETAIL ENGINEERING.
9. THIS DRAWING IS GUIDE DRAWING IN NATURE AND INDICATIVE OF BROAD REQUIREMENT SUCH AS SPACE REQUIREMENT, SIZE AND LAYOUT.
10. HEIGHT OF FIRE WALL SHALL BE 10M ABOVE TOP OF TRANSFORMER.
11. LOWEST LEVEL OF SHELTER (EAVE LEVEL) SHALL BE 2M ABOVE TOP OF TRANSFORMER.
12. ANY REARRANGEMENT WITHIN GIVEN SPACE SHALL BE FINALIZED DURING DETAIL ENGINEERING STAGE.
13. SHELTER AS ON TRANSFORMER SHALL BE REMOVABLE TYPE FOR MAINTENANCE OF TRANSFORMER.
14. THE WALL CUTOUTS FOR ENTRY OF BUS DUCT, CABLE TRAYS, HVAC ARE NOT SHOWN HERE. SUITABLE CUTOUT AS REQUIRED SHALL BE SHOWN DURING DETAIL ENGINEERING.
15. HEIGHT OF THE TRANSFORMER SHED SHOWN HERE IS FOR REFERENCE ONLY. FINAL SHED HEIGHT TO BE PROVIDED SHALL BE DECIDED DURING DETAIL ENGINEERING STAGE.
16. PROVIDE PEDESTALS TO TAKE PROVISION FOR THE INSTALLATION OF SOLAR PANEL ON THE ROOFTOP OF SUBSTATION, SO THAT SOLAR PANELS CAN BE INSTALLED IN THE FUTURE. ROOF SHALL BE DESIGNED TO TAKE CARE OF THESE LOADS AND FINAL ARRANGEMENT SHALL BE DISCUSSED AND FINALIZED DURING DETAILED ENGINEERING. PEDESTALS SHALL BE CAST OVER THE ROOF BEAMS BEFORE WATERPROOFING, SO THAT STEEL SUPPORT FOR SOLAR PANELS ARE PROPERLY INSTALLED.

LEGEND / ABBREVIATION:-

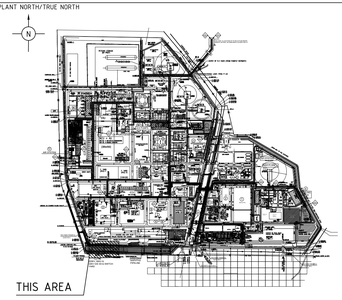
HPP - HIGH POINT PAVEMENT
FFL - FINISHED FLOOR LEVEL
FGL - FINISHED GROUND LEVEL
TYP - TYPICAL
RWP - RAIN WATER PIPE
TOC - TOP OF CONCRETE
TOG - TOP OF GRAVEL
SS - STAINLESS STEEL

AC/FC/FF/UD
AC - AIR CONDITIONING
FC - FALSE CEILING
UD - UNDER DECK INSULATION
FF - FALSE FLOORING
MV- MECHANICAL VENTILATION
- 10MM FLOOR/ TILE DROP

- 345 THICK FULL HEIGHT BRICK WALL
- 230 THICK FULL HEIGHT BRICK WALL
- 115 THICK FULL HEIGHT BRICK WALL
- 230 THICK 3150 HIGH BRICK WALL UPTO FALSE CEILING
- 115 THICK 3150 HIGH BRICK WALL UPTO FALSE CEILING
- 230 THICK 2100 HIGH BRICK WALL
- 115 THICK 2100 HIGH BRICK WALL

KEY PLAN

PLANT NORTH/TRUE NORTH



THIS AREA

REFERENCE DRAWINGS

359755-MDR-000-PIP-01-001	MAH OVERALL PLOT PLAN
359755-MDR-000-ELE-51A1-0002	SUBSTATION LAYOUT - 220KV

REV NO	DATE	PURPOSE	PREP BY	CHKD BY	APPD BY
2	19-JUN-24	ISSUED FOR USE	MSR	JAN	YOK
1	30-MAY-24	ISSUED FOR USE	TAB	JAN	YOK
0	04-MAY-24	ISSUED FOR USE	TAB	JAN	YOK

PROJECT

MALEIC ANHYDRIDE PROJECT AT
PANIPAT REFINERY & PETROCHEMICAL COMPLEX

OWNER

INDIAN OIL CORPORATION LIMITED

PMC: CB&I INDIA PRIVATE LIMITED

PMC JOB NO.	359755	SDR Code	-

TITLE

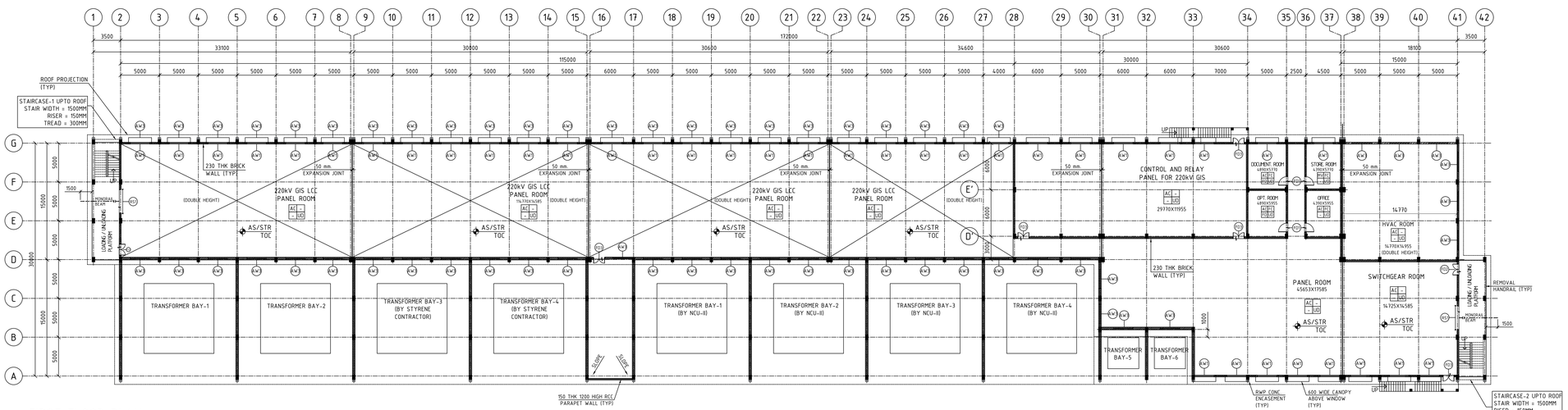
LAYOUT FOR SUBSTATION - 220kV GIS

GRAPHIC SCALE 0m 2 4 6 8 10 1:200

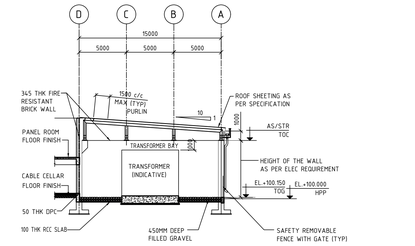
SCALE : 1:200 | DWG.NO. 359755-MDR-000-ARC-02-0006 | 1/2 REV. 2

TITLE: LAYOUT_FOR_SUBSTATION_220kV_GIS | DWG NO: 359755-MDR-000-ARC-02-0006 | REV: 1 | 2/2

PLANT NORTH/TRUE NORTH



FIRST FLOOR PLAN



TYPICAL SECTION OF TRANSFORMER BAY

GRID (2) (5) (9) (12) (15) (17) (20) (24) (27) & (30)

FINISHING SCHEDULE

ROOM/AREA	FLOOR	WALLS	CEILING	AIR CONDITIONING	REMARKS
CABLE CELLAR	METALLIC HARDENER FLOORING	OIL BOUND DISTEMPER	OIL BOUND DISTEMPER	NO	
STORE ROOM	VITRIFIED TILES	CEMENT PLASTER, POP PUNNING & PLASTIC EMULSION PAINT	ACRYLIC EMULSION PAINT	NO	
220KV GIS LCC PANELROOM	METALLIC HARDENER FLOORING	OIL BOUND DISTEMPER	OIL BOUND DISTEMPER	YES	
CONTROL AND RELAY PANEL FOR 220kV GIS	METALLIC HARDENER FLOORING	OIL BOUND DISTEMPER	OIL BOUND DISTEMPER	YES	
HVAC ROOM	METALLIC HARDENER FLOORING	OIL BOUND DISTEMPER	EXPOSED CEILING WITH UNDERDECK INSULATION	YES	
TRANSFORMER BAY	PEBBLES	DUST PROOF PAINT AND CHAIN LINK FENCE	METAL SHEETING	NO	
OPERATOR ROOM	FALSE FLOOR	CEMENT PLASTER, POP PUNNING & PLASTIC EMULSION PAINT	ALUMINIUM PANEL/ STRIP CEILING	YES	
SWITCHGEAR ROOM	METALLIC HARDENER FLOORING	CEMENT PLASTER AND OIL BOUND DISTEMPER	EXPOSED CEILING PAINTED WITH ACRYLIC EMULSION PAINT	YES	
BATTERY ROOM	ACID RESISTANT TILES	ACID RESISTANTEPOXY FINISH UPTO 2500 HEIGHT, ABOVE THIS ACRYLIC EMULSION PAINT		NO	
OCCUPENT & OFFICE ROOM	VITRIFIED TILES	CEMENT PLASTER, POP PUNNING & PLASTIC EMULSION PAINT	COMBINATION OF MINERAL FIBER TILE AND BOARDER WITH GYPSUM BOARD FALSE CEILING	YES	
TOILET	GRANITE STONE FLOORING	GRANITE STONE DADO UP TO CEILING/ FALSE CEILING		NO	

FINISHING SCHEDULE

ROOM/AREA	FLOOR	WALLS	CEILING	AIR CONDITIONING	REMARKS
CABLE CELLAR	METALLIC HARDENER FLOORING	OIL BOUND DISTEMPER	OIL BOUND DISTEMPER	NO	
STORE ROOM	VITRIFIED TILES	CEMENT PLASTER, POP PUNNING & PLASTIC EMULSION PAINT	ACRYLIC EMULSION PAINT	NO	
OPERATOR ROOM	FALSE FLOOR	CEMENT PLASTER, POP PUNNING & PLASTIC EMULSION PAINT	ALUMINIUM PANEL/ STRIP CEILING	YES	
TRANSFORMER BAY	PEBBLES	DUST PROOF PAINT AND CHAIN LINK FENCE	METAL SHEETING	NO	
220 KV GIS LCC PANEL ROOM	CERAMIC STONE FLOORING	CEMENT STONE FLOORING	COMBINATION OF MINERAL FIBER TILE AND BOARDER WITH GYPSUM BOARD FALSE CEILING	YES	
SWITCHGEAR ROOM / PANEL ROOM	METALLIC HARDENER FLOORING	CEMENT PLASTER AND OIL BOUND DISTEMPER	EXPOSED CEILING PAINTED	YES	
BATTERY ROOM	ACID RESISTANT TILES	ACID RESISTANTEPOXY FINISH UPTO 2500 HEIGHT, ABOVE THIS ACRYLIC EMULSION PAINT	WITH ACRYLIC EMULSION PAINT	NO	
TOILET	GRANITE STONE FLOORING	GRANITE STONE DADO UP TO CEILING/ FALSE CEILING	COMBINATION OF MINERAL FIBER TILE AND BOARDER WITH GYPSUM BOARD FALSE CEILING	NO	

SCHEDULE OF DOORS & WINDOWS

TYPE	NOS	OPENING SIZE	FRAME SIZE	DESCRIPTION	REMARKS
FD1	11	1200 X 2100	1180 X 2090	STEEL FIRE SINGLE DOOR	
FD2	5	1500 X 2100	1480 X 2090	STEEL FIRE DOUBLE DOOR	
FD3	6	1500 X 2400	1480 X 2390	STEEL FIRE DOUBLE DOOR	
SD2	1	1200 X 2100	1180 X 2029	STEEL FIRE DOUBLE DOOR	
RS1	4	3000 X 3000	-	MECHANICALLY OPERATED ROLLING SHUTTER	
AW1	51	2500 X 1800	2480 X 1780	ALUMINIUM SLIDING GLASS WINDOW	
AW3	99	2500 X 600	2480 X 580	ALUMINIUM FIXED GLASS VENTILATOR	
PD1	8	800 X 2100	780 X 1980	SINGLE SHUTTER PVC DOOR	
WD1	4	1000 X 2100	980 X 1980	WOODEN SINGLE DOOR	
EF	8	-	-	300 DIA EXHAUST FAN	

EXTERNAL FINISHING & OTHER GENERAL FINISH

ROOF FINISH: RCC ROOFS SHALL BE PROVIDED WITH WATERPROOFING COATING OF POLYURETHANE (PU) WATERPROOF COATING, SINGLE COMPONENT FINISHED WITH MIN. 25MM THICK PCC (1:2:4) LAID IN PANELS.
EXTERNAL WALL FINISH: PLAIN CEMENT PLASTER AND SURFACE TEXTURED COATING (GRANULAR OR FLAKES TYPE). CEMENT PLASTER AND ANTI-ALGAL WEATHERPROOF, ACRYLIC EMULSION PAINT WITH SILICON ADDITIVES OF APPROVED SHADE AS/SPECS.
PLASTERING: (REFER 359755-MDR-000-ARC-SPC-0001)
SOFFIT OF R.C.C SURFACES: 6MM THK. ORDINARY PLAIN CEMENT PLASTER IN C.M 1:3
INTERNAL MASONRY/ R.C.C SURFACES: 12MM THK. ORDINARY PLAIN CEMENT PLASTER IN C.M 1:4
INTERNAL MASONRY/ R.C.C SURFACES: 15MM SAND FACE CEMENT PLASTER IN C.M. 1:4
EXTERNAL R.C.C./BRICK SURFACES: 18MM SAND FACE CEMENT PLASTER IN C.M. 1:4
RAMP: 50MM CEMENT-CONCRETE FINISHED IN NEAT CEMENT WITH CHEQUERED PATTERN. ACCESS PLATFORM: GRANITE STONE PLINTH PROTECTION : 100THK PCC (M20 GRADE) FINISH WITH NEAT CEMENT SLURRY.

NOTES:

1. FOR NOTES REFER DRAWING NUMBER 35755-MDR-000-ARC-02-0006-SHEET 01/02.

GRAPHIC SCALE 0m 2 4 6 8 10 — 1:200

REV NO	DATE	PURPOSE	PREP BY	CHKD BY	APPD BY
2	19-JUN-24	ISSUED FOR USE	MSR	JAN	YOK
1	30-MAY-24	ISSUED FOR USE	TAB	JAN	YOK
0	04-MAY-24	ISSUED FOR USE	TAB	JAN	YOK

PROJECT

MALEIC ANHYDRIDE PROJECT AT
PANIPAT REFINERY & PETROCHEMICAL COMPLEX

OWNER

INDIAN OIL CORPORATION LIMITED

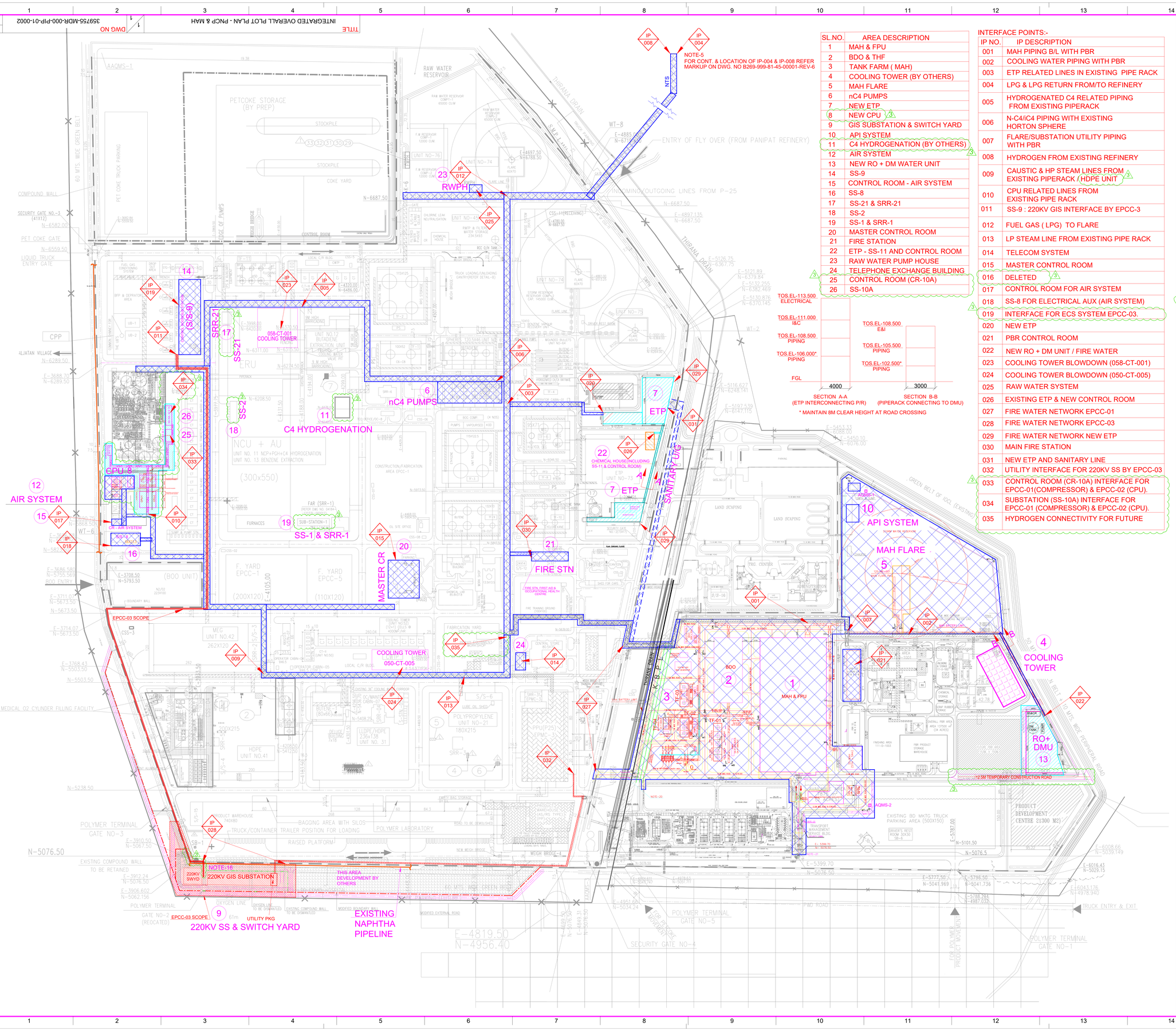
PMC: CB&I INDIA PRIVATE LIMITED

PMC JOB NO. 359755 | SDR Code | –

TITLE

LAYOUT FOR SUBSTATION-220kV GIS

SCALE : 1:200 | DWG.NO. 359755-MDR-000-ARC-02-0006 | REV. 2



SL.NO.	AREA DESCRIPTION
1	MAH & FPU
2	BDO & THF
3	TANK FARM (MAH)
4	COOLING TOWER (BY OTHERS)
5	MAH FLARE
6	nC4 PUMPS
7	NEW ETP
8	NEW CPU 3
9	GIS SUBSTATION & SWITCH YARD
10	API SYSTEM
11	C4 HYDROGENATION (BY OTHERS) 3
12	AIR SYSTEM
13	NEW RO + DM WATER UNIT
14	SS-9
15	CONTROL ROOM - AIR SYSTEM
16	SS-8
17	SS-21 & SRR-21
18	SS-2
19	SS-1 & SRR-1
20	MASTER CONTROL ROOM
21	FIRE STATION
22	ETP - SS-11 AND CONTROL ROOM
23	RAW WATER PUMP HOUSE
24	TELEPHONE EXCHANGE BUILDING
25	CONTROL ROOM (CR-10A) 3
26	SS-10A

INTERFACE POINTS:-

IP NO.	IP DESCRIPTION
001	MAH PIPING B/L WITH PBR
002	COOLING WATER PIPING WITH PBR
003	ETP RELATED LINES IN EXISTING PIPE RACK
004	LPG & LPG RETURN FROM/TO REFINERY
005	HYDROGENATED C4 RELATED PIPING FROM EXISTING PIPERACK
006	N-C4/iC4 PIPING WITH EXISTING HORTON SPHERE
007	FLARE/SUBSTATION UTILITY PIPING WITH PBR
008	HYDROGEN FROM EXISTING REFINERY
009	CAUSTIC & HP STEAM LINES FROM EXISTING PIPERACK / HDPE UNIT 3
010	CPU RELATED LINES FROM EXISTING PIPE RACK
011	SS-9 : 220KV GIS INTERFACE BY EPCC-3
012	FUEL GAS (LPG) TO FLARE
013	LP STEAM LINE FROM EXISTING PIPE RACK
014	TELECOM SYSTEM
015	MASTER CONTROL ROOM
016	DELETED 3
017	CONTROL ROOM FOR AIR SYSTEM
018	SS-8 FOR ELECTRICAL AUX (AIR SYSTEM)
019	INTERFACE FOR ECS SYSTEM EPCC-03. 3
020	NEW ETP
021	PBR CONTROL ROOM
022	NEW RO + DM UNIT / FIRE WATER
023	COOLING TOWER BLOWDOWN (058-CT-001)
024	COOLING TOWER BLOWDOWN (050-CT-005)
025	RAW WATER SYSTEM
026	EXISTING ETP & NEW CONTROL ROOM
027	FIRE WATER NETWORK EPCC-01
028	FIRE WATER NETWORK EPCC-03
029	FIRE WATER NETWORK NEW ETP
030	MAIN FIRE STATION
031	NEW ETP AND SANITARY LINE
032	UTILITY INTERFACE FOR 220KV SS BY EPCC-03
033	CONTROL ROOM (CR-10A) INTERFACE FOR EPCC-01(COMPRESSOR) & EPCC-02 (CPU). 3
034	SUBSTATION (SS-10A) INTERFACE FOR EPCC-01 (COMPRESSOR) & EPCC-02 (CPU).
035	HYDROGEN CONNECTIVITY FOR FUTURE

REFERENCE

DOC. NO.	TITLE
359755-MDR-000-PIP-01-0001	OVERALL PLOT PLAN - MAH BLOCK
359755-MDR-121-PIP-03-0001	EQUIPMENT LAYOUT PLAN MAH & FPU UNIT
359755-MDR-122-PIP-03-0001	EQUIPMENT LAYOUT PLAN BDO & THF UNIT
203168C-000-DW-0051-0001 (REV.4)	PLOT PLAN OFFSITE FACILITIES -OVERALL (PBR)
6714-LAY-000-LD-0002 (REV-0)	OVERALL PLOT PLAN - PNCP COMPLEX
359755-MDR-046-PIP-01-0001	PRELIMINARY PLOT PLAN FOR CPU

NOTES

1. LOCATION OF ALL FACILITIES SHALL BE FINALIZED BY EPC CONTRACTOR IN CONSULTATION WITH ENGINEER- IN -CHARGE AND THIS PLOT PLAN SHALL BE READ WITH SCOPE, DRAWINGS AND SPECIFICATIONS DEFINED IN THE BIDDING DOCUMENT.
2. DETAILED LAYOUT OF EACH FACILITY SHALL BE DEVELOPED BY EPC CONTRACTOR BASED ON DETAIL ENGINEERING AND VENDOR / PKG / SUPPLIER INPUT
3. INTERFACE POINTS ARE INDICATIVE. LSTK CONTRACTOR TO VERIFY THE LOCATIONS INLINE WITH P&IDS , SOW AND FINALIZE THE LOCATIONS DURING DETAIL ENGINEERING.
4. FOR CIVIL RELATED BATTERY LIMIT INTERFACE, REFER DRAWING NO. 359755-MDR-000-CIV-02-0003 - SCOPE DRAWINGS FOR ROADS AND DRAINAGE (EPC 1).
5. THIS INTERFACE POINT (IP004/IP008) SHALL BE AT EXISTING PANIPAT REFINERY. THESE LINES MIGHT TRAVEL APPROX.7KM (7KM IS INDICATIVE AND FINAL DISTANCE SHALL BE ESTIMATED BY EPC CONTRACTOR AND TO BE INCLUDED IN THE PROPOSAL ACCORDINGLY) FROM REFINERY TO MAH BLOCK. LOCATION AND ROUTE OF THESE LINES SHALL BE FINALIZED BY LSTK CONTRACTOR DURING DETAIL ENGINEERING.
6. NEW CPU SHALL BE LOCATED AS SHOWN. 3
7. PLOT AREA FOR CPU, ETP +ZLD AS SHOWN ARE TENTATIVE AND TO BE VERIFIED BY EPCC CONTRACTOR AT SITE IN CONSULTATION WITH ENGINEER-IN-CHARGE.
8. DM WATER STORAGE TANK AND PUMPS SHALL BE INSTALLED IN THE NEW DMU
9. BATTERY LIMIT INTERFACE BETWEEN EPCC-01 , EPCC-02 & EPCC-03 SHALL BE AS SHOWN AND SAME TO BE FINALIZED AT SITE IN CONSULTATION WITH ENGINEER-IN-CHARGE.
10. ALL INTERCONNECTED PIPING / CABLING ETC. SHALL BE CONSIDERED BY EPCC.
11. EXISTING FACILITIES SUCH AS CHEMICAL STORAGE / HANDLING FOR ETP SHALL BE INTERFACE WITH EXISTING ETP TO THE EXTENT FEASIBLE.
12. NEW SUBSTATION AND CONTROL ROOM PROPOSED FOR NEW CPU 3
13. DELETED
14. LOCATION AND BLOCK SIZE OF C4H UNIT IS TENTATIVE , EPCC TO STUDY AND DEVELOP LAYOUT FOR C4H UNIT BASED ON LICENSOR PKG DURING DETAIL ENGINEERING . EXISTING LAYOUT SHALL BE REVISED BY EPC CONTRACTOR TO INCORPORATE THE REQUIREMENT OF LICENSOR PKG
15. IT IS RESPONSIBILITY OF EPC CONTRACTOR TO STUDY ALL THE INTERFACES WITH EXISTING FACILITIES AND CONSIDER THE SCOPE OF SUPPLY & WORK DURING DETAIL ENGINEERING , PARTICULARLY FOR TIE IN POINTS , CABLE TRENCHES /TRAYS / DUCTS , EXTENSION OF EXISTING PIPERACK AS REQUIRED , ROAD CONNECTIVITY , DRAINAGE CONNECTIVITY TO THE EXISTING DRAINS / STORM POND , PIPERACK FOUNDATION INTERFACES WITH OTHER CONTRACTORS, ETC
16. EXISTING U/G PIPELINE LOCATION SHALL BE VERIFIED BY EPCC AND SUFFICIENT CLEARANCE AS PER OISD SHALL BE MAINTAINED. ANY CHANGE IN LAYOUT DUE TO LOCATION OF EXISTING PIPELINE AND COMPLIANCE TO OISD SHALL BE EXECUTED BY EPCC WITHOUT ANY IMPACT ON COST AND TIME.
17. LOCATION OF AQMS IS INDICATIVE AND SAME SHALL BE FINALIZED AT SITE AS PER INSTRUCTIONS OF ENGG-IN-CHARGE 3
18. AIR SYSTEM COMPRISING OF COMPRESSOR (3 NOS.), AIR DRYER, ASSOCIATED SHED AND OTHER FACILITIES ARE IN THE SCOPE OF EPCC-01.

LEGEND

EPCC-01 SCOPE

EPCC-02 SCOPE

EPCC-03 SCOPE

IP 0XX — INTERFACE POINTS WITH EXISTING OR OTHERS

REV NO	DATE	PURPOSE	PREP BY	CHKD BY	APPD BY
3	22-AUG-24	RE-ISSUED FOR FEED	MSB	ADJ	ADJ
2	10-MAY-24	RE-ISSUED FOR FEED	MSB	ADJ	ADJ
1	27-MAR-24	RE-ISSUED FOR FEED	MSB	ADJ	ADJ
0	21-MAR-24	ISSUED FOR FEED	GAB	ADJ	ADJ

PROJECT

MALEIC ANHYDRIDE PROJECT AT
PANIPAT REFINERY & PETROCHEMICAL COMPLEX

OWNER

INDIAN OIL CORPORATION LIMITED

PMC

CB&I INDIA PRIVATE LIMITED

PMC JOB NO. 359755 | SDR Code | –

TITLE

INTEGRATED OVERALL PLOT PLAN - PNCP AND MAH

SCALE : 1:3000 | DWG.NO. 359755-MDR-000-PIP-01-0002 | REV. 3 | 1/1

TITLE: INTEGRATED OVERALL PLOT PLAN - PNCP & MAH | DWG NO: 359755-MDR-000-PIP-01-0002 | REV: 3

Reply to Pre-Bid Queries : Technical

TENDER: EPCC-03 - 220KV GIS AND ASSOCIATED WORKS OF MALEIC ANHYDRIDE PROJECT ATPANIPAT REFINERY PETROCHEMICAL COMPLEX

BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02

Reply to Pre-Bid Queries : Technical

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
1	DRG No. 359755-MDR-000-ELE-21A1-0003			Termination for Incoming bays in GIS Substation	As per our understanding, the Incoming 220 kV GIS bays has to be terminated with Cable. Please confirm our assumption	Bidder to consider cables for termination.
2	DRG No. 359755-MDR-000-ELE-21A1-0003			LA & VT	As per our understanding, LA requirement is only in outgoing bays and VT requirement is only in BBM bays. Kindly confirm our assumptions	Bidder to ensure compliance to bidding documents
3	DRG No. 359755-MDR-000-ELE-21A1-0003			Termination for Outgoing bays in GIS Substation	Kindly confirm whether the termination of Outgoing bays is with Cable termination or SF6 to air termination	Bidder to consider cables for termination.
4	DRG No. 359755-MDR-000-ELE-21A1-0003			Requirement of High speed earth switch in Trafo bays	High speed earth switches are required for line bays where high charges from lines from long distances have to be discharged. Hoever same is not the case with Transformer bays as Transformer is located near the GIS. Hence we propose to offer Work in progress earth switch in Trafo bays.	Bidder to ensure compliance to bidding documents
5	DRG No. 359755-MDR-000-ELE-21A1-0003			Rated current	As per our understanding, the Rated bus bar current shall be 2000 A at 40 Deg C ambient temperature. Please confirm	Bidder to ensure compliance to published amendment.
6	DRG No. 359755-MDR-000-ELE-21A1-0003			Future extension	Please confirm whether any future extension bays are envisaged on either side of the Substation	Bidder to note that future extension bays are to be considered on both ends of the Switchgear / GIS, as shown in the layout
7	DRG No. 359755-MDR-000-ELE-21A1-0003			220 kV GIS shall be provided with Online Temperature monitoring System and Partial discharge monitoring system	Kindly elaborate on "Online Temperature Monitoring System" as GIS manufacturers are unable to offer this feature.	Bidder to ensure compliance to bidding documents
8	DRG No. 359755-MDR-000-ELE-21A1-0003			Current Transformer	As CT is not shown in GIS SLD, we understand single side CT is envisaged in all the bays including Bus sectionlizer & Bus coupler after the Circuit breaker. Please confirm and share detail CT parameters.	Bidder to refer published amendment.
9	DRG No. 359755-MDR-000-ELE-51A1-0002			Position of LCC for 220 kV GIS	As per the shared layout, we understand the LCC for 220 kV GIS is ground mounted type. However one of the OEMs proposed Bay mounted LCC which shall reduce GIS footprint and may reduce building size inturn. Kindly confirm acceptibility of the same.	Bidder to note that such details shall be discussed post award with successful bidder and OEM
10	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Maximum distance between GIS/LCC and corresponding CRP shall be considered as 150 meters unless otherwise specified	We propose Bay mounted type LCC as Bay mounted LCC will reduce the GIS footprint and will reduce the building size inturn. Requesting your kind acceptance on the same	Bidder to note that such details shall be discussed post award with successful bidder and OEM
11	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Pre-Insertion Resistor (if specified in job specification/ datasheet)	We understand the same is not applicable for this package of 220 kV GIS; Kindly confirm.	It is clarified that requirement shall be decided by EPCC-03 Contractor based on OEM recommendation.
12	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Hydraulic Operated Mechanism	Not Applicable for certain makes of GIS	It is clarified that requirement shall be decided by EPCC-03 Contractor based on OEM recommendation.
13	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Hydraulic Monitoring Device	Not Applicable for certain makes of GIS	It is clarified that requirement shall be decided by EPCC-03 Contractor based on OEM recommendation.
14	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Voltage Transformer	GIS type Voltage Transformer shall only be applicable for Bus bar measurement and the same will be considered.	Bidder shall consider voltage transformers as required for incomer and bus bar
15	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Outdoor SF6 - Air Bushings	Please confirm terminations of all the bays as the same is not clear from the SLD.	Bidder to refer to clarification provided in other query
16	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			All the equipment should have been successfully type tested as per the relevant standards. Type tests shall not have been conducted earlier than five years. In case the type tests were conducted earlier than 5 years, such type tests shall be carried out by the vendor free of cost before commencement of supply.	As per CEA guidelines, the type tests for GIS shall be valid for 15 years. Reqeuesting your kind acceptance.	Bidder to ensure compliance to bidding documents
17	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			GIS shall be provided with Online temperature monitoring system and Partial Discharge system.	Online Temperature monitoring facility is not available in the GIS offered by OEMS. Requesting for deletion of this feature from GIS.	Bidder to ensure compliance to bidding documents
18	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Each of the equipment devices including CB, Disconnector switch, Earthing switch, CT, VT and busbars etc shall be provided with nameplate.	Separate nameplate shall be provided only for CT, VT. For Disconnector, Earth switch & CB a single Rating plate shall be provided.	Bidder understanding is in order
19	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Over pressure for each gas compartment of the bay.	The gas pressure difference between 3 compartments in GIS is not significant. Thus over pressure alarm is not envisaged.	Bidder to ensure compliance to bidding documents
20	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Additional Requirements for Safety Earthing Switches	As the earthing of GIS is through GIS enclosure, hence no additional cables & copper braids are required. OEM will provide 3 positions on the enclosure from where earthing connection can be connected to Earth mat.	Bidder to ensure compliance to bidding documents
21	DRG No. 359755-MDR-000-ELE-21A1-0003			Rquirement of BUS VT	Since Bus-sectionalizer is shown at both buses, we have considered Bus VTs on both sides of the Bus Sectionalizers	Bidder to ensure compliance to bidding documents
22	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Requirement of Special Tools and Tackles and Mandatory Spares	The requirement of special tools and tackles and mandatory spares for 220kV GIS is not clear in the specification; Request you to kindly calrify.	Bidder shall refer scope of supply and other tender documents for special tools and tackles and mandatory spares.
23	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Internal Arc fault	Offered equipment is type tested for internal arc fault of duration 0.3 sec as per IEC 62271-203; Please confirm	Bidder to ensure compliance to bidding documents

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
24	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Portable Partial Discharge Monitoring System	We understand that online PD Monitoring system is to be provided for the GIS, therefore portable type is not required; Please confirm.	Online PD system shall be provided
25	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			High Speed Earth Switch	Kindly note that maintenance of HES will be required after two operations.	Bidder to note that such details shall be discussed post award with successful bidder and OEM
26	359755-MDR-000-ELE-SPC-0002 (GIS Specs)			Bay Control Unit	Kindly note that Bay Control Unit (BCU) will be a part of Control & Relay Panel and not GIS	Bidder to note that such details shall be discussed post award with successful bidder and OEM
27	DRG No. 359755-MDR-000-ELE-51A1-0002			Substation Layout - 220kV GIS	Why a distance of 12 Meters is kept between the outdoor Switchyard and the GIS Building ? Will there be a road in between ?	Bidder understanding is in order
28	GENERAL				Kindly confirm that space for construction of indoor and outdoor Stores and Site Office will be provided to us by IOCL .	Bidder shall refer to Bidding document
29	GENERAL				Kindly inform whether construction power and water will be provided by IOCL to us free of charge.	Bidder to ensure compliance to Tender documents
30	359755-MDR-000-ELE-SOW-0003		1.52.1	Tapping from 220kV Line	Kindly specify the point of tap-off and the exact routing of the line upto the incoming gantry of the New 220kV Switchyard.	Bidder to refer to clarification provided in other query
31	NIT 6 of 21		4.1.3	MOU with GIS manufacturer	Is any specific format of MOU is prescribed by IOCL / MCDERMOTT ?	MOU can be signed on Plain paper
32	Vol 2	2175 of 5756	2	Annexure -1, Scope of Work	Please indicate the distance of the tapping point of 220kV Line from our Switchyard / exact location of the dead end tower and it's angle	Bidder shall consider 40-50meters distance from the IOCL property line for the proposal and exact coordinate will be provided post award
33	Vol 2	2175 of 5756	2	Annexure -1, Scope of Work	Please indicate the details of connection between 220kV Incoming Line to GIS. Is it an Air-to- Bushing termination and thereafter GIB ? Or is it a 220kV Cable connection with 220kV CSE ?	Connection will be through overhead conductor and refer to published amendment
34	Vol 2	2175 of 5756	3	Annexure -1, Scope of Work	Please indicate details of connection between 220kV GIS and 220kV Transformer primary - Is it GIB or Cables ?	Connection shall be through cables and refer amendment
35	Vol 2	2175 of 5756	4	Annexure -1, Scope of Work	What is the co-ordination with State Grid Authorities applicable here ? Is there any interfacing required with remote end Substation of HVPNL ?	Bidder shall refer to Bidding document
36	Vol 2	2175 of 5756	5 & 6	Annexure -1, Scope of Work	Why both PLCC and OPGW are required simultaneouly ?	Bidder shall refer to Bidding document
37	Vol 2	2175 of 5756	3	Annexure -1, Scope of Work	Is separate lockable metering room required for tariff metering of HVPNL ?	Bidder understanding is in order
38	Substation Layout-220kV GIS				Please note that 220/66kV , 60/75 MVA Transformers are to be installed in the outdoor switchyard and not inside GIS building. Please review and confirm.	Bidder shall refer to Bidding document
39	Substation Layout-220kV GIS			Annexure -1, Scope of Work	The 220/33kV Transformers are to be installed in the outdoor Switchyard and not inside GIS Building. Please review and confirm.	Bidder shall refer to Bidding document
40	Vol 2	2175 of 5756	13	Annexure -1, Scope of Work	For the 220/66kV and 220/33kV Transformers supplied and installed by others, EPCC-03 contractor will construct only Fire Walls and no other Civil / Structural works will be in EPCC contractor's scope. Please confirm	Bidder shall refer to Bidding document and published amendment
41	Vol 2	2176 of 5756	24 & 25	Annexure -1, Scope of Work	Please clarify the scope of earthing and lightning protection for outdoor switchyard and GIS building.	Bidder shall refer to Bidding document
42	Vol 2	2175 of 5756	8	Annexure -1, Scope of Work	Air conditioning and ventilation requirement of the GIS and control room building area-wise : GIS Hall Control room 33kV Switchgear room LV Room comprising LT panels and Battery Charger Battery Room Office rooms and toilets Other rooms	Bidder shall refer to Bidding document
43	Substation Layout-220kV GIS			Annexure -1, Scope of Work	Kindly provide details of existing panels at CPP Substation and Control Room , Main Control Room and Fire Station Control Room. Please calrify the scope of interfacing and integration.	Bidder shall refer to Bidding document and published amendment
44	General				Kindly provide the details of IOCL approved following agencies: 1. Material Testing laboratory, 2.Geotech agency 3. Contour survey agency	It is bidder responsibility to select the agencies based on the credential and obtain approval during execution stage
45	General				Kindly comfirm that IOCL will provide us adeqeate space to construct our store & Site office within the premises of Panipat Refinenery adjecent to our site.	Bidder shall refer to Bidding document
46	General				Pls provide the land coordinates of the site	It is clarified that these details will be available during execution stage
47	General				Pls provide the Contour map of the plot	Bidder shall refer to Bidding document
48	General				Pls confirm if any Royalty charges like sand, brick aggregates, earth etc to be considered	It is bidder responsibility to check these applicability and consider in the proposal accordingly
49	General				Pls provide the Contour map of the plot	Bidder shall refer to Bidding document
50	General				Kindly provide us IOCL's guidelines to construct Labour Hutments ajdscent to our site	It is bidder responsibility to consider these facilities as per GOVT regulations and bidding document
51	Part B	466 of 990	7	Price Variation	There is no scope of Price Variation for Major Supply items like GIS, Transformers, Cables, LT Switchhgear, Cement. Reinforcement Steel & Erection activities. Request you to kindly include these items in the Price Variation clause	Bidder shall refer to Bidding document
52	General				Any ROW or Land acquisition issue, if it arises, ith will be in IOCL's scope	Bidder shall refer to Bidding document
53	General				The scope includes lot of interfacing with other package suppliers. Incase commissioning of the substation is delayed because of delay caused by other package supplier, is there ant provision for compensation.	Bidder shall refer to Bidding document

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
54	Vol 2	2175 of 5756	15	Annexure -1, Scope of Work	We understand that Supply, Laying, Termination, Testing and commissioing of all 66kV Cables are out of the scope of EPCC-03. Also Cable trenches outside GIS bldg.is out of the scope of EPCC-03. However, for any trench and tray arrangements inside the GIS building kindly provide the sizes and no of runs of 66kV Cables.	Bidder understanding for supply of 66KV cable is in order. However cable trenches, Trays within 220KV GIS battery limit are in the scope of the Bidder and refer bidding comment for details. Cable details shall be provided post award with successful bidder and OEM
55	Vol 2	2175 of 5756	13	Annexure -1, Scope of Work	Kindly confirm that the 66kV Cables from outgoing of Transformers of Bay-3 & 4will be outside the scope of EPCC-03. Please provide the Transformer dimensions also, as these are not in EPCC-03 scope. Please provide outgoing 66kV Cable details if anyCable Trench / Tray arrangements are to be made within GIS building.Please confirm that RTCC panels of these transformers will not be located in GIS bldg.	Refer above for supply and cable trenches. RTCC for all 6 transformer supplied by others shall be installed in 220KV GIS substation .
56	Vol 2 DWG No. 359755-MDR-000-ELE-51A1-0002 Rev 0				Kindly provide us the overall dimensions of 33kV Switchgear (outside EPCC-03scope) and 220/33kV, 70 MVA Transformers (also outside EPCC-03 scope) and details of 33kV Cables (outside EPCC-03 scope) in order to correctly asses the dimensions ofthe GIS building . Please confirm that the RTCC panels of these Transformers will not be located inside GIS building.	Bidder shall note that overall size of the Building will be in line with amendment and Bidding document. Details will be shared post award
57	ELE-SOW-0003	page 11 of 26	1.52.3		*"Design and Engineering of Fiber Optic Transmission system and Cyber Security systemfor the entire network …" - Request you to kindly elaborate on Cyber Security System*	It is bidder responsibility to design and provide the system as per requirement and HVPSL requirement which will be obtained by the Bidder during detailed engineering post award.
58	ELE-SOW-0003	page 12 of 26	1.52.4		Size not provided for 220kV Cables from 220kV outdoor Switchyard to GIS Bldg	It is bidder responsibility to design and consider the size accordingly based on the load demand which is 350MW.
59	ELE-SOW-0003	page 12 of 26	1.52.5		Kindly provide detailed configuration and specification for SCAP panel.	Bidder shall refer to bidding document and published amendment
60	ELE-SOW-0003	page 12 of 26	1.52.6		Please calrify what is meant by "Double Height" GIS room.	It is bidder responsibility to design and consider the height of the GIS building as per OEM recommendation keeping minimum height as indicated in the bidding document
61	ELE-SOW-0003	page 13 of 26	1.52.6		Request you to kindly furnish a list of all equipment with tentative DC auxilliary load(which are supplied by others) for which EPCC-03 contractor has to make a provisionin Battery.	Bidder shall refer to Published amendment
62	ELE-SOW-0003	page 15 of 26	1.52.8		For which 6 nos Transformers Gates and Shades are to be provided by EPCC-03 ? Removable shade at double height - Kindly clarify "double height"	Bidder shall refer to Bidding document and amendment
63	ELE-SOW-0003	page 22 of 26	1.52.30		Kindly confirm that the connection between 220kV GIS Substation and SS-09 of CPP will be thru overhead cable bridge to be constructed under EPCC-03 package.	Bidder shall refer to Bidding document and amendment
64	ELE-SOW-0003	page 23 of 26	1.52.34		There is no 66kV/33kV/6.6kV Switchgear in EPCC-03 scope. Why then Breaker Withdrawal trolley, breaker handling trolley and earthing trolley included in Tools & Tackles list ?	Bidder shall consider the accessories as per scope of supply and issued amendment.
65	GENERAL				For Fire Fighting system of Power Transformers, both NIFPS and HVWS systems are envisaged. What will be the fire fighting system for 220kV Outdoor Switchyard and 220kV GIS Building ?	It is bidder responsibility to design and consider scope of fire fighting accordingly
66	Vol-1 Section-2	Page 2175 of 5756	3.1.4	220kV Switchyard Scope	Bidder understands that the scope division outlined under Annexure -1 is final in nature and in case of any conflict between annexure-1 and any other clause of Tender Document, description under annexure-1 shall prevail. Kindly confirm	Bidder to ensure compliance with the tender document requirement and issued amendments.
67	Vol-1 Section-2	Page 2175 of 5756	3.1.4	Integration of 220KV Overhead lines from point of tap off to 220KV outdoor switchyard. Any required items/structures, AAAC/ ACSR conductors/busbars etc. for connecting to 220kV Outdoor switchyard and coordination with state grid authorities as applicable	Bidder understands that switchyard Gantry of 220kV transmission Line is in scope of Bidder(EPCC-03) and termination of Line along with Line side Insulators & hardware's are excluded and is not the part of the present scope. Kindly confirm.	Bidder to note that all hardware (including gantry)/ software along with accessories required for interconnection between nearest tap-off point (from transmission line tower) to 220kV Switchyard for complete integration of protection, control & telemetry FO network, OPGW network and ECS interface with the upstream HVPNL substation shall be by EPCC-03 Contractor.
68	Vol-1 Section-2	Page 2175 of 5756	3.1.4	4. Approval of all outdoor switchyard-related documents through HVPNL (state grid) such as GELO, layout, drawings, Outdoor CT, PT, CVT, Meters and wave trap etc. 5. PLCC equipment pair including wave trap, CVT, 48V Charger for both sending and receiving end (i.e. at MAH 220KV end and at HVPNL end). 6. OPGW and telemetry hardware	We understand that Bidder is required to follow-up for approval of switchyard equipment with concerned Transmission Utility(HVPNL).However, submission of required documents to HVPNL shall be through IOCL only. Kindly confirm. Kindly clarify whether Supply, Erection, Testing and commissioning of remote end(HVPNL end) PLCC equipment are in scope of bidder(EPCC-03)? If yes, Please share the Technical specification of the equipment(HVPNL end).	Complete design, supply, installation, testing and commissioning of PLCC system and its associated hardware / equipment / software like CVT, wave trap, 48V DC Charger, LMU, PLCC panel etc. shall be by EPCC-03 Contractor. Make list of HVPNL to be followed by the vendor. Prior approval for procurement also to be taken by HVPNL.
69	Vol-1 Section-2	Page 2175 of 5756	3.1.4	6. OPGW and telemetry hardware	Kindly confirm whether there is any requirement of Telemetry hardware at remote end. Also provide location of Remote Substation and Transmission Line route length.	Bidder to note that telemetry panel and data acquisition system of both sending and receiving end shall be in the scope of EPCC-03 Contractor including providing software support for establishment of data communication. Vendor to be follow the make list of HPVNL and take prior approval for the HVPNL before procurement.

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
70	Vol-1 Section-2	Page 2175 of 5756	3.1.4	The 220KV Substation building shall be designed to install the following equipment as a minimum- •2 20KV GIS switchgear - 1 no. • Standalone SCAP Panel for manual operation of 220KV Switchyard, 220 KV GIS, Transformer, Sync Metering, mimic view. •3 3KV GIS switchgear (Supply, installation, testing and commissioning by others) •2 20/66KV, 60/75 MVA transformers – 2 nos. • 220/66KV, 60/75 MVA transformers – 2 nos. (Supply, installation, testing and commissioning by others) •2 20/33KV transformer – 4 Nos. (Supply, installation, testing and commissioning by others) •6 .6/0.433KV, 1250 KVA Distribute. on transformers for Substa□on Auxiliary power • 220V DC Charger system complete with batteries for Switchgear control power supply– 1 set. • 220V DC Charger system complete with batteries for Emergency and Critical lighting – 1 set. • 415V / 415V Normal Lighting Transformer – 2 Nos. • 415V PCC, 2000A, 50Hz, 50kA for 1 sec. – 1 No. • 415V, 250A, 50Hz, 25kA for 1 sec. Lighting & Small Power Distribution Board – 1 Nos. • 415V, 400A, 50Hz, 50kA for 1 sec, Auxiliary switchboard – 1 Nos. • ECS system complete with LIU, FO Patch cords, Ethernet Switches, Main & Redundant RTU, Data concentrator, Hardware I/O rack, CPU, Keyboard, Monitor, Mouse, Printer etc. In addition to the above all the common facilities for building and switchgears such as HVAC, Auxiliary transformers, PCCs, lighting transformers, Lighting & small power DBs, DC power requirement for all the switchgears including the ones supplied by others shall be designed, supplied, installed, tested and commissioned by EPCC-03 contractor. Complete Civil related information required for building design such as switchgear loading for foundation & cut-out design and transformer bay shall be provided by others for their scope of equipment to EPCC-03.	1. Kindly specify the requirement of future space provision for 220kV GIS. 2. For 33kV GIS switchgear, IOCL is requested to specify Maximum area requirement to be considered at bidding stage. Further, please also confirm that in case, the requirement of Building area/size gets increased in order to accommodate the equipment to be supplied by other agencies(like 33kV Switchgear, 220kV & 66kV EHV cable, 220kV Transformers) other than the equipment specified In the tender, cost implication on account of the same shall be payable extra. 3. Kindly clarify whether any Interfacing scope of 220kV Side of Transformers(to be supplied by other agency) with the present scope of 220kV GIS (EPCC-03) is to be considered. If it is in scope of EPCC-03 then clarify the type of interconnection whether GIB type or EHV cable type is to be considered? 4. Substation layout Drw no. 359755-MDR-000-ELE-51A1-0002. is not Civil Drawing, incorporation of Column and Beams shall increase the Building Size. if the Plot size found to be insufficient to accommodate all equipment under the current scope, IOCL shall arrange the additional plot. 5. It is requested to remove any dismantling scope like PIPELINE, CABLE, Existing wall and Tree cutting etc from the scope of the bidder which require statutory permission/approval. Further, Please confirm that encumbrance free land/plot shall be provided by IOCL.	Bidder to ensure compliance with the tender document requirement.
71	Vol-1 Section-2	Page 2152 of 5756	1.6	It will be the responsibility of ONTRACTOR to acquire all necessary information related to the existing facilities / systems and conduct survey at site to understand the extent of scope of work involved, which is required for successful Hook-up & completion of work of the new facilities. Wherever there is interface of the new systems with the existing systems such as Switchgears/MCCs, ECS, Utilities etc. the new systems shall be of the same make as the existing one. For any exception to this a prior approval from Owner/PMC shall be taken	Kindly specify the existing systems which needs to be hooked up with new system under the present scope and also provide the make of Existing systems.	Bidder to refer ECS block diagram attached in Amendment.
72	Vol-1 Section-2	Page 2154 of 5756	1.16	The electrical system studies shall be carried out in ETAP latest version. Output results shall include sequence components of fault current, voltage vectors etc. EPC CONTRACTOR shall submit native ETAP OTI, MDB, and LIB files to OWNER/PMC. All these ETAP studies shall be carried out for normal and emergency power. Based on motor start-up study, VFD/soft starter as required shall be recommended by CONTRACTOR for any large drives. Following system studies shall be in the contractor scope:	We propose to undertake System Studies in PSSE software as it is widely used for studies related to EHV systems. ETAP generally is used for HV & LV systems. in view of same kindly review the software requirement and confirm your acceptance on the proposal.	Bidder to ensure compliance with the tender document requirement.
73	Vol-1 Section-2	Page 2154 of 5756	1.18	Bidder shall provide suitable provisions for the installation of Solar Panel / supporting structure / pedestals / U-clamps etc. on the rooftop of 220kV GIS building so that Solar Panels can be installed in the future.	Please note that the Civil works for solar panel mounting is done as per actual requirement of solar panel structures and that is done by solar panel agency as per their design/requirement. Bidder(EPCC-03) can design the Substation building suitable load bearing for Solar system only. Kindly review the requirement.	Bidder to ensure compliance with the tender document requirement.
74	Vol-1 Section-2	Page 2154 of 5756	1.26	Preparation of all layouts such as but not limited to equipment layouts, lighting layouts, cabling layouts, earthing layouts, lightning protection layout, HVAC, Fire detection and alarm, Paging system, Firefighting layout, Spray system, Roads, UG layout, Interface and interconnection systems.	Layout shall be prepared by the bidder only for the area & equipment fall under the present scope(EPCC-03) only. The other equipment/system which are falling in the area but is not the part of the EPCC-03, the same shall be taken care by other respective agency(ies). Kindly confirm	Bidder to ensure compliance with the tender document requirement.
75	Vol-1 Section-2	Page 2159 of 5756	1.52.3	Make list of HVPNL for all outdoor equipment and structural hardware shall be taken care as per the requirement of state grid. And approval shall be obtained from the state power supply agency before procurement and ordering. The OPGW and telemetry hardware to be considered for both ends.	Kindly provide approved Make list of HVPNL as part of Tender Documents	Bidder shall offer equipment make in line with the Vendor list and other provision of the Bidding documents. However obtaining approval of the equipment associated with interface with HVPNL shall be the responsibility of the Bidder
76	Vol-1 Section-2	Page 2160 of 5756	1.52.4	220KV cables from outdoor switchyard to 220KV GIS switchgear along with the required termination kits, jointing kits and Link boxes.	Kindly confirm if 220kV GIB is acceptable for interface of Outdoor switchyard to 220kV GIS as other transformer feeders connection are through GIB shown in Tender SLD.	Bidder to consider cables for inter-connection between switchyard and 220kV GIS.
77	Vol-1 Section-2	Page 2162 of 5757	1.52.8	OWNER/Other Contractors shall furnish the details of other six nos. of transformers for EPCC-03 to size the transformer bays and bay size as mentioned in layout is to be considered.	Bidder shall consider transformer(*supplied by other* s) bay size(i.e. 15m)maximum as provided in Substation layout Draw no. 359755-MDR-000-ELE-51A1-0002. In case of any increase in the bay width during project execution stage, cost implication shall be borne by IOCL. Please confirm.	Bidder shall consider the transformer way size for the proposal; as per the bidding document
78	Vol-1 Section-2	Page 2162 of 5757	1.52.8	Each Power transformer shall be provided with RCC oil soak pit below the transformers and further connection to main oil pit.	Oil Soak pit shall be provided for Transformers under the present scope only in line with scope matrix annexure-1. We understand that no civil works w.r.t. transformers to be supplied by other agency is to be considered by the bidder. Please confirm.	It is Bidder responsibility to design the firewall, transformer gate, transformer foundation including oil soak pit, trenches within transformer bays and connectivity with cable cellar, oil drain pipe upto oil collecting pits for transformer supplied by others and details will be shared post award.

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
79	Vol-1 Section-2	Page 2162 of 5757	1.52.8	Main gate for power transformers and Maintenance Gates for routine operation & maintenance shall be provided in transformer bay. Transformer bays to be covered with removable shed at double height. Gate and sheds for all these 6 Nos. of transformers shall be also considered	1. Kindly confirm whether Shed and gate to be considered for transformers which are to be supplied by other OEM/agency.. 2. Kindly Clarify Removable shed at double height of what? However, as per drawing no 359755-MDR-000-ELE-51A1-0002. T*ransformer bays shall be provided with overhead removable type shed of sheet metal. Shed height shall be at substation floor level and must have man height clearance* . Both requirement are different, kindly clarify actual requirement. In addition to above, matching the substation floor with Transformer Shed shall increase the height of Cellar room with no use of Cellar room. Kindly review the requirement and also provide the section View Substation Building Drawing.	Bidder shall refer to the published amendment for the clarification as shed are not required and stands excluded from the scope of EPCC-03
80	Vol-1 Section-2	Page 2162 of 5757	1.52.8	The Power and control / signal cables from the assigned 6.6KV Power feeder at CPP Substation-9 to the auxiliary transformer in 220kV GIS building including supply, laying, termination, testing & commissioning shall be by EPCC-03 Contractor. Complete cable raceway (trench or trays) as required for Power and control cables for the above 6.6KV Power feeder shall be by EPCC-03 contractor. For above 6.6kV feeder cable, supply, installation, termination, testing and commissioning of Line differential protection relays, CT's, FO cables at both ends shall be done by EPCC-03 Contractor. For cable routing under S/S 9 cellar in new cable trays shall be considered by EPCC-03 contractor for laying these cables. Contractor scope shall also include any modification or replacement of any component like CTs, meters etc. in case required to meet the transformer rating.	IOCL is requested to remove the Supply and works of 6.6kV Power feeder at CPP Substation-9 to aux transformer in 220kV GIS building, since almost all the HV and EHV cable supply and works is in scope EPCC-01. it suggested to keep this feeder scope in the scope of EPCC-01 supplier/contractor only due to ease of execution and cost optimization . it will be difficult to put cable laying resources only for this feeder by EPCC-03. Kindly review your requirement and confirm deletion of the said scope.	Bidder shall ensure compliance to the Bidding document and also refer to the published amendment
81	Vol-1 Section-2	Page 2166 of 5756	1.52.10	1 No. of EOT cranes for GIS hall of 10T (Minimum) capacity shall be provided for erection & maintenance of largest GIS component/assembly. The crane shall consist of all special requirements & lifting assemblies for erection & maintenance of GIS equipment.	As per referred clause, 1 no of EOT Crane for complete 220kV SS shall be provided. However, 3 Nos EOT crane have been stipulated under the requirement outlined at Technical specification part-3(Page 2097). Kindly confirm the exact requirement.	Bidder shall consider 1 no of EOT and also refer to published amendment
82	Vol-1 Section-2	Page 2169 of 5756	1.52.29	Supply of Portable Oil filtration unit.	Kindly provide specification if any	It is Bidder responsibility to offer the machine as per good Engineering and operational practice.,
83	Vol-1 Section-2	Page 2169 of 5756	1.52.27	Supply of SF6 Gas handling unit.	Kindly provide specification if any	It is Bidder responsibility to offer the machine as per good Engineering and OEM Recommendation /operational practice.,
84	Vol-1 Section-2	Page 2169 of 5756	1.52.28	All cable tray/ trench requirement for cabling interface of EPCC-03 scope of cables between 220kV GIS building and CPP Substation-9 shall be by EPCC-03 contractor.	Kindly remove the Cable tray scope from EPCC-03 and put it in Scope EPCC-01 for ease of execution since the scope may overlap with EPCC-01.	Bidder shall ensure compliance to the Bidding document and also refer to the published amendment
85	Vol-1 Section-2	Page 2169 of 5756	1.52.30	Obtaining approval from all statutory authorities such as Central Electricity Authority (CEA)/ Electrical Inspectorate, HVPNL etc., as applicable. Any modification or additional requirements of the electrical inspectorate shall have to be carried out by the CONTRACTOR at his own cost without affecting the time schedule. For all items procured abroad statutory approval from the local body shall be by CONTRACTOR.	We understand that any Application of statuary application shall be in the name of Owner only. Please confirm.	It is Bidder responsibility to obtain all approvals and application can be provided by the OWNER
86	Vol-1 Section-3, COMMON PROJECT MASTER SUPPLIER LIST	Page 1921-96 of 5756	6.12	COMMON PROJECTS MASTER SUPPLIER LIST-SECTION-C (ELECTRICAL)	BHEL is a regular OEM/supplier of the following major equipment with substantial field experience and having a proven track record. i) 220kV Outdoor CT. ii) 220kV Outdoor CVT. iii) 220kV Outdoor PT. iv) Control & Relay Panels. v) 415V AC LT switchgear. vi) DC Distribution Boards. vii) 220kV BPI. We request you to kindly add BHEL a supplier under the the COMMON PROJECTS MASTER SUPPLIER LIST for the above equipment.	Bidder to follow project master supplier list
87	Vol-1 Section-6,	Page 3934 of 5756	7	7.0 INSPECTION, TESTING AND ACCEPTANCE 7.1.2 All the equipment should have been successfully type tested as per the relevant standards. Type tests shall not have been conducted earlier than five years. In case the type tests were conducted earlier than 5 years, such type tests shall be carried out by the vendor free of cost before commencement of supply.	As per the latest guidelines issued by CEA, periodicity/validity of the Type test reports for GIS & Hybrid Switchgear (66kV & above systems) has been specified as Fifteen (15) years. In view of the above, we request M/s IOCL/MCDERMOTT to kindly accept the periodicity/validity of the type test for GIS as 15 years as on the last date of submission of bid.	Bidder to ensure compliance to bidding documents
88					Kindly let us know the document hierarchy od SLD, Specifications, Drawings	Bidder shall refer to the Bidding document for these requirement
89					Kindly let us know of the boundary wall entirely beyond the substation of EPCC-03 is in our scope	Bidder shall refer to the Bidding document for these details

	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX	
IndianOil	BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02	MCDERMOTT
	Reply to Pre-Bid Queries : Technical	

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
90					Kindly confirm the ERT, SBC, Soil thermal resistivity	Bidder shall refer to the Bidding document for these details
91					Kindly confirm if the scope of 6.6kV Panel is in Bidder's scope	Bidder shall refer to the scope of supply and work defined in the Bidding document for these details
92	359755-MDR-000-ELE-SOW-0003	6 of 26			Our understanding is that solar supply is not present scope of EPCC-03.	Bidder understanding is in order
93	359755-MDR-000-ELE-SOW-0004				For suitable provisions for the installation of Solar Panel / supporting structure / pedestals / U-clamps etc. on the rooftop of 220kV GIS building, please provide the details.	Bidder shall note that these details shall be discussed during detailed design and engineering post award.
94	359755-MDR-000-ELE-SOW-0005				Our understanding is that no need to be done equipment sizing calculations including power & distribution transformer sizing, all switchgear AC/DC UPS system sizing including batteries, lighting transformer sizing, cable sizing, CT sizing & Heat loss calculation, HVAC system, Fire detection system, Firewater demand and network sizing by tap software.	It is bidder responsibility to carry out all the required Design and relevant calculation and obtain approval from OWNER/PMC as per the Bidding document
95	359755-MDR-000-ELE-SOW-0003	10 of 26			Please confirm the scope of supply, installation, erection for conductor with hardware accessories from dead end tower of 220kV(HVPNL) to switch yard gantry. If scope in bidder(EPCC-03), please provide the detail document(like type of conductor, location of the dead end tower, hardware fitting, tower details etc.) of the dead end tower location to switchyard.	Bidder shall refer to published clarification and amendment.
96	359755-MDR-000-ELE-SOW-0003	11 of 26			Please confirm bidder shall follow HVPNL specification for Fiber optic transmission system(telemetry panel, data acquisition, FO cable, etc.)	Bidder understanding is in order
97	359755-MDR-000-ELE-SOW-0003				Please confirm the metering panel at remote substation is not scope of bidder supply.	Bidder understanding is in order
98	359755-MDR-000-ELE-SOW-0003	11 of 26			Please confirm 48V battery with DCDB at remote station is in scope of epcc-03 bidder or not.	Bidder understanding is in order that these are required for both the ends
99	359755-MDR-000-ELE-SOW-0003	11 of 26			Please confirm the outdoor metering panel for 220kV Incoming is in scope of EPCC-03 or not.	Bidder shall ensure compliance to the Bidding document
100	359755-MDR-000-ELE-SOW-0004				Our understanding is that 2 nos. of 1250kVA Distribution transformers for Substation Auxiliary power and 2 nos. 150kVA 415V / 415V Normal Lighting Transformer for this tender are the maximum requirement. Please provide the owner loads which shall be fed from distribution transformer at 220KV GIS building.	Bidder shall refer to bidding document and note that these are minimum ratings
101	359755-MDR-000-ELE-SOW-0005				Scope of no. of 6.6kV SWG Panels is missing in the tender for EPCC-03 contractor.	Bidder shall ensure compliance to the Bidding document and also refer to the published amendment
102	359755-MDR-000-ELE-SOW-0006				Please confirm the distribution transformer and auxiliary transformer are same.	Bidder understanding is in order
103	359755-MDR-000-ELE-SOW-0003				The tender sld (359755-MDR-000-ELE-21A1-0003) is indicated 4 nos. of 70MVA, 220/33kV, transformer is not shown cl-1.52.6.	Bidder understanding is in order
104	359755-MDR-000-ELE-SOW-0003				only 2 no. of 220/66KV, 60/75 MVA transformers is scope of supply of bidder. Balance 6 nos. of 220/66kV transformer and foundation, trenches, firefighting system, sheds, gates, oil soak pit and connection to oil pit is not scope of supply, installation.	Bidder understanding is in order for supply of transformer. However balance activities for all the transformer is in the scope of the Bidder except fire water spray
105	359755-MDR-000-ELE-SOW-0003	12 of 26			As per cl- 1.52.5, please provide no. of bays with feeder details of 220KV GIS.	Bidder shall refer to bidding document
106	359755-MDR-000-ELE-SOW-0003	12 of 26			Please confirm csd is required or not for 220KV GIS system.	CSD shall be considered for 220kV system based on the recommendation of the OEM as well as system studies.
107	359755-MDR-000-ELE-SOW-0003	16 of 26			As per our understanding is that online DGA is required for only bidder supplying 2 no. of power transformer.	Bidder understanding is in order
108	359755-MDR-000-ELE-SOW-0004				Please provide the detail of 48V DC system for PLCC equipment.	Bidder shall refer to bidding document
109	359755-MDR-000-ELE-SOW-0005				Please provide the no. of SCAP panel.	Bidder shall refer to bidding document
110	359755-MDR-000-ELE-SOW-0006				Please confirm the distance between 220KV GIS Substation to MAH Substations as per 66kV cable route.	Bidder shall refer to the plot plan attached with Bidding document
111	359755-MDR-000-ELE-SOW-0003	17 of 26			Please confirm the 6.6kV Cable with accessories, from MAH Substation & CPP substation to 2 Nos., 6.6/0.415KV, 1250kVA transformers is not scope of supply, installation, commissioning of EPCC-3 bidder.	Bidder shall ensure compliance to the Bidding document and also refer to the published amendment
112	359755-MDR-000-ELE-SOW-0003				Please confirm the distance between 220KV GIS substation to MAH substation and CPP Substation.	Bidder shall refer to the plot plan attached with Bidding document
113	359755-MDR-000-ELE-SOW-0003				Please confirm the cable tray, trench with accessories inside the 220kV GIS building (EPCC-03) for 6.6 kv cable from MAH Substation & CPP substation to 2 Nos., 6.6/0.415KV, 1250kVA transformers is not scope of supply, installation, commissioning of EPCC-3 bidder.	Bidder shall ensure compliance to the Bidding document and also refer to the published amendment

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
114	359755-MDR-000-ELE-SOW-0003	18 OF 26			Please clarify" for cable routing under S/S 9 cellar in new cable trays shall be considered by EPCC-03 contractor for laying these cables".	Bidder understanding is in order
115	359755-MDR-000-ELE-SOW-0003	18 OF 26			EPCC-03 Bidder is considering suitable size of AL cable for incomer of PCC, ASB. Please confirm the same.	Bidder shall ensure compliance to the Bidding document
116	359755-MDR-000-ELE-SOW-0003	18 OF 26			Please confirm 01 nos. of 415 V, maximum 2000A, 3-phase TPN, 50 kA single front draw-out type Power Control Centre (PCCs) is required for only 220kV GIS Substation.	Bidder understanding is in order
117	359755-MDR-000-ELE-SOW-0003				As per the cl- 1.18, solar is not the present scope. As per our understanding, only incomer provision has been provided in PCC. So, please provide the rating of incomer of the same in pcc panel. The provision for solar in PCC is not reflected in the sld(359755-MDR-000-ELE-21A1-0003)	Bidder shall ensure compliance to the Bidding document and also refer to the published amendment
118	359755-MDR-000-ELE-SOW-0003				Please confirm LCC(Local control cabinet) for 220KV GIS shall be part of GIS module or separate LCC .	This will be as per OEM and also refer to layout and scope of supply specified in the Bidding document
119	359755-MDR-000-ELE-SOW-0003				Please confirm the cable or duct is using for connection between 220KV GIS to outgoing equipment and transformers and confirm the scope of supply.	Bidder shall refer to published amendment
120	359755-MDR-000-ELE-SOW-0003				Please confirmed heating & illumination circuit power supply for panels shall be fed from LDB.	Bidder understanding is in order
121	359755-MDR-000-ELE-SOW-0003	19 of 26			DC loads for other contractors is missing in the tender. Please provide the same for finalize the battery. During detail design stage, increasing loads is not acceptable.	Bidder shall refer to published amendment
122	359755-MDR-000-ELE-SOW-0003	19 of 26			Please confirm the common DC system shall be consider for switchgear protection, control supply and critical lighting due to same voltage.	Bidder shall refer to the Bidding document
123	359755-MDR-000-ELE-SOW-0003				Please confirm the online temperature monitoring is required or not for DC system.	Bidder shall refer to the Bidding document
124	359755-MDR-000-ELE-SOW-0003	19 of 26			Please share details of the existing ECS for integration with new ECS.	Bidder shall refer to published amendment
125	359755-MDR-000-ELE-SOW-0003				Where are using Straight through joint kit for EHV, HV & MV.	It is bidder responsibility to work out the requirement based on the drum length and distance between the source and destination
126	359755-MDR-000-ELE-SOW-0003	22 of 26			Please confirm the earthing system calculation, earthing material supply, laying, installation of 220kV GIS building and switchyard are in scope of EPCC-03 or not.	Bidder shall refer to the Bidding document
127	359755-MDR-000-ELE-SOW-0003	21 of 26			Please confirm the cable tray is in present scope of supply of EPCC-03 for future bays/spares inside the cable trench within 220kV GIS Building.	Bidder understanding is in order
128	359755-MDR-000-ELE-SOW-0003				As per cl-1.52.6, the 6.6 cable with all accessories from MAH substation is not scope of supply of EPCC-3 contractor. But as per CL-1.60, The same is in scope of EPCC-3 bidder. Please confirm the same.	Bidder shall refer to published amendment
129	359755-MDR-000-ELE-SOW-0003				Please confirm the system integration only ECS or ECS as well as DCS.	Bidder shall refer to published amendment
130	359755-MDR-000-ELE-SOW-0003				Dimension of the Building for 220KV GIS is mismatch in the 359755-MDR-000-ELE-51A1-0002 and 359755-MDR-000-ARC-02-0006. Please confirm which one to be followed.	Bidder shall refer to published amendment
131	359755-MDR-000-ELE-SOW-0003				Please confirm the room size will be interchanged during the detail design stage.	Bidder understanding is in order but minimum size as indicated shall be maintained
132	359755-MDR-000-ELE-BOD-0001				Our understanding is that Online temperature monitoring system is applicable for only PCC.	Bidder shall refer to the Bidding document
133	359755-MDR-000-ELE-BOD-0001				UPS is not required 220kV GIS Substation (EPCC-3)	Bidder shall refer to the Bidding document
134	359755-MDR-000-ELE-BOD-0001				DG , auxiliary transformer for emergency power supply are not required for EPCC-03.	Bidder understanding is in order
135	359755-MDR-000-ELE-BOD-0001				Please provide the selection basis of ACB / MCCB with earth fault protection	Bidder shall refer to the Bidding document
136	359755-MDR-000-ELE-BOD-0001				Please confirm how many future bay space provision for GIS is considered in the 220KV GIS building.	Bidder shall refer to the Bidding document and published amendment
137	359755-MDR-000-ELE-51A1-0002				33kV Switchgear panel with cable, termination accessories is not scope of supply of EPCC-3	Bidder understanding is in order
138	359755-MDR-000-ELE-51A1-0002				Please provide no. of 6.6kV feeder details.	Query is not clear
139	359755-MDR-000-PRM-SOW-0003 Rev. 1	6 of 14			Cable, duct, tray with accessories for E&I interconnecting cabling and trays/duct (incl. 66KV cabling from 220KV GIS switchgear to MAH areas) is not scope of bidder(EPCC-3)supply, installation.	Bidder shall refer to the Bidding document as understanding is not correct
140	359755-MDR-000-PRM-SOW-0003 Rev. 1				For electrical system, In case of any conflict between the statutory requirements, codes and standards to be followed and various specifications, data sheets, documents etc. of this bid document which document should be followed.	Bidder shall refer to the Bidding document for these requirement
141	359755-MDR-000-ELE-SOW-0003				Please confirm the tapping point of the incomer Line whether it is inside the IOCL premises or outside the IOCL premises.	This will be outside the IOCL property line.
142	359755-MDR-000-ELE-SOW-0003				Further confirm if the EPC contractor should integrate tap off point to 220kV outdoor switchyard via underground cable or overhead conductors	Bidder shall note that the Integration shall be through overhead lines in line with Bidding document
143	359755-MDR-000-ELE-SOW-0003				If integration of tap off point to 220kV outdoor switchyard via underground cable, please suggest the method of laying of Cable i.e., directly buried/ HDD/ RCC Trench/structure. Further we request you to provide the existing underground utilities details along the proposed UG cable route.	Bidder shall note that the Integration shall be through overhead lines in line with Bidding document

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
144	359755-MDR-000-ELE-SOW-0003				We request you to provide the existing structure drawing for 220 kV Cable laying.	Bidder shall note that the Integration shall be through overhead lines in line with Bidding document
145	359755-MDR-000-ELE-SOW-0003				Please confirm the detailed specification for 220 kV Cable	Bidder shall refer to the Bidding document for these requirement
146	359755-MDR-000-ELE-SOW-0003				Please confirm 220 kV outdoor switchyard s/s to 220 kV GIS s/s will be connected through RCC trench/bus duct/ Buried trench.	Bidder shall refer to the Bidding document for these requirement
147	359755-MDR-000-ELE-SOW-0003				We understand that construction of trench for 66kV Cable from 220kV /66kV GIS s/s to MAH FPU is not present scope of EPCC-03.	Bidder shall ensure compliance to the Bidding document and also refer to the published amendment
148					If the mechanism to integrate tapping point of power to outdoor switchyard is through tower and conductor, then can we use the land in the substation for the same	Bidder shall refer to the Bidding document for these requirement
149					Kindly confirm if the project site provided to EPC bidder would be encumbrance-free, motorable and levelized land	Bidder shall refer to the Bidding document for these requirement
150					Kindly confirm if there are no ROW issues in the bidder's project site	Bidder understanding is in order
151					Kindly confirm if the clearance of trees & plantation and approvals of the same are in bidder's scope	Bidder understanding is not in order and shall refer to the Bidding document for these requirement
152					Kindly confirm the list of approvals, if any in the bidder's scope	It is clarified that all the approval or the scope are in the Bidder scope as per bidding document
153				General input	The following information are required for proper estimation of the lumpsum items: a) Kindly furnish the plot coordinates for the 220kV GIS Substation, 220kV outdoor switchyard inside existing Panipat Naphtha Cracker complex b) 220kV line orientation w.r.t the proposed 220kV Outdoor switchyard. c) Existing HVPNL substation name and location with coordiantes, from where 220kV incoming supply is coming to proposed 220kV outdoor switchyard d) Transmission line distance between the existing HVPNL substation to proposed 220kV outdoor switchyard	Bidder to note the following: a) Bidder to refer revised dwg.no.359755-MDR-000-ELE-21A1-0003 for gantry location. b) Bidder to refer revised dwg.no.359755-MDR-000-ELE-21A1-0003 for gantry location. c) These details will be provided to the successful bidder post award d) These details will be provided to the successful bidder post award
154	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 4 of 26	1.3	Cable / GIB	As per referred clause, it is mentioned as "*Basic and detail engineering activities for design of outdoor switchyard for receiving incoming overhead line and PLCC & Optical ground wire communication from Haryana Vidyut Prasaran Nigam Limited (HVPNL) substation and further connecting it to 220 kV GIS in substation building via* ***cables***" Based on above clause , we understand that 220kV OH incoming line is connected to 220kV GIS through cables. However as per, DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP), 220kV GIS incoming connection to OH lines is shown as GIB with SF6 to air bushing. a) Please confirm whether GIB or Cable shall be considered for inteconnection of OH line to 220kV GIS? b) If cable shall be considered, please provide the cable szie and number of runs to be considered c) Cable trench to be considered- RCC or direct buried trench?	Bidder to note the following: a) Bidder to consider cables for inter-connection between switchyard and 220kV GIS. b) Bidder to size the cables considering power capacity of 350MW per circuit. c) Bidder to ensure compliance to bidding documents
155	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 4 of 26	1.3	Substation end/ tower end	In continuation to above query, as per the clause description we understand that 220kV incoming supply shall be overhead line from existing HVPNL substation to proposed outdoor switchyard inside existing Panipat Naphtha Cracker complex. However, as per the DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15, integration of 220kV overhead lines from point of tap of off (on nearest 220KV transmission tower) to PNCP 220kV outdoor switchayard shall be EPCC-03 contractor. a) As both above clauses are contradicting each other, please confirm whether 220kV incoming OH line is coming directly from HVPNL substation (or) from nearest 220KV transmission tower to PNCP 220kV outdoor switchayard b) If 220kV incoming OH line is coming directly from HVPNL substation, we presume that 220KV bays are already available in the existing HVPNL substation for present scope. We do not envisage any remote end bay extension works at HVPNL substation. Please confirm.	Bidder to note the following: a) Bidder to note that incoming line connection/ tap-off from the nearest 220kV transmission line tower to PNCP 220kV Switchyard is in EPCC-03 Contractor's scope. Bidder may consider distance of 40-50 meters from switchyard gantry upto last tower of HVPNL and exact coordinates will be provided to the successful bidder post award. b) Bidder to note that all hardware (including gantry)/ software along with accessories required for interconnection between nearest tap-off point (from transmission line tower) to 220kV Switchyard for complete integration of protection, control & telemetry FO network, OPGW network and ECS interface with the upstream HVPNL substation shall be by EPCC-03 Contractor.
156	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000	Notes 15	Location of tapping	a) Please provide the location of nearest 220kV HVPNL grid transmission tower along with coordinates b) Please confirm whether two incoming lines for proposed 220kV outdoor switchyard are coming from same HVPNL substation. c) Please confirm whether bidder need to consider LILO of existing HVPNL transmission line or continue extending the existing Double circuit transmission line from any Tapping point? d) Please provide TL survey drawing along with the route length for OH line	a) Bidder to refer to clarification given above. b) Bidder's understanding is in order. c) Bidder to connect the double circuit 220kV transmission line from the tap-off point to PNCP 220kV Switchyard. D) Bidder to refer to clarification given above.

	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX	
IndianOil	BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02	MCDERMOTT
	Reply to Pre-Bid Queries : Technical	

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
157	DWG.NO. 359755-MDR-000-ELE-53A1-0001	Page 44 of 1000		OVERALL CONCEPTUAL CABLE ROUTING - MAH	220kV Switchyard gantry location is not shown in the referred drawing. Please provide the incoming gantry location with coordinates for estimating the length of incoming 220kV cables to GIS.	Bidder to refer revised dwg.no.359755-MDR-000-ELE-21A1-0003 for gantry location.
158	DWG.NO. 359755-MDR-000-ELE-53A1-0001	Page 44 of 1000		OVERALL CONCEPTUAL CABLE ROUTING - MAH	a) Please confirm whether highlighted 6.6kV cable route under EPCC-03 contract (shown as pink line) from proposed 220kV GIS substation to the control room substation S/S-9 shall be direct buried trench or RCC trench? b) Also, please provide the typical cross section of the trench to be considered.	a) Bidder shall ensure compliance to the Bidding document and also refer to the published amendment B) Bidder shall design and consider the trenches inline with the engineering philosophy defined in the bidding documents.
159	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000		SLD	As per the referred SLD, connection of 220kV GIS to 220/66kV transformer for MAH substation shown as GIS bus duct. Please confirm whether transformer termination shall be with SF6 to air bushing or SF6 to oil bushing.	Bidder to consider cables for inter-connection between 220kV GIS and 220/66kV Power Transformer.
160	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 9 of 26	1.49 (iii)		As per referred scope of supply, it is mentioend as "*220KV, 66KV power, control and feeder differential OFC cables*". However as per cl.no- 1.52.8 , we understand that 66kV cables shall not be in the present scope. Please confirm.	Bidder understanding is correct, 66kV cable scope is in EPCC-01 Contractor's scope. However, EPCC-03 Contractor shall coordinate with Other/ EPCC-01 Contractor for required interface regarding required cable trays/ trench inside 220kV GIS Building. Also interfaces with Other/ EPCC-01 Contractor w.r.t to design of 220kV GIS is in EPCC-03 Contractor scope.
161				HAZOP study	a) We understand that 220kV GIS and 220kV switchyard area shall be classified as "clean area" free from Hazardous atmosphere. Hence HAZOP study shall not be applicable to the 220kV GIS and 220kV switchyard area. Please confirm b) If HAZOP study shall be carried out, please provide a separate line item in price schedule.	Bidder understanding is in order
162	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 10 of 26			As per referred clause, it is mentioned as "Integration of 220KV Overhead lines from point of tap off to 220KV outdoor switchyard. Any required items/structures, **HTLS or ACSR Moose** equivalent conductors/busbars, Insulators etc. for connecting to 220kV Outdoor switchyard and coordination with state grid authorities as applicable". As per above description, please confirm whether HTLS or ACSR moose condcutor need to be considered for overhead transmission line.	Bidder to consider HTLS conductor
163	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 4 of 26	1.3	Cable / GIB	As per referred clause, we understand that 220kV GIS shall be connected to 220kV incoming gantry with the 220kV cables. In this regard, please provide the MVA rating of transimission lines in order to size the incoming cable. (or) Please furnish the number of runs per phase & the cable size (in Sq.mm) for 220kV cable.	Bidder to size the cables considering power capacity of 350MW per circuit.
164	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000		SLD	We presume that the number of Outgoing & Incoming feeders for 220kV shall be considered as per attached SLD. Please confirm whether Bidder's understanding is in order.	Bidder understanding is in order
165	359755-MDR-000-MEC-SOW-0003 Rev. 0	Page 8 of 12	2.1	EOT CRANE	As per referred clause, 3Nos of 10 Tons EOT cranes are mentioned. However, as per 359755-MDR-000-ELE-SOW-0003 Rev, cl.no-1.52.29, 1No EOT crane mentioned. Please confirm the exact requirement and puprose of 3 Nos EOT cranes.	Bidder to ensure compliance to published amendment and consider 1 nos. EOT cranes for GIS.
166	DWG.NO. 359755-MDR-000-ELE-51A1-0002 SUBSTATION LAYOUT - 220kV GIS	Page 47 of 1000			Please confirm whether mentioned building sizes as per referred layout are minimum or bidder can optimise the same based on the requirements.	Bidder to ensure compliance to bidding documents
167	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 19 of 26	1.52.19		As per referred clause, it is mentioned as "*The new ECS system shall be of the same make (ie. ABB) that is existing in plant for smooth tie up of the system*". We are requesting IOCL to revise the above clause which is restricting make of ECS in order to avoid monopoly and to have uniform bidding conditions.	PNCP is sync with the Grid supply at 33 KV level and share the load in the parallel. Overall ECS control will be from 220KV GIS which also include the existing PNCP electrical load. For seam less integration same ECS system will be required.
168	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 14 of 26	1.52.6		As per referred clause, it is mentioned as "*Modification of existing SAS & ECS system interface for incorporation of extension panels for existing GIS, including all hardware & software required as per existing systems design / make / model*". As per above clause, it is mentioned as existing SAS. However, we understand that only ECS is applicable for present scope. No scope of supply of new SAS and integartion/augmentaion of existing SAS in the present scope. Please confirm.	Bidder understanding is in order

	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX	
IndianOil	BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02	MCDERMOTT
	Reply to Pre-Bid Queries : Technical	

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
169	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000		SLD	As per referred SLD, under notes, it is mentioned as the responsibility of "detail engineering contractor". As the SLD depicts the scope of work for other contractors as well, we presume the actual scope under this contract shall be as per Annexure-I, scope of work/Responsibility/Interface Matrix. Please confirm.	Bidder to ensure compliance to bidding documents
170	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000		SLD	As per referred SLD, it is shown that High speed earth switch is required for 220kV GIS . As a standard utility practice we request IOCL to accept High speed Earth switch only for Incoming line bays. For transformer bays the same is not required. Please confirm.	Bidder to ensure compliance to bidding documents
171	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 5 of 26	1.11	Ratings	As per the referred clause, "*The CONTRACTOR shall note that equipment ratings and quantity, wherever specified in the bid package, are to be considered as minimum rating & quantity*". As the Power transformer (220/66kV 60/75MVA) is feeding power supply to MAH-1, we request IOCL to define the correct MVA rating of this transformer. As the loads are not in Bidder's control, any increase in the MVA rating shall have suitable implications. Please check & confirm.	Bidder to ensure compliance to bidding documents
172	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000		Current Transformer	Number of CTs along with CT Cores are not mentioned for 220kV GIS. Please furnish the following details in this regard: a) Number of cores b) CT ratio c) CT parameters such as accuracy class, VA burden, knee point voltage, magnetizing current etc.	Bidder to ensure compliance to published amendment
173	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000		Potential Transformer	Number of line , bus VT and VT Cores are not mentioned for 220kV GIS. Please furnish the following details in this regard: a) Number of cores b) VT ratio c) VT parameters such as accuracy class & VA burden	Bidder to ensure compliance to published amendment
174	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000			As per the referred SLD, connection of 220kV GIS to 220/66kV transformer for MAH substation shown as GIS bus duct. Similarly for future contractor scope 220/66kV transformers, GIS bus duct/cable is mentioned. a) Please confirm whether Transformer GIS bays shall be considered with GIS bus duct or Cables. b) If cable shall be considered, please provide the cable szie and number of runs to be considered Detailed specification of cable shall be furnished c) Cable trench to be considered- RCC or Buried	a) Bidder to consider cables for inter-connection between switchyard and 220kV GIS. b) Bidder to ensure compliance with the tender document requirement. c) Bidder to ensure compliance with the tender document requirement.
175	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 17 of 26	1.52.8	66kV Cable size	Please specify the cable size and number of runs per phase to be considered for 66kV cable between 220/66kV transformers & 66kV GIS to desgin the transformer cable chambers.	Bidder to ensure compliance to bidding documents
176	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 10 of 26	1.52.3	PLCC communication	Please specify the rating (inductance & current rating) of 220kV Wave trap.	Bidder to ensure compliance to bidding documents
177				Control, relay and protection system	a) Please confirm whether Busbar protection is required for 220kV ? b) Please confirm the type of busbar protection **scheme i.e. Centralized or decentralised?**	a) Bidder to consider Busbar protection for 220kV GIS b) Bidder to consider Centralized busbar protection scheme
178	DWG.NO. 359755-MDR-000-ELE-51A1-0002 (SUBSTATION LAYOUT - 220kV GIS)	Page 47 of 1000		GIS building	We presume that the 220kV GIS building shall be constructed only for the number of bays as indicated in the DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP). Please confirm.	Bidder's understanding is in order, however 220kV GIS shall be extendible in future on both ends.
179	359755-MDR-000-ELE-BOD-0001 Rev. 1	Page-Page 10 of 10	Sl.No-50	Solar PV	We presume the future roof top solar (in IOCL scope) is for Indoor lighting only. Please confirm the rating in order to design the GIS Hall suitably.	Bidder to ensure compliance to bidding documents
180	DATASHEET FOR EHV POWER TRANSFORMER			Transformer	Please specify if any Ceiling limits are there for transformer losses. If so, please specify the Maximum losses allowable for 220/66kV, 60/75MVA transformer	Minimum guaranteed efficiency at 0.8 pf at 40% load shall not be less than 99.65% for transformers above 50MVA rating (inclusive of tolerance).
181	DATASHEET FOR EHV POWER TRANSFORMER			Transformer	Please confirm whether any loss capitalization is there for 220/66kV, 60/75MVA transformer. Please confirm whether the losses are considered for bid evaluation?	Bidder to ensure compliance to bidding documents
182	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 11 of 26	1.52.3	Telecommunication equipment	We understand that interfaces at remote end FOTE are to be provided in the scope of this package. Please provide the following details of HVPNL end FOTE: i) Make and Model number ii) Transmission capacity (STM-1/STM-4/STM-16)	Bidder understanding is in order. Required details shall be provided post award to successful bidder.

	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX	
IndianOil	BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02	MCDERMOTT
	Reply to Pre-Bid Queries : Technical	

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
183	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 19 of 26	1.52.19	SCADA System	As per referred clause, *"Integration with HVPNL is also required for meters/ switchgear for implementation of load trimming scheme, availability-based tariff metering and SCADA/ ECS interface for real time data visibility"* We understand that the required signals/metering parameters shall be communicated to the remote end HVPNL substation through PLCC & FOTE. We do not envisage any SCADA integration works at the remot end substation. Bidder's responsibility is limited only to ensure the transmission of required data to the remote end substation. Please confirm.	Bidder understanding is in order
184	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 19 of 26	1.52.19	SCADA System	Please furnish the following details w.r.t the HVPNL end SCADA system: a) Make & Model number of SCADA b) Location of HVPNL SCADA (i.e. the station name)	These details shall be shared with successful bidder post award
185	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 19 of 26	1.52.19	DCS System	As per referred clause, " *Interconnecting FO cables between DCS and ECS system shall be provided by Contractor as required"* Please furnish the following details w.r.t the existing DCS system: a) Make & Model number b) Location of existing DCS & its distance from the proposed 220kV GIS Substation Control building c) Number of runs of FO Cables d) Number of FO fibres	Bidder to ensure compliance to published amendment
186	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 14 of 26	1.52.6	SAS & ECS	Please furnish the following details w.r.t **SAS & ECS** at existing substation (SS-63) a) Make & Model number b) Location of existing SAS & ECS and their distance from proposed 220kV GIS Hall	Query not clear
187	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000	Notes-12	SLD	As per referred notes, space to place 33kV GIS is mentioned. We understand that the number of 33kV bays shall be considered as shown in the referred SLD. Please confirm.	Bidder to ensure compliance to bidding documents
188				Bay configuration & Specification for 220kV GIS	a) Equipment details (bay configuration) for each bay are not mentioned for 220kV GIS . Kindly furnish the details. b) Specification for 220kV GIS is not available as part of tender documents. Please furnish the same.	Bidder to ensure compliance to bidding documents
189	---	---			As the Substation buildings are located in an isolated location and the electrical installations including transformers are contained inside the building, we do not envisage any specific requirements to be considered for hazardous atmosphere. Please confirm. Otherwise please specify the hazardous area classification that need to be followed for this project, in order to have an uniform bidding platform for all the bidders.	Bidder's understanding is in order. Transformers will be installed outside bays of the substation.
190	359755-MDR-000-ICS-SPC-0001 Rev. 0	Page 17 of 59	3.5.1.11		As per referred clause, "*All control/ alarm cables shall be twisted pair with a conductor size of 1.5 mm2 minimum*" We propose twisted pair cables only for Analog signals. For other, control, status & alarm cables, we propose to use control cables with cores (such as 2C, 3C, 5C etc). Please confirm.	Bidder to ensure compliance to bidding documents
191	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 12 of 26	1.52.5		As per referred clause, we understand that supply and integration of differential relay with panel at HVPNL end shall not be in bidder scope of supply. Please confirm whether bidder's understanding is in order.	Bidder to ensure compliance to bidding documents
192	Annexure -1 - Scope of work/responsibility/interface matrix	PAGE NO-375 OF 1200	Sl.No-5		As per referred clause , supply of 48V DC system for PLCC shall be in present scope , however, same is not shown in referred SLD. Kindly confirm the requirement and provide the specification & configuration diagram for 48V DC system.	All equipment required for PLCC communication at both sending and receiving end is part of EPCC-03 Contract.
193	359755-MDR-000-PIP-SOW-0003 Rev. 0	Page 5 of 9	1.16.		Kindly provide the version of E3D software to be used for 3D modelling.	Version of E3D shall be discussed and finalised during Kick-off meeting post award
194					We understand that only cable trays for 230kV switchyard is in bidder's scope. Further, pipe rack/cable rack outside the 230kV switchyard fence is not in scope of bidder.	Bidder to ensure compliance to bidding documents

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
195	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 16 of 26	1.52.8		As per the referred clause, "*Contractor to ensure that valid type test certificates of offered design of transformer are available for Heat run test, short circuit test, IP test of panels, dielectric test, etc. as per type tests listed in IS:2026. In case of non-availability of short circuit test reports, dielectric test reports, IP test reports, impulse test reports, etc. same shall be conducted without any cost and time implication to Owner/ PMC*" a) We request IOCL to accept the Dynamic short circuit withstand test reports which has already been conducted on similar or higher ratings (both voltage & kVA rating) in line with IEC 60076-5. b) Also we request IOCL to accept dynamic effects of short circuit by detailed calculations by check against the manufacturer's design rules for short circuit strength as per IEC 60076 part-5 in case of non availability of short circuit test report. Please confirm.	Bidder to ensure compliance to bidding documents
196					There is no detailed specification for Standalone SCAP Panel for manual operation of 220KV Switchyard, 220 KV GIS, Transformer, Sync Metering in tender documents. Please check and provide the same	Query is not clear
197	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 6 of 26	1.17		As per referred clause, it is mentioned as "*connection with existing Substation and Control room through overhead bridge*" a) However, there is no scope regarding connections with existing subsation and control rooms. Please provide the detailed scope related to Overhead bridge. b) Also, please provide the overhead bridge drawing.	Bidder to ensure compliance to published amendment
198	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 10 of 26	1.52.3		As per referred clause, it is mentioned as,"*The approval of all outdoor switchyard-related documents through HVPNL (state grid) is compulsory like GELO, Outdoor CT, PT, CVT, Meters, and wave trap*." In this regards, please provide the HVPNL specifications GELO (general electrical layout), Outdoor CT, PT, CVT, Meters, and wave trap.	These details shall be shared with successful bidder post award
199					There is no detailed specification for 220kV GIS in the tender documents. Please check and provide the same	Bidder to refer tender documents
200	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 10 of 26	1.52.3		We understand that PLCC/FOTE equipments are already available at existing HVPNL substation. No need to conisder under present scope. Please confirm.	All equipment required for PLCC / FOTE communication at both sending and receiving end is part of EPCC-03 Contract.
201	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 26 of 26	3.1.3		As per referred clause, "Mandatory spares shall be as Refer Doc no. 359755-MDR-000-PRM-LST-0001" Please provide the Doc no. 359755-MDR-000-PRM-LST-0001 as same is missing in tender documents	Bidder to ensure compliance to bidding documents, as the document is already available in the same.
202	359755-MDR-000-ICS-SOW-0002 Rev. 2	Page 5 of 7	2.5		As per referred clause, *"Modification required in existing DCS of associated unit for providing monitoring/Status signals of new electrical system to Control room including supply and installation of Instrument cables, Fibre optic cables, trays, conduits, and other accessories shall also be in EPCC-03 scope*" As DCS is related to process control, we request IOCL to exclude the abovr scope from this contract.	Bidder understanding is in order and scope of DCS is excluded from EPCC-03 scope.
203	359755-MDR-000-ICS-SOW-0002 Rev. 2	Page 5 of 7	2.5		Please provide the following details as per above description a) Existing DCS architecture b) Exact modification works to be considered in the existing DCS As DCS is related to process control, we request IOCL to exclude the abovr scope from this contract.	Bidder understanding is in order and scope of DCS is excluded from EPCC-03 scope.
204	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 18 of 26	1.52.10		As per referred clause,"*at CPP Substation-9 : Contractor scope shall also include any modification or replacement of any component like CTs, meters etc. in case required to meet the transformer rating*" a) As per above description, we understand that 6.6 KV cable shall be taken from existing switchgear at CPP Substation-9 b) Please provide the GA & scheme drawings of existing 6.6kV switchgear at CPP Substation-9 to understand the modification works c) Make and model number of existing 6.6kV switchgear d) Existing CPP Substation-9 plan and section view of buildings e) Existing cable routing layout of CPP Substation-9	Bidder to refer published amendment for clarity

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
205	Price schedule (FORM SP-5)		SL.NO-2.1.3	220KV GIS IBP	220kV GIS isolating breaker panel (IBP) is mentioned in the referred price schedule. In this regard, please furnish the following: a) Specification & Datasheet for IBP b) Revised tender layout and SLD showing the location of IBP.	Bidder shall refer to the technical section of bidding document for 220KV GIS.
206	Price schedule (FORM SP-5)		SL.NO-2.1.21	Package PLC	There is no detailed specification, requirements are not mentioned for the Package PLC However same is mentioned in the referred price schedule. Please check and provide the specifcations/architecture with clear requirements	Bidder shall refer to the technical section of bidding document.
207	Price schedule (FORM SP-5)		SL.NO-2.1.13	MCC feeder list	There is no feeder list and SLD for MCC. Please provide the same	Bidder to ensure compliance to bidding documents
208	Price schedule (FORM SP-5)		SL.NO-2.1.12	HV switchgear	We understand that there is no supply of 6.6 kV (HV switchgear) under present scope as per referred line item. Please confirm.	Bidder to refer published amendment for clarity
209	Price schedule (FORM SP-5)		SL.NO-2.1.22	Field instuments	Please confirm what are the field instruments to be considered under this line item.	It is clarified that field instruments required for Packages such as cooling tower, Air System, Fire Fighting system, etc.
210	DWG.NO. 359755-MDR-000-ELE-21A1-0003 (OVERALL KEY SINGLE LINE DIAGRAM – INTEGRATED MAH & PNCP),Notes -15	Page 46 of 1000	Notes 15	PCC	As per part-3, spec: 359755-MDR-000-ELE-SOW-0003 Rev. 0, Page 18 of 26, cl.no-1.52.12 "*PCC shall have two incomers from transformers and provision for one incomer from rooftop solar photovoltaic system and bus coupler with auto changeover facility* ". However as per the referred SLD, only two incomers from transformer are shown. Kindly confirm the requirement of third incomer.	Bidder to ensure compliance to published amendment
211				General	We presume that Earthing, DSLP, Lighting, Cable trench & other associated works are required to be executed only for the present scope of works within the substation premises. Please confirm.	Bidder to ensure compliance to bidding documents
212	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 19 of 26		Tariff meters	Please confirm the following as per referred clause: a) Accuracy class of Tariff meters b) specification detailing the requirements such as ABT & TOD features c) We presume only incoming HVPNL line bays are to be provided with Tariff Meters. Please confirm.	These details shall be shared with successful bidder post award
213	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 10 of 26	1.52.1	O/H Line	Please furnish the Conductor type & size of O/H Transmission line coming from HVPNL end to 220kV Outdoor switchyard incomers.	Bidder shall consider HTLS conductor
214	359755-MDR-000-ELE-BOD-0001 Rev. 1	Page 3 of 10	Sl.No-50	EPMC	As per referred clause a separate EPMC has been envisaged for feeding emergency loads. However in the SLD EPMC is not shown. Kindly confirm the requirement.	Bidder to ensure compliance to published amendment
215	RHQ- Maintenance & Inspection, Project	Page 907 of 1200	-11	Transformer	Please furnish the following Neutral CT details for transformers: a) Number of cores b) CT ratio c) CT parameters such as accuracy class, VA burden, knee point voltage, magnetizing current etc.	It is bidder's responsibility to design and select CT specifications as per power system requirement
216				DG Set	We presume that DG Set is not included the present scope of work . Hence we do not envisage any building for DG set under the present scope of works. Please confirm whether Bidder's understanding is in order.	Bidder understanding is in order
217				Surge arrestor	Please furnish the Cantilever strength for outdoor AIS Surge arrester housing.	It is bidder's responsibility to design and select cantilever strength / specifications as per power system requirement
218				CT/VT/CVT	Please furnish the Cantilever strength for outdoor AIS CT/VT/CVT housing.	It is bidder's responsibility to design and select cantilever strength / specifications as per power system requirement
219	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 10 of 26	1.52.3	220kV GIS BUS PT	As per referred clause Bus PT is mentioned in the outdoor switchyard. We presume that BUS PT shall be part of GIS. Please confirm.	Supply, installation, testing and commissioning of separate metering CT and PT in switchyard is part of EPCC03 Contractor's scope
220	359755-MDR-000-ELE-SPC-0036 Rev. 0	Page 17 of 38	7.7.3	EHV POWER TRANSFORMERS	As per the referred clause, it is mentioned, "Cable box up to 66 kV shall be phase segregated air insulated type in single phase or three phase arrangement." However, as per Datasheet No. 359755-MDR-000-ELE-DAS-0025, Sl. No 92, Terminal connection for LV side (i.e. 66kV side) is mentioned as Oil filled cable box. Please clarify the exact requirement, as the above two clauses are contradicting.	Bidder to ensure compliance to published amendment
221	359755-MDR-000-ELE-SPC-0036 Rev. 0	Page 18 of 38	7.7.6	EHV POWER TRANSFORMERS	As per the referred clause, it is mentioned, "For transformers with SF6 gas insulated bus duct, provision shall be provided to connect gas insulated bus duct adaptor compartment. Bushing turret shall be provided with facility to measure the tan o of bushing." Also, as per 359755-MDR-000-ELE-SOW-0003 Rev. 0, Clause 1.52.7, "GIS Bus du cts - 220KV, 2000A, 50KA (3 Sec) GIS Bus ducts from GIS switchgear to 2 Nos. of 220/66KV Power transformers single phase busduct with all bends and flexibles comprising of the Gas monitoring devices, barriers, pressure switches, UHF PD sensors etc. However, as per Datasheet No. 359755-MDR-000-ELE-DAS-0025, Sl. No 91, Terminal connection for HV side is mentioned as Oil filled cable box. Please clarify the type of termination i.e. Cable termination (or) GIB termination ?	Bidder to ensure compliance to published amendment

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
222	359755-MDR-000-ELE-SPC-0036 Rev. 0	Page 18 of 38	7.7.6	EHV POWER TRANSFORMERS	As per the referred clause, it is mentioned, "For transformers with SF6 gas insulated bus duct, provision shall be provided to connect gas insulated bus duct adaptor compartment. Bushing turret shall be provided with facility to measure the tan o of bushing." And, as per 359755-MDR-000-ELE-SOW-0003 Rev. 0, Clause 1.52.7, "GIS Bus du cts - 220KV, 2000A, 50KA (3 Sec) GIS Bus ducts from GIS switchgear to 2 Nos. of 220/66KV Power transformers single phase busduct with all bends and flexibles comprising of the Gas monitoring devices, barriers, pressure switches, UHF PD sensors etc. Please clarify whether the termination of SF6 Insulated busduct onto the Transformer bushing is SF6 to Air termination or SF6 to Oil termination?	Bidder to consider cables for inter-connection between switchyard and 220kV GIS.
223	359755-MDR-000-ELE-SPC-0031 Rev. 0			EXTRA HIGH VOLTAGE CABLES AND ACCESSORIES	Please provide the following specifications for 220kV EHV Cables: 1) Bonding cable specifications 2) Earth return cable specifications 3) Specification for 220kV Straight through Joints	It is bidder's responsibility to design and select cable specifications including bonding, joints, earth return system, etc., as per power system requirement
224	359755-MDR-000-ELE-SPC-0031 Rev. 0			EXTRA HIGH VOLTAGE CABLES AND ACCESSORIES	Please provide the following details for 220kV EHV Cables: 1) Short circuit withstand current and duration for Metalic screen/metalic sheath. 2) Soil Thermal resistivity	It is bidder's responsibility to design and select cable specifications including short circuit duration, Relay coordination, soil characteristics, etc., based on the power system studies and scope requirement
225	359755-MDR-000-ELE-SPC-0031 Rev. 0	Page 6 of 13	3.6.5	EXTRA HIGH VOLTAGE CABLES AND ACCESSORIES	As per the referred clause, it is mentioned that, The EHV cable shall be with one of the following constructions. For details of the EHV cable, refer to project specification/ datasheet. i) Water Blocking Laminate Taped with Aluminium Foil (Poly-Al-Poly) ii) Corrugated Aluminum Sheathed iii) Lead Alloy Sheathed However as per 359755-MDR-000-ELE-SOW-0003 Rev. 0, Clause 1.52.11 it is mentioned as, "Cables - 220KV, 66KV Power cables with Copper conductor, XLPE insulated, armored cables with termination kits and straight through jointing kits, link boxes with/ without SVL as required for EPCC-03 scope equipment and systems." Out of the above three construction, only 'Water Blocking Laminate Taped with Aluminium Foil (Poly-Al-Poly)' is having armour as an additional layer. Please clarify whether 220kV EHV cables can be unarmoured if the other two constructions are chosen?	Bidder shall ensure that all cables are armoured
226	359755-MDR-000-ELE-SOW-0003 Rev. 0,	Page 12 of 26	1.52.5	Online Temperature Monitoring for GIS	As the Online temperature monitoring system is not a standard offering with all the GIS suppliers available in market, we request IOCL to delete the requirement from the contract. Please check & issue suitable amendments.	Bidder to ensure compliance to bidding documents
227	359755-MDR-000-ELE-SOW-0003 Rev. 0,	Page 12 of 26	1.16	Electrical System Studies	As the scope under this contract is limited only to 220kV system, we understand our scope w.r.t system studies are limited only to the modeling of 220kV system & associated transformers. Further downstream such as 66kV & 33kV shall be modeled by PMC or respective contractors. Bidder of this contract shall facilitate by providing the necessary inputs & OTI files to carry out the overall study. Please confirm.	Bidder to ensure compliance to bidding documents
228	359755-MDR-000-ELE-DAS-0025		Sl. No. 39 to 41	Percentage impedance	As per the referred datasheet, the percentage impedance is mentioned as per IS. However, as per the latest version of IS 2026 (Part-1) no impedance values are being specified. In this regard, we request IOCL to specify the impedance values in order to have uniform bidding conditions.	Bidder to ensure compliance to bidding documents
229	359755-MDR-000-PIP-SOW-0003 Rev. 0	Page 5 of 9	1.16	3D Modeling software	As per the referred clause E3D software is mentioned for 3D modeling of piping. However, as per 359755-MDR-000-MEC-SOW-0003 Rev. 0, Attachment 1, Page 10 of 12, Sl. no 6, SP3D software is mentioned for modeling. Please check & clarify which software shall be used?	3D modeling will be on E3D platform
230	359755-MDR-000-ELE-SOW-0003 Rev. 0	Page 7 of 26	1.21	3D Modeling software	Please confirm whether Bidder can use any other quivalent 3D modeling software such as Revit or Equivalent?	Bidder to ensure compliance to bidding documents

IndianOil			MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX			MCDERMOTT
			BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02			
			Reply to Pre-Bid Queries : Technical			

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
231	359755-MDR-000-PIP-SOW-0003 Rev. 0	Page 5 of 9	1.16	3D Modeling software - License	i) As per referred clause, it is mentioned "Generation of 3-D model using E3D software or approved equivalent and presentation to the PMC / OWNER for minimum 3 stages as per Bid document and deliver "AS BUILT" Model after the pre-commissioning and commissioning of the plant along with 1 set of E3D software with base data and library and having validity of 2 years from the date of handover to OWNER." ii) Also, as per 359755-MDR-000-ELE-SOW-0003 Rev. 0, Clause 1.16, "After completion of the system studies all data of the electrical equipment shall be updated as per final ratings and the model shall be submitted to OWNER/PMC along with base data bank and 2 Nos ETAP licenses for operation for 3 years." iii) However as per, 359755-MDR-000-PRM-PRC-0001 Rev 0, Clause 7.52, "CONTRACTOR shall include the supply of Two nos. E3D software license with base data and one no. ETAP software license with base data and both licenses shall have validity of minimum 3 years." Since the above statements i) & ii) are contradicting with iii), please clarify the following: 1) Number of E3D software licenses and for how many years? 2) Number of ETAP software licenses and for how many years?	Bidder to ensure compliance to published amendment
232	359755-MDR-000-PIP-SOW-0003 Rev. 0	Page 5 of 9	1.16	3D Modeling software - License	In continuation to the above query, please clarify the following: 1) The software sub-packages required to be included in the license for E3D 2) The software sub-packages required to be included in the license for ETAP	It is clarified that all licensed softwares shall be complete with software sub-packages as required for development of 3D model review, extraction of deliverables, interface with production/fabrication, engineering management, etc.
233	359755-MDR-000-PIP-SOW-0003 Rev. 0			3D Modeling software	Please furnish the scope of all the 3D design works need to be done using E3D/SP3D software.	It is clarified that EPCC-03 scope of work shall be included for 3D modeling on E3D platform. Detail of scope is specified in the bidding documents. Further details can be finalised post award.
234					Please confirm whether room temperature can be taken as the minimum ambient for sizing the 220V, 110V , 48V Batteries.	Bidder shall refer to technical section of bidding documents.
235				Spares & Special Tools	Please furnish the following details: a) Commissioning Spares b) O&M Spares c) Special Tools & Tackles	It is bidder's responsibility to work out these requirements based on their experience and OEM recommendations
236				Order of precedence	Incase of contradiction between the following, please confirm the order of precedence to be followed: a) BPS b) Annexure-I (Scope of work/responsibility/Interface Matrix) c) Specification d) Datasheet e) Drawings	Bidder to ensure compliance to bidding documents for order of precedence
237					Please provide the data sheet for 220kV Cable as same is missed along tender documents.	It is Bidder's responsibility to develop data sheet for 220kV Cable during execution, and submit the same to Owner/PMC for approval.
238	---	---			Please furnish feeder wise IO List for ECS .	Bidder to ensure compliance to published amendment
239				Existing GIS	As per our site visit, we understand that "I*nterconnection of existing GIS with Master control room building"* shall be in the scope of bidder. However, there is no clarity regarding existing GIS and also similar scope is not mentioned in the tender documents. We are not considering any nterconnection of existing GIS with Master control room building	Bidder understanding is in order
240				66kV SCOPE	As per our site visit, we understand that "Outgoing feeder from 66kV side is not in the scope of this package & will be executed by other contractor. Based on scope of works, we understand that bidder terminal point is upto transformer secondary side only. 66kV cables and 66kV GIS shall be part of seperate contract. Please confirm.	Bidder understanding is in order
241				Validity of type test	We request IOCL to accept the validity of type tests as per latest CEA guidelines. Please confirm.	Bidder to ensure compliance to bidding documents
242				FOTE specification	Please provide the detailed specification of FOTE along with communication architecture as same is missed In tender documents	Bidder shall note that these detailed specification shall be shared with successful bidder post award. However these are standard specifications which are being used by state electricity supply agencies.
243	Part-3	608/1200	3.15	Design Basis	In mentioned clause it specified as Please refer HVAC Design Basis report for HVAC design reuirement, But HVAC design Basis report is not availble,Please share the same.	Bidder to ensure compliance to bidding documents

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX		MCDERMOTT
	BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02		
	Reply to Pre-Bid Queries : Technical		

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
244	Part-3	569/1200	5.12	Outdoor Design Conditions	Weather data such as Dry bulb, wet bulb temperatures only avaalilable and other details Daily range, relative humidity / Specific Humidity which is required to design HVAC system is not available. Hence, we are considering ASHRAE/ISHRAE weather conditions for HVAC design. Kindly confirm.	Bidder to ensure compliance to bidding documents
245	Part-3	296/1200	1.1	AC system	Bidder is considering Chilled water cooled chillers with Chilled water coil AHUS and chilled water recirucuting pumps with 100% redundancy for Substation. Kindly confirm.	Bidder understanding is in order
246	Part-3	296/1200	1.2	AC system	Bidder is considering water cooled packaged AC units with N+1 redundancy for Substation Switchyard. Kindly confirm.	Query is not clear
247	Part-3	296/1200	1.1	Chilled water	Bidder is understands that Water supply requirement for the Chilled water system shall be available near 3m from the substation building.	Bidder shall refer to the Plot Plan for tapping of water supply for drinking and cooling system
248	Part-3	411/1200	17	Ventilation	Bidder is considering Smoke exhaust fans for rooms protected with gas suppression system, without standby fans. Kindly confirm	It is clarified that all the fans shall be with 100% redundancy
249	Part-3	851/860	5.17.1	Battery room ventilation	We request to kindly confirm the Air changes to be considered for Battery Room.	Bidder to consider air changes as per standard. However, minimum air changes shall not be less than 14 to 16 air changes per hour.
250	Part-3	851/860	5.17.1	Cable Cellar ventilation	We would like to confirm that air changes per cable cellar shall be considered as mentioned in NBC Standards. kindly confirm	Bidder understanding is in order
251	Part-3	570/1200	5.16	Ventilation	Bidder is considering Both AC and ventilation system for Battery Room. During normal operation AC unit will work with recirculation. During Hydrogen detection exhaust fan will work & AC will be OFF. Kindly confirm.	Bidder understanding is in order
252	Part-3	869/1200	Point number 32	Control system	Please clarify the type of control system required for HVAC system, kindly provide the same with detailed HVAC control philosophy.	Bidder shall consider PLC based Control and interlocking system with auxiliaries such as Shutdown, flooding, etc.
253	Part-3		General	General	We presume that chemical filters shall be sected to to be maintain from GX environment at outside to G1 environment inside building	Bidder understanding is in order
254	Part-3		General	General	We presume that only Air conditioning rooms in Substations (SS-100 & Switchyard SS) needs to be maintained G1 environment (G1 environment not required inside cable cellar & Battery rooms).Please confirm.	Bidder understanding is in order
255	Part-3		General	General	No ventilation system is being considering for transformers.Please confim	Bidder shall ensure compliance to bidding documents
256	Part-3	1187/1200	Dwg No - 359755-MDR-000-ARC-02-0006	Drawing	As per the drawing 359755-MDR-000-ARC-02-0006 we have observed only one AHU room for entire 156m length of building, we presume that bidder is free to select the number of AHU rooms as per design requirement.	Bidder understanding is in order. Bidder also maintained the redundancy in the HVAC system for AHU, ...
257	Part-3	410/1200	17	Gas suppression system	We are considering Clean agent gas suppression system for Battery Room at Basement, Control & relay panel room at ground floor and Swgr room at ground floor. Kindly confirm	Bidder understanding is in order
258	Part-3	410/1200	17	Gas suppression system	Kindly confirm the requirement of spare cylinders, whether we need to consider 100% standby.	Bidder to consider spare cylinders as per applicable standards
259	Part-3	412/1200	20	Safety Equipment	Kindly confirm the quantity for fire safety equipment.	It is bidder's responsibility to work out type and quantity of fire safety equipment as per applicable standards and bidding documents.
260	KEY SINGLE LINE DIAGRAM 220KV GIS PACKAGE EPCC-03	Tender Document_Technical Part_3	SLD	Termination for Incoming bays in GIS Substation	As per our understanding, the Incoming 220 kV GIS bays has to be terminated with Cable. Please confirm our assumption	Bidder understanding is in order and bidder to refer to published amendment
261	KEY SINGLE LINE DIAGRAM 220KV GIS PACKAGE EPCC-03	Tender Document_Technical Part_3	SLD	LA & VT	As per our understanding, LA requirement is only in outgoing bays and VT requirement is only in BBM bays. Kindly confirm our assumptions	Bidder to refer to published amendment
262	KEY SINGLE LINE DIAGRAM 220KV GIS PACKAGE EPCC-03	Tender Document_Technical Part_3	SLD	Termination for Outgoing bays in GIS Substation	Kindly confirm whether the termination of Outgoing bays is with Cable termination or SF6 to air termination	Bidder to refer to published amendment
263	KEY SINGLE LINE DIAGRAM 220KV GIS PACKAGE EPCC-03	Tender Document_Technical Part_3	SLD	Requirement of High speed earth switch in Trafo bays	High speed earth switches are required for line bays where high charges from lines from long distances have to be discharged. Hoever same is not the case with Transformer bays as Transformer is located near the GIS. Hence we propose to offer Work in progress earth switch in Trafo bays.	Bidder to ensure compliance to bidding documents
264	KEY SINGLE LINE DIAGRAM 220KV GIS PACKAGE EPCC-03	Tender Document_Technical Part_3	SLD	Rated current	As per our understanding, the Rated bus bar current shall be 2000 A at 40 Deg C ambient temperature. Please confirm	Bidder to ensure compliance to published amendment.
265	KEY SINGLE LINE DIAGRAM 220KV GIS PACKAGE EPCC-03	Tender Document_Technical Part_3	SLD	Future extension	Please confirm whether any future extension bays are envisaged on either side of the Substation	It is clarified that future bays are envisaged on either side of the switchgears, as shown in the layout
266	KEY SINGLE LINE DIAGRAM 220KV GIS PACKAGE EPCC-03	Tender Document_Technical Part_3	SLD	220 kV GIS shall be provided with Online Temperature monitoring System and Partial discharge monitoring system		Bidder to ensure compliance to bidding documents

IndianOil	**MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX** **BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02** **Reply to Pre-Bid Queries : Technical**	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
267	Layout	Tender Document_Technical Part_3		GA Layout of GIS building	We understand that the size of the 220KV GIS Building is tentative one and bidder can optimize the size of the building. Kindly clarify.	Bidder understanding is in order. However minimum size shall be maintained as per bidding documents
268	Layout	Tender Document_Technical Part_3		Cablerack / cable tray	As we understand from the layout there is cable tray work that needs to be done by EPCC-03 bidder that extend upto IP- 011 point as shown in the layout. Kindly clarify our understanding.	Bidder understanding is in order.
269	Layout	Tender Document_Technical Part_3		Utility package	We understand that there is an Utility package shown in the layout is not EPCC-03 bidders scope, kindly clarify.	Bidder understanding is not in order. Bidder shall refer to the bidding documents
270	Layout	Tender Document_Technical Part_3		Boundary wall /chain link fencing	kindly clarify the area of boundary wall/chain link if needs to be done.	Bidder shall refer to the scope drawing for required details
271	220KV AIS Switchyard (220KV I/C 1 & 2 from Grid)	Tender Document_Technical Part_3		Incoming side Gantry and Tower	We understand that the I/C side Gantry along with Tower is not in EPCC-03 Bidders scope. Our scope shall start from point of terminal gantry and within 220KV Switchyard only. Kindly clarify our understanding.	It is clarified that bidder scope shall be in line with bidding document and published amendment
272	220KV AIS Switchyard (220KV I/C 1 & 2 from Grid)	Tender Document_Technical Part_3		Metering units	Metering units(ABT Meter) supply and commissioning shall be excluded from EPCC-03 bidders scope. It shall be free issue item. Kindly clarify our understanding.	Bidder proposal is not acceptable. Bidder to ensure compliance to bidding document
273	220KV AIS Switchyard (220KV I/C 1 & 2 from Grid)	Tender Document_Technical Part_3		Gantry arrangement at 220KV Switchyard	We are considering one gantry as shown in the layoutfor 220KV Switcyard area.	Bidder understanding is in order.
274	Power Transformer	Tender Document_Technical Part_3		220/66KV, 75MVA Power Transformer, ONAN/ONAF	As understood from scope matrix , we understdn that only 2 nos of 220/66KV Power Transformer needs to be supplied by EPCC-03 Bidder out of total 4 Nos. Kindly clarify our understanding	Bidder understanding is in order. However total no. of transformers bays shall be inline with layout.
275	33KV Switchgear			33KV Switchgear at 220KV GIS Buiding	We understand that 33KV Switchgear supply along with ETC is not in EPCC-03 bidders scope. Kindly confirm .	Bidder understanding is in order.
276	Cables for 6.6/0.433 Dry type Transformer			I/C cable for 6.6KV feeder from MAH Substation-2 and CPP Substation -9	We undesand theat the I/C cable along with cable termination for 6.6/0.433KV 1250 KVA dry type transformer is not in EPCC-03 bidders scope. Kindly confirm.	Bidder shall ensure compliance to the Bidding document and also refer to the published amendment
277	SLD for 220 kV GIS Package			i. THE TERMINATION OF OVERHEAD CONDUCTOR THROUGH TIE-IN POINT OF TRANSMISSION SYSTEM UPTO GANTRY TOWER SHALL BE IN DETAIL ENGINEERING CONTRACTOR'S SCOPE OF WORK INCLUDING STRUCTURAL HARDWARE ETC. ii. WAVE TRAP, CVT, PLCC PANEL, 48V CHARGER, OPGW AND TELEMETRY HARDWARE AT BOTH ENDS (i.e. AT MAH 220kV SWITCHYARD AND AT HVPNL END) SHALL BE SUPPLIED AND INSTALLED BY DETAIL ENGINEERING CONTRACTOR'S.	We understand theat only conductor stringing from T point to I/C side of 220KV Switchyard is in EPCC-03 bidders scope. We are considering Wave trap, CVT, 48V Battery charger and hardwares only at 220KV Switchyard area and not at other end of MAH 220KV Switchyard & at HVPNL end. Kindly confirm	Bidder understanding with respect to conductor stringing is in order. However scope related to wave trap, CVT, etc. is not acceptable and same shall be in line with bidding documents.
278				5. ALL STATUTARY APPROVALS AND APPROVAL OF ALL OUTDOOR SWITCHYARD RELATED DOCUMENTS THROUGH HVPNL LIKE GELO, OUTDOOR CT, PT, CVT, METERS, AND WAVETRAP REQUIRED FOR THE GRID INTEGRATION SHALL BE BY DETAIL ENGINEERING CONTRACTOR.	our scope shall be limited to providing technical support for CEIG approval. Fees and other statutory payments shall be undertaken by IOCL . We shall provide support towards technical documentation.	Bidder to ensure compliance to bidding document
279				10. SUPPLY, LAYING, TERMINATION, TESTING & COMMISSIONING OF 6.6kV CABLES FROM ASSIGNED 6.6KV SWITCHGEAR AT CPP SUBSTATION-9 TO 1 NO. 6.6/0.433KV AUXILIARY TRANSFORMER IN 220kV SUBSTATION BUILDING INCLUDING CABLE TRENCHES / TRAYS WITH SUPPORTS SHALL BE BY EPCC-03 CONTRACTOR.	Kindly clarify the size of the I/C cable and no of runs to consider from CPP substation-9 to 1250 KVA Auxillary Transformer in 220KV Substation .	It is bidder responsibility to size incoming cable for auxiliary loads (primary side 6.6KV/.433V transformer). Bidder shall also refer to published amendment for power supply arrangement.
280				11. IN ADDITION TO ABOVE MENTIONED AUXILIARY TRANSFORMER, OTHER AUXILIARY FACILITIES IN 220kV GIS SUBSTATION BUILDING SHALL ALSO BE PROVIDED BY DETAIL ENGINEERING CONTRACTOR. ELECTRICAL EQUIPMENT FOR BUILDING FACILITIES SUCH AS 415V PCC, 415V DB, LIGHTING TRANSFORMER, DC BATTERY CHARGER AND BATTERIES, HVAC SYSTEM, ECS SYSTEM AS REQUIRED SHALL BE IN THE SCOPE OF DETAIL ENGINEERING CONTRACTOR.	We understand the DETAIL ENGINEERING CONTRACTOR is not the EPCC-03 Bidder. Kindly clarify.	It is clarified that EPCC-03 is responsible for complete work including detailed engineering.
281				15. INTEGRATION OF 220kV OVERHEAD LINES FROM POINT OF TAP OFF (ON NEAREST 220kV TRANSMISSION TOWER) TO PNCP 220kV OUTDOOR SWITCHYARD SHALL BY EPCC-03 CONTRACTOR. ALSO, ANY REQUIRED ITEMS/STRUCTURES, AAAC/ACSR CONDUCTORS/BUSBARS, INSULATORS ETC. FOR CONNECTING TO 220kV OUTDOOR SWITCHYARD AND COORDINATION WITH STATE GRID AUTHORITIES (AS APPLICABLE) SHALL BE BY EPCC-03.	Kindly confirm the distance of nearest 220KV tower to I/C 220KV Switchyard Gantry .EPCC-03 bidders scope is limite to construction of 220KV switcyard , 220KV GIS and auxillaries within GIS building for present scope of work . Coordination with State Grid authoroties , arranging required approval for stringing, along wirg permission for rquired shutdown and then charging of 220KV Switchyard shll be undertaken by IOCL/ Consultant.	Bidder to refer to clarification provided in other query
282	Overall Key SLD	Tender Document_Technical Part_4			As per SLD and Note- (15&16) We understand that the incoming connection shall be done through overhead line. the line incident incuding line side insulator swithyard gantry is not in bidder scope. Bidder scope is start from tapping from the line side gantry.	Bidder understanding is not correct and shall refer to scope defined in the bidding document.
283	Overall Key SLD	Tender Document_Technical Part_4			We understand that the existing tower modification work, shutdown cordination and approval , line corridor and scheme approval of transmission line not in biddder scope.	Bidder shall ensure compliance to bidding documents
284	Overall Key SLD	Tender Document_Technical Part_4			Pls clarify the 220kV incomer it is tap off, know lilo concept is applicable for these two line.	Bidder shall ensure compliance to bidding documents
285	Overall Key SLD	Tender Document_Technical Part_4			Metering scheme- Pls clarify the ABT metering requirement for the substation . For MCVT mention Pls clarify weather MOT considered and the location before MCT. Also, ABT meter TOD meter and submotion meter not speciefied in SLD. Pls share the approved metering scheme.	Bidder shall refer to bidding documents for required details and also note that the metering scheme shall be approved by HVPNL.

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
286	Overall Key SLD	Tender Document_Technical Part_4			There is descipncy in swithyard area detail A in SLD. Metring CVT not shown in layout. Also in layout metering room not shown in layout	Bidder shall ensure compliance to published amendment
287	Overall Key SLD	Tender Document_Technical Part_4			As per SLD SA/LA has been consider all outgoing feeder for 220 kV	Bidder shall ensure compliance to published amendment
288	Overall Key SLD	Tender Document_Technical Part_4			For 220kV two incomer we understand that two line will be connected to GIS through BUS duct , Pls confirm our understanding.	Bidder shall consider cables for connection between switchyard and GIS
289	Overall Key SLD	Tender Document_Technical Part_4			Four no trformer 220/66kV should have bus duct connection and balance four no. shall have cable connection at 220 kV.In addition two spatre feeder shall have cable connection. At present For 220/66kV transformer only two no feeder bust duct at present consider and balance two tranformer feeder no bus duct. and these two present transformer will be directly connected to SF6 to oil connection .	Bidder shall consider cables for connection between GIS and transformers. Bidder to ensure compliance to published amendment
290	Overall Key SLD	Tender Document_Technical Part_4			We understand that the 220/66 KV trfo and 66kV side of the transformer shall have the AIS Bushing.	Bidder shall ensure compliance to bidding documents
291	Overall Key SLD	Tender Document_Technical Part_4			We understand that two nos LT AUX (1250KVA) including LT bus duct is in bidder scope, 6.6kV incoming cable supply including terimination not in bidder scope. These LT trfo both side shall have cable termiation box. Pls clarify the requirement.	Auxiliary Transformers and busducts are in Bidder's scope. Bidder to refer published amendment for clarity.
292	Overall Key SLD	Tender Document_Technical Part_4			We understand for two nos hvpnl line we have to only consider plcc both end however wave trap, 48V charger OPGW at hvpnl not in bidder scope.	Bidder shall ensure compliance to bidding documents. All equipment required for PLCC communication at both sending and receiving end is part of EPCC-03 Contract.
293	Overall Key SLD	Tender Document_Technical Part_4			For outdoor yard and GIS S/s to understand that only CIEG approval is in bidder scope. Load section, metering scheme, transmission line approval not in bidder scope.	Bidder understanding is in order. However, bidder to note that the metering scheme shall be approved by HVPNL.
294	Overall Key SLD (220 kV shall be provide with online temp monitoring system , partial discharge monitorinh system)	Tender Document_Technical Part_4			We understand that 220kV shall be provide with online partial discharge monitring system and for gis hall we have to provoide only temperature monitoring , Pls clarify our understanding.	Bidder to refer to bidding documents for clarity. Further requirements will be discussed with Successful Bidder post award.
295	Overall Key SLD	Tender Document_Technical Part_4			We understand that for MAH & NCU we have to provide only two nos dedicated AC & DC fedder and further distribution by MAH & NCU.	Bidder shall ensure compliance to bidding documents and published amendment
296	Substation Layout -220kV GIS	Tender Document_Technical Part_4			220/33 kV GIS building dimension has been freezed from customer end & no building size optimization/reduction and increase is not consider by bidder. Bidder will Quote as per tender building dimension. Pls confirm	Bidder to ensure compliance to bidding documents and published amendment.
297	Tender_Documents_Technical_Part_7 - Page 58/306 of pdf (Page No : 30 of the document)	Civl scope		Pile capacity	We presume that the capacity of piles mentioned is Compression capacity. Request you to furnish uplift and lateral capacity of piles	Bidder shall design and finalise the foundation philosophy including types and capacity of piles based on Geotech investigation, to be carried out by the EPCC-03 Contractor.
298	Tender_Documents_Technical_Part_7 - Page 208/306 of pdf	Civl scope		Borehole location in Contour	Please confirm the Borehole number falling in the proposed project site area. Also please furnish the contour plan with proposed FGL with readings at every 5m intervals in autocad format for better clarity	Bidder to refer to clarification already provided and also the contour survey attached with the bidding documents
299	Tender_Documents_Technical_Part_6 - Page 144/450 of pdf	Civl scope		Seismic cross hole test report	We presume that the Seismic cross hole trest report need not be conducted during project execution and soil parameters shall be assessed by borehole/trial pit/plate load/CBR tests. Please confirm	Bidder shall design and finalise the foundation philosophy including types and capacity including Seismic cross hole test based on Geotech investigation, to be carried out by the EPCC-03 Contractor.
300	Tender_Documents_Technical_Part_6 - Page 256/450 of pdf	Civl scope		Underground scanning-GPR Survey	We presume that the data furnished is final and UG scanning need not be conducted at execution stage.We also request the enlarged portion of substation project area for better understanding of existing underground facilities	Bidder shall note that report provided is only for reference. It is bidder's responsibility to carry out Geotech investigation, Topographical survey including UG and finalise the design and philosophy accordingly.
301	Tender_Documents_Technical_Part_6 and Part 7	Civl scope		Soil investigation reports	1.The tender document contains two different soil investigation reports conducted in years 1999 and 2022. Kindly confirm the report to be considered. Also please confirm the borehole number to be considered for switchyard area. 2.Kindly do confirm provided soil report whichever to be considered (either 1999 or 2022 report) is binding for the subject project.	Bidder shall note that report provided is only for reference. It is bidder's responsibility to carry out Geotech investigation, Topographical survey including UG and finalise the design and philosophy accordingly.
302	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 3.2.5	Civl scope		Blast forces	We presume that blast forces need not be considered for substation structures and buildings. Please confirm	Bidder shall design and finalise the foundation philosophy based on Geotech investigation and loading to be carried out by the EPCC-03 Contractor.
303	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 4.1.1.k	Civl scope		Isolation of vibrating equipment foundation from building structure	We presume that GIS equipment with operating loads shall be supported on the main building structure with primary and secondary beams below load points. Please confirm	Bidder understanding is in order
304	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 4.1.2.f	Civl scope		Reduction of 600mm backfilled soil for foundation design	We presume that since the backfilling of switchyard foundations are permenant, this clause is not applicable. Please confirm	Bidder shall ensure compliance to bidding documents
305	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 4.2.4	Civl scope		Minimum clear cover of bottom of foundations	Since we are providing 75mm PCC below foundations, please confirm whether we can consider 75mm clear cover for bottom face against 125mm mentioned in the above clause	Bidder shall ensure compliance to bidding documents
306	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 4.2.5	Civl scope		Minimum thickness of structural members	Please confirm whether we can consider 100 mm as thickness of raft and wall of smaller cable trenches and 75mm as thickness of precast cover slabs if design criteria are met	Bidder shall ensure compliance to bidding documents
307	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 4.3.1	Civl scope		Fireproofing of steel structures	Please confirm that this clause is not applicable for switchyard steel structures	Bidder understanding is in order
308	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 4.3.1 - 8.c	Civl scope		Minimum 2 nos of 20mm dia 8.8 mm dia bolts for joints	Please confirm that the usage of 1 number 16mm dia bolts are permitted for outdoor yard structures if the design criteria is met. Also please check usage of 5.6 grade bolts are permitted in switchyard structures as per general industry practices	Bidder shall ensure compliance to bidding documents

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
309	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 4.3.1 - 15	Civl scope		Minimum clear headroom	Please confirm that for EOT crane platform, the clear height shall be from bottom of slab and not from the bottom of beam as the access is required only for occassional maintenance	Bidder shall ensure compliance to bidding documents
310	359755-MDR-000-STR-BOD-0001 Rev 0 , Clause 4.3.7	Civl scope		The minimum thickness of structural components (except gratings) which are directly exposed to weather and inaccessible for repainting shall be 8mm.	Please confirm that for switchyard structures shall be as per the relavant clauses of IS 802 and 5mm thick angles and 6mm thick gusset plates can be used	Bidder shall ensure compliance to bidding documents
311	359755-MDR-000-STR-BOD-0001 Rev 0	Civl scope		Proposed GIS Building.	We would like to propose Pre Engineered Building with PUF panel roof and wall cladding since timelines is very short as well it is flexible on approach and handling during operations than RCC building. Kindly confirm	Bidder shall ensure compliance to bidding documents
312	Tender Documents - Technical - Part 3	Civl scope		Site Seismic Spectra	Kindly clarify whether IS 1893 Part IV is applicable or not in design? Kindly clarify whether Seismic spectrum values are to be taken directly from the given chart or is to be calculated as per the STAAD software output?	Bidder shall ensure compliance to bidding documents
313	Tender Documents - Technical - Part 3	Civl scope		OISD	Request M/s.IOCL to confirm whether OISD clauses are applicable for the SWYRD civil works? If so kindly provide us the reference clauses for the same.	OISD is not applicable for switchyard
314	SCC	Civl scope		Project Delivery	Since scope of civil work is extensively very high request M/s.IOCL to consider delivery schedule minimum of 36 months. Kindly confirm	Bidder shall ensure compliance to bidding documents
315	Scope of works	Civl scope		Civil Works	Request M/s.IOCL to define the detail civil scope of works.	Bidder shall ensure compliance to bidding documents
316	Scope of works	Civl scope		Dismantling works	Request M/s.IOCL to provide us the detail scope of dismantling works including qtys.	Bidder shall ensure compliance to bidding documents
317	Site	Civl scope		Boundary wall	Kindly confirm whether we have to dismantle existing boundary wall during the initial stage of execution or later after completion of SWYRD works? Kindly do confirm whether we have to construct new boundary wall? If so kindly provide us the qty of the same	Bidder shall ensure compliance to bidding documents
318	Site	Civl scope		Pheripheral Road	Kindly confirm whether we have to construct new pheripheral road adjecent to new boundary wall?	Bidder shall ensure compliance to bidding documents
319	Site	Civl scope		Existing trees and bushes	During our site visit we have noticed lot many trees- (approximate grith of 150-200mm of approximately 10trees) and bushes are in the proposed SWYRD area. We assume that same will be cleared and encumbrance free land will be handedover to the success bidder during LOA. Kindly confirm	Bidder shall ensure compliance to bidding documents
320	Site	Civl scope		Underground services	1.We assume that no any underground services to be rerouted, dismantled in the proposed SWYRD. Kindly confirm. 2.We assume that no any underground services like pipe lines, cables, drinage etc.. Is not envisaged in the proposed SWYRD. Kindly confirm	It is bidder's responsibility to carry out Geotech investigation, Topographical survey including UG and finalise the design and philosophy accordingly.
321	Site	Civl scope		Land Development	We assume that land development is not envisaged in the proposed SWYRD. We understand that minor land development of ±300mm is in the scope of bidder without any borrowed earth. Kindly confirm	Bidder shall ensure compliance to bidding documents
322	Site	Civl scope		Gate Pass	1.Kindly provide us the detail SOP for obtaining gate passess. 2.Request M/s.IOCL to make alternate arrangment for issuing gate pass at the entry of proposed SWYRD for smooth and easy access and execution of work at site. Kindly confirm 3. Gate passes for manpower entry 1st time we have considered 24hours. Beyond this will be captured in the hindrence register for time extension and cost. Kindly confirm 4. Gate passess for machinery and construction materials on immidiate basis with valid documents	It is clarified that all logistics shall be discussed by the successful bidder with Engineer-in-charge at site, and procedure shall be finalised accordingly.
323	Site	Civl scope		Integrated overall plot plan - PNCP and MAH - DWG.NO. 359755-MDR-000-PIP-01-0002	1.During the site visit we have noticed that, there is a land adjecent to proposed SWYRD where in 'Scope of Others' mentioned in the drawing. We assume that no land development and boundary wall is in SWYRD bidder scope for this area. Kindly confirm 2. We assume that existing Oxygen Line will be dismantled and encumbrance free land will be handed over to the successful bidder during LOA by M/s.IOCL. Kindly confirm.	1. Bidder understanding is in order. 2. Bidder may note that Oxygen line is outside of battery limit of EPCC-03 scope.
324	Site	Civl scope		Integrated overall plot plan - PNCP and MAH - DWG.NO. 359755-MDR-000-PIP-01-0002	During the site visit we have noticed that, existing watch tower is close to the proposed SWYRD. We assume that same will be dismantled and encumbrance free land will be handed over to the successful bidder during LOA by M/s.IOCL. Kindly confirm.	It is clarified that existing tower is outside the battery limit of EPCC-03
325	Proposed SWYRD	Civl scope		Construction power and water	We assume that construction water and power will be provided in free of cost.	Bidder shall ensure compliance to bidding documents
326	Proposed SWYRD	Civl scope		Site office, fabrication yard etc..	We assume that land for the Site office, fabrication yard etc..will be provided next to the proposed 220kV SWYRD. Kindly confirm	Bidder shall ensure compliance to bidding documents
327	Proposed SWYRD	Civl scope		SWYRD Drain	We consider our SWYRD storm water drain outfall point outside the fencing area within 5Mtrs. Kindly confirm	It is clarified that drain outfall point shall be connected as shown in the layout.
328	Proposed SWYRD	Civl scope		Approach Road	We assume that necessary motorable approach road will be made available before handingover of land to the successful bider. Kindly confirm	Bidder shall refer to the Scope drawing regarding the road connectivity, and any additional road required shall be in the scope of EPCC-03 Contractor.
329	Statutory Requirements	Civl scope		Gate Pass/Vehicle Permits/Entry Procedures/Additional shift workings/Material management/Return materials/Safety Permits during excavations with internal departments/construction of superstructures/readymix operations	Request M/s.IOCL to share the below related to substation inside the plant: 1. Construction/operational requirements 2. Statutory requirements 3. HR requirements and documents (Like gate pass, permits etc..) 4. Any mandatory safety training for workforce/supervisors prior to induction in works.	Bidder shall ensure compliance to bidding documents
330	Site	Civl scope		Accomodation for site staffs	Request M/s.IOCL to consider accomodation for supervisors, engineers and site office staffs within the plant premises on chargeable basis.	Bidder shall ensure compliance to bidding documents
331	Site	Civl scope		Accomodation for labour	Siemens shall provide labour details and numbers for M/s.IOCL to accommodate in their labour camp in free of charge. This support will only expedite the progress of work. Kindly confirm	Bidder shall ensure compliance to bidding documents

IndianOil	MALEIC ANHYDRIDE PROJECT AT PANIPAT REFINERY PETROCHEMICAL COMPLEX BIDDING DOCUMENT NO.: 359755-MDR-000-EPCC-TEN-0003/02 Reply to Pre-Bid Queries : Technical	MCDERMOTT

SL. NO.	REFERENCE OF ENQUIRY DOCUMENT				BIDDER'S QUERY	PMC / OWNER REPLY
	PART /VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		
332	Site	Civl scope		Internal Interfacing	All the internal interfacing with any departments during the construction is in the scope of M/s.IOCL. We sahll approach M/s.IOCL designated project incharge for all the clearance and approvals during the execution. Kindly confirm	Bidder shall ensure compliance to bidding documents
333	Civil Works	Civl scope		PV Clause	Inflation on construction material – PV clause is mandatory in civil works with the recent steep increase on structrual steel, labour, aggregates and machineries rent etc... request M/s.IOCL to bring civil works under PV clause. Kindly confirm	Bidder shall ensure compliance to bidding documents
334	Site	Civl scope		Testing Laboratory	Testing laboratory - Requesting M/s.IOCL to provide the approved construction material testing laboratory detail	It is bidder responsibility to select the agencies based on the credential and obtain approval during execution stage
335	Design Optimization	Civl scope		Minumum carpet area and Engineering Optimization	We understand that, engineering optimization is applicable for the proposed Buildings and other civil works based on manufacturer equipment size and requirements. Kindly confirm	Bidder to refer to clarification provided in other query
336	Land	Civl scope		Encumbrance free land	We assume that encumbrance free land will be provided to us for both the proposed SWYRD. No tree cutting, demolition of any existing strutures etc.. In our scope. Kindly confirm	Bidder understanding is not in order and shall refer to the Bidding document for these requirement
337	Sand	Civl scope		Use of Manufacture Sand	Kindly confirm, Manfacture sand can be used for all the civil works	Bidder shall ensure compliance to bidding documents
338				Termination for Incoming bays in GIS Substation	As per our understanding, the Incoming 220 kV GIS bays has to be terminated with Cable. Please confirm our assumption	Bidder understanding is in order
339				LA & VT	As per our understanding, LA requirement is only in outgoing bays and VT requirement is only in BBM bays. Kindly confirm our assumptions	Bidder to ensure compliance to bidding documents.
340				Termination for Outgoing bays in GIS Substation	Kindly confirm whether the termination of Outgoing bays is with Cable termination or SF6 to air termination	Bidder to consider cables for termination.
341				Requirement of High speed earth switch in Trafo bays	High speed earth switches are required for line bays where high charges from lines from long distances have to be discharged. Hoever same is not the case with Transformer bays as Transformer is located near the GIS. Hence we propose to offer Work in progress earth switch in Trafo bays.	Bidder to ensure compliance to bidding documents.
342				Rated current	As per our understanding, the Rated bus bar current shall be 2000 A at 40 Deg C ambient temperature. Please confirm	Bidder to ensure compliance to published amendment.
343				Future extension	Please confirm whether any future extension bays are envisaged on either side of the Substation	Bidder to note that future extension bays are to be considered on both ends of the Switchgear / GIS
344				Current Transformer	As CT is not shown in GIS SLD, we understand single side CT is envisaged in all the bays including Bus sectionlizer & Bus coupler after the Circuit breaker. Please confirm and share detail CT parameters.	It is bidder responsibility to consider separate sets of CT for all bays, for the defined functions and detail will be reviewed during detailed engineering post award, which shall be taken care by bidder without any cost and time impact to Owner.
345				220 kV Switchyard	Please confirm whether 220 kV outdoor GIS switchyard is of AIS type or GIS type.	220kV Outdoor switchyard is AIS type.
346				Position of LCC for 220 kV GIS	As per the shared layout, we understand the LCC for 220 kV GIS is ground mounted type. However we propose Bay mounted LCC which shall reduce GIS footprint and reduce Building size inturn. Please confirm the same	Bidder shall refer to the bidding document for type and location of LCC
347				Pre-bid queries	These Tender queries shared are only based on Tender SLD. More quries shall be shared after receival of other Tender documents and Technical specifications for the project later.	Noted
348				Maximum distance between GIS/LCC and corresponding CRP shall be considered as 150 meters unless otherwise specified	We propose Bay mounted type LCC as Bay mounted LCC will reduce the GIS footprint and will reduce the building size inturn. Requesting your kind acceptance on the same	Bidder to ensure compliance to bidding documents. Optimization in the design may be proposed during detail engineering and all cable lengths shall be estimated based on the drawings / layouts included in the tender.
349				Pre-Insertion Resistor (if specified in job specification/ datasheet)	We understand the same is not applicable for this package of 220 kV GIS	It is clarified that requirement shall be decided by EPCC-03 Contractor based on OEM recommendation.
350				Hydraulic Operated Mechanism	Not Applicable for our make GIS	It is clarified that requirement shall be decided by EPCC-03 Contractor based on OEM recommendation.
351				Hydraulic Monitoring Device	Not Applicable for our make GIS	It is clarified that requirement shall be decided by EPCC-03 Contractor based on OEM recommendation.
352				Voltage Transformer	GIS type Voltage Transformer shall only be applicable for Bus bar measurement and the same has been considered.	Bidder shall consider voltage transformers as required for incomer and bus bar
353				Voltage Detectors	Voltage detectors for Incoming & outgoing bay shall be provide in the Male & Female Termination kits but the same is not applicable for bus bar. Presence of Voltage in Busbars can be checked through Bus VTs which shall be in our scope.	Bidder shall ensure voltage detectors for incomer, outgoing as well as bus bars
354				Outdoor SF6 - Air Bushings	Please confirm terminations of all the bays as the same is not clear from the SLD.	Bidder shall refer to published amendment
355				All the equipment should have been successfully type tested as per the relevant standards. Type tests shall not have been conducted earlier than five years. In case the type tests were conducted earlier than 5 years, such type tests shall be carried out by the vendor free of cost before commencement of supply.	As per CEA guidelines, the type tests for GIS shall be valid for 15 years. Reqeuesting your kind acceptance.	Bidder shall ensure compliance to the bidding documents
356				GIS shall be provided with Online temperature monitoring system and Partial Discharge system.	Online Temperature monitoring facility is not available in the offered GIS. Requesting your kind acceptance	Bidder to ensure compliance to bidding documents.
357				Each of the equipment devices including CB, Disconnector switch, Earthing switch, CT, VT and busbars etc.	Separate nameplate shall be provided only for CT, VT. For Disconnector, Earth switch & CB a single Rating plate shall be provided.	Bidder to ensure compliance to bidding documents.
358				Over pressure for each gas compartment of the bay.	The gas pressure difference between 3 compartments in GIS is not significant. Thus over pressure alarm is not envisaged.	Bidder to ensure compliance to bidding documents.
359				Additional Requirements for Safety Earthing Switches	As the earthing of Siemens make GIS is through GIS enclosure, hence no additional cables & copper braids are required. We shall provide 3 positions on the enclosure from where earthing connection can be connected to Earth mat.	Bidder shall ensure compliance to the bidding documents and any variations due to type tested OEM design will be discussed and finalised post award with successful bidder.

Validate | Print | Help

Item Wise BoQ

Tender Inviting Authority: BHEL TBG NOIDA

Name of Work: IOCL Panipat-220kV GIS S/stn Tender

NIT/Enquiry No: NIT No. 84687_Enquiry No. 61Q2500228 Dtd: 16-08-2024

Name of the Bidder/ Bidding Firm / Company :	

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Quoted Currency in INR / Other Currency	Unit RATE In Figures To be entered by the Bidder in Rs. P	GST (in Percentage)	GST Amount (Unit Rate*Quantity* GST) Rs. P	Unit Freight & Insurance Charges in Rs. P	GST (in Percentage)	GST Amount on F&I (Unit Rate*Quantity*GST) Rs. P	HSN / SAC Code	TOTAL Ex-Works + F & I AMOUNT excluding GST in Rs. P	TOTAL Ex-Works + F & I AMOUNT including GST in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	12	13	14	15	16	20	21	51	53	54	55
1.01	GIS SUPPLY: 220KV, 2000A, 50kA, SF6 GIS BUS BAR MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	item1	4	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.02	GIS SUPPLY: 220KV, 50kA, SF6 BUS PT/ VT BAY MODULE WITH BUS EARTH SWITCH (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	item2	4	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.03	GIS BAY SUPPLY: 220kV, 2000A, 50 kA, SF6 INCOMING GIS LINE FEEDER BAY MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	item3	2	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.04	GIS BAY SUPPLY: 220kV, 2000A, 50kA, SF6 GIS BUS COUPLER BAY MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	item4	2	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.05	GIS BAY SUPPLY: 220kV, 2000A, 50kA, SF6 GIS BUS SECTIONALISER BAY MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	item5	2	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.06	GIS BAY SUPPLY: 220kV, 2000A, 50 kA, SF6 OUTGOING GIS TRANSFORMER FEEDER BAY MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	item6	8	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.07	GIS BAY SUPPLY: 220kV, 2000A, 50kA, SF6 OUTGOING GIS SPARE FEEDER BAY (FULLY EQUIPPED) MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS) AS PER TS	item7	2	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.08	GIS BAY SUPPLY: ONLINE TEMPERATURE MONITORING & PARTIAL DISCHARGE SYSTEM	item8	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.09	GIS SUPPLY: 220KV, CONTROLLED SWITCHING DEVICE (CSD) FOR 220KV, 3- PH CIRCUIT BREAKER	item9	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.10	SUPPLY- GIS : 220KV, 2000A, 1 PHASE GAS INSULATED BUS DUCT (INCLUDING SF6 GAS, STRUCTURE WITH HARDWARES AND EARTHING MATERIALS)	item10	10	MTRS	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.11	GIS SUPPLY: 220KV, 2000A, 1 PHASE SF6 TO AIR BUSHING (POLYMER) (INCLUDING SF6 GAS, STRUCTURE WITH HARDWARES AND EARTHING MATERIALS)	item11	1	NO	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.12	GIS SUPPLY: 390KV, 1 PHASE SURGE ARRESTER WITH SURGE COUNTER (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS)	item12	42	NO	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.13	GIS SUPPLY: 220KV, 2000A, 1 PHASE SF6 TO OIL BUSHING (POLYMER) (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS)	item13	1	NO	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.14	GIS SUPPLY: 220KV, 2000A, 1 PHASE CABLE CONNECTION MODULE (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS)	item14	42	NO	INR			0.00			0.00		0.000	0.000	INR Zero Only

Validate Print Help

Item Wise BoQ

Tender Inviting Authority: BHEL TBG NOIDA

Name of Work: IOCL Panipat-220kV GIS S/stn Tender

NIT/Enquiry No: NIT No. 84687_Enquiry No. 61Q2500228 Dtd: 16-08-2024

Name of the Bidder/ Bidding Firm / Company :	

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Quoted Currency in INR / Other Currency	Unit RATE In Figures To be entered by the Bidder in Rs. P	GST (in Percentage)	GST Amount (Unit Rate*Quantity* GST) Rs. P	Unit Freight & Insurance Charges in Rs. P	GST (in Percentage)	GST Amount on F&I (Unit Rate*Quantity*GST) Rs. P	HSN / SAC Code	TOTAL Ex-Works + F & I AMOUNT excluding GST in Rs. P	TOTAL Ex-Works + F & I AMOUNT including GST in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	12	13	14	15	16	20	21	51	53	54	55
1.15	GIS SUPPLY: 220KV, 1 PHASE VOLTAGE TRASNFORMER (INCLUDING SF6 GAS, STRUCTURE, HARDWARES & EARTHING MATERIALS)	item15	1	NO	INR			0.00			0.00		0.000	0.000	INR Zero Only
1.16	GIS SUPPLY: LOCAL CONTROL CUBICLES	item16	16	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
2.01	GIS SUPPLY: SF6 GAS LEAKAGE DETECTOR	item17	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
2.02	GIS SUPPLY: SF6 GAS FILLING AND EVACUATING PLANT	item18	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
2.03	GIS SUPPLY: SF6 GAS ANALYSER	item19	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
2.04	GIS SUPPLY: PORTABLE PARTIAL DISCHARGE MEASUREMENT SET	item20	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
2.05	GIS SUPPLY: SF6 TOPPING SYSTEM	item21	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
2.06	GIS SUPPLY: SF6 GAS HANDLING PLANT/ SERVICE CART	item22	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
2.07	GIS SUPPLY: PORTABLE LADDER WITH ADJUSTABLE HEIGHT	item23	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
3.01	GIS SPARES: NUMERICAL RELAYS	item24	2	NO.	INR			0.00			0.00		0.000	0.000	INR Zero Only
3.02	GIS SPARES: CT/ PT/ CONMTROL TRANSFORMER (ALL TYPES AND RATINGS)	item25	3	NO.	INR			0.00			0.00		0.000	0.000	INR Zero Only
3.03	GIS SPARES: POWER & CONTROL FUSES	item26	10	NO.	INR			0.00			0.00		0.000	0.000	INR Zero Only
3.04	GIS SPARES: SF6 GAS LEAKAGE DETECTOR	item27	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
3.05	GIS SPARES: DIGITAL MULTIFUNCTION METERS	item28	1	NO.	INR			0.00			0.00		0.000	0.000	INR Zero Only

Validate Print Help

Item Wise BoQ

Tender Inviting Authority: BHEL TBG NOIDA

Name of Work: IOCL Panipat-220kV GIS S/stn Tender

NIT/Enquiry No: NIT No. 84687_Enquiry No. 61Q2500228 Dtd: 16-08-2024

Name of the Bidder/ Bidding Firm / Company :	

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Quoted Currency in INR / Other Currency	Unit RATE In Figures To be entered by the Bidder in Rs. P	GST (in Percentage)	GST Amount (Unit Rate*Quantity* GST) Rs. P	Unit Freight & Insurance Charges in Rs. P	GST (in Percentage)	GST Amount on F&I (Unit Rate*Quantity*GST) Rs. P	HSN / SAC Code	TOTAL Ex-Works + F & I AMOUNT excluding GST in Rs. P	TOTAL Ex-Works + F & I AMOUNT including GST in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	12	13	14	15	16	20	21	51	53	54	55
3.06	GIS SPARES: INDICATING LAMPS	item29	5	NO.	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.01	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, OPERATING MECHANISM FOR CIRCUIT BREAKER COMPLETE IN ALL RESPECT	item30	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.02	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, OPERATING MECHANISM FOR DISCONNECTOR COMPLETE IN ALL RESPECT	item31	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.03	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, OPERATING MECHANISM FOR MAINTENANCE EARTHING SWITCH COMPLETE IN ALL RESPECT	item32	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.04	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, OPERATING MECHANISM FOR FAST ACTING/ HIGH SPEED GROUNDING SWITCH COMPLETE IN ALL RESPECT	item33	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.05	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, DISCONNECTOR COMPLETE IN ALL RESPECT	item34	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.06	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, MAINTENANCE EARTHING SWITCH COMPLETE IN ALL RESPECT	item35	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.07	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, FAST ACTING/ HIGH SPEED GROUNDING SWITCH COMPLETE IN ALL RESPECT	item36	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.08	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, SINGLE PHASE BUS BAR	item37	1	Mtrs	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.09	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, GIS METALLIC ENCLOSURE	item38	50	Kgs	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.1	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, EXPANSION JOINTS	item39	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only

Validate | Print | Help

Item Wise BoQ

Tender Inviting Authority: BHEL TBG NOIDA

Name of Work: IOCL Panipat-220kV GIS S/stn Tender

NIT/Enquiry No: NIT No. 84687_Enquiry No. 61Q2500228 Dtd: 16-08-2024

Name of the Bidder/ Bidding Firm / Company :	

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Quoted Currency in INR / Other Currency	Unit RATE In Figures To be entered by the Bidder in Rs. P	GST (in Percentage)	GST Amount (Unit Rate*Quantity* GST) Rs. P	Unit Freight & Insurance Charges in Rs. P	GST (in Percentage)	GST Amount on F&I (Unit Rate*Quantity*GST) Rs. P	HSN / SAC Code	TOTAL Ex-Works + F & I AMOUNT excluding GST in Rs. P	TOTAL Ex-Works + F & I AMOUNT including GST in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	12	13	14	15	16	20	21	51	53	54	55
4.11	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, FLEXIBLE CONNECTIONS	item40	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.12	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, BARRIER INSULATOR	item41	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.13	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, NON-BARRIER INSULATOR	item42	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.14	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, GAS SEALS	item43	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.15	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, GAS DENSITY MONITOR SWITCH	item44	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.16	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, GAS PRESSURE SWITCH	item45	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.17	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, TEE BEND	item46	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.18	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, ANGLE BEND	item47	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.19	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, L-BEND	item48	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
4.2	SPARES- GIS: REFERENCE UNIT PRICE FOR ADDITION/ DELETION OF SUPPLY ITEMS: 220KV, VOLATGE DETECTORS	item49	1	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.01	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF GIS	item50	16	Bays	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.02	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1-PHASE GAS INSULATED BUS DUCT	item51	10	MTR	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.03	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE SF6 TO AIR BUSHING	item52	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only

Validate | Print | Help

Item Wise BoQ

Tender Inviting Authority: BHEL TBG NOIDA

Name of Work: IOCL Panipat-220kV GIS S/stn Tender

NIT/Enquiry No: NIT No. 84687_Enquiry No. 61Q2500228 Dtd: 16-08-2024

Name of the Bidder/ Bidding Firm / Company :	

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Quoted Currency in INR / Other Currency	Unit RATE In Figures To be entered by the Bidder in Rs. P	GST (in Percentage)	GST Amount (Unit Rate*Quantity* GST) Rs. P	Unit Freight & Insurance Charges in Rs. P	GST (in Percentage)	GST Amount on F&I (Unit Rate*Quantity*GST) Rs. P	HSN / SAC Code	TOTAL Ex-Works + F & I AMOUNT excluding GST in Rs. P	TOTAL Ex-Works + F & I AMOUNT including GST in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	12	13	14	15	16	20	21	51	53	54	55
5.04	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE SF6 TO OIL BUSHING (POLYMER)	item53	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.05	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE CABLE CONNECTION MODULE	item54	42	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.06	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE SURGE ARRESTER WITH SURGE COUNTER	item55	42	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.07	SERVICES- 220kV GIS: SUPERVISION OF ERECTION OF 1 PHASE VOLTAGE TRASNFORMER	item56	1	SET	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.08	SERVICES- 220kV GIS: TESTING & COMMISSIONING OF GIS	item57	16	Bays	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.09	SERVICES- 220kV GIS : TESTING & COMMISSIONING OF GAS INSULATED BUS DUCT	item58	10	MTR	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.10	SERVICES- 220kV GIS : FINAL SUCCESSFUL HV/ POWER FREQUENCY TESTING OF GIS INCLUDING ARRANGING OF HV TEST KIT ALONG WITH OPERATOR	item59	16	Bays	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.11	SERVICES- 220kV GIS : 3D MODEL FOR 220KV GIS	item60	1	LOT	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.12	SERVICES- 220kV GIS : INSULATION CO-ORDINATION STUDIES FOR GIS SYSTEM	item61	1	LOT	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.13	SERVICES- 220kV GIS : TRAINING FOR GIS AT SITE	item62	7	DAY	INR			0.00			0.00		0.000	0.000	INR Zero Only
5.14	SERVICES- 220kV GIS : TRAINING FOR GIS AT MANUFACTURER WORKS	item63	7	DAY	INR			0.00			0.00		0.000	0.000	INR Zero Only
6.01	SERVICES- 220KV GIS : REFERENCE UNIT PRICE FOR ADDITION / DELETION OF SERVICES - SERVICES FOR SUPERVISION OF ERECTION OF GIS	item64	10	MANDAY	INR			0.00			0.00		0.000	0.000	INR Zero Only
6.02	SERVICES- 220KV GIS : REFERENCE UNIT PRICE FOR ADDITION / DELETION OF SERVICES - SERVICES FOR TESTING & COMMISSIONING OF GIS	item65	10	MANDAY	INR			0.00			0.00		0.000	0.000	INR Zero Only

Validate | Print | Help

Item Wise BoQ

Tender Inviting Authority: BHEL TBG NOIDA

Name of Work: IOCL Panipat-220kV GIS S/stn Tender

NIT/Enquiry No: NIT No. 84687_Enquiry No. 61Q2500228 Dtd: 16-08-2024

Name of the Bidder/ Bidding Firm / Company :	

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Quoted Currency in INR / Other Currency	Unit RATE In Figures To be entered by the Bidder in Rs. P	GST (in Percentage)	GST Amount (Unit Rate*Quantity* GST) Rs. P	Unit Freight & Insurance Charges in Rs. P	GST (in Percentage)	GST Amount on F&I (Unit Rate*Quantity*GST) Rs. P	HSN / SAC Code	TOTAL Ex-Works + F & I AMOUNT excluding GST in Rs. P	TOTAL Ex-Works + F & I AMOUNT including GST in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	12	13	14	15	16	20	21	51	53	54	55
6.03	SERVICES- 220KV GIS : REFERENCE UNIT PRICE FOR ADDITION / DELETION OF SERVICES: DEMOBILIZATION AND REMOBILIZATION CHARGES FOR GIS ERECTION SUPERVISION TEAM	item66	2	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
6.04	SERVICES- 220KV GIS : REFERENCE UNIT PRICE FOR ADDITION / DELETION OF SERVICES: DEMOBILIZATION AND REMOBILIZATION CHARGES FOR GIS TESTING & COMMISSIONING TEAM	item67	2	Set	INR			0.00			0.00		0.000	0.000	INR Zero Only
6.05	SERVICES- 220KV GIS : REFERENCE UNIT PRICE FOR ADDITION / DELETION OF SERVICES: DEMOBILIZATION & REMOBILIZATION CHARGES OF HV TEST KIT ALONG WITH OPERATOR	item68	1	Lot	INR			0.00			0.00		0.000	0.000	INR Zero Only
Total in Figures													0.000	0.000	Zero Only
oted Rate in Words		**INR Zero Only**													