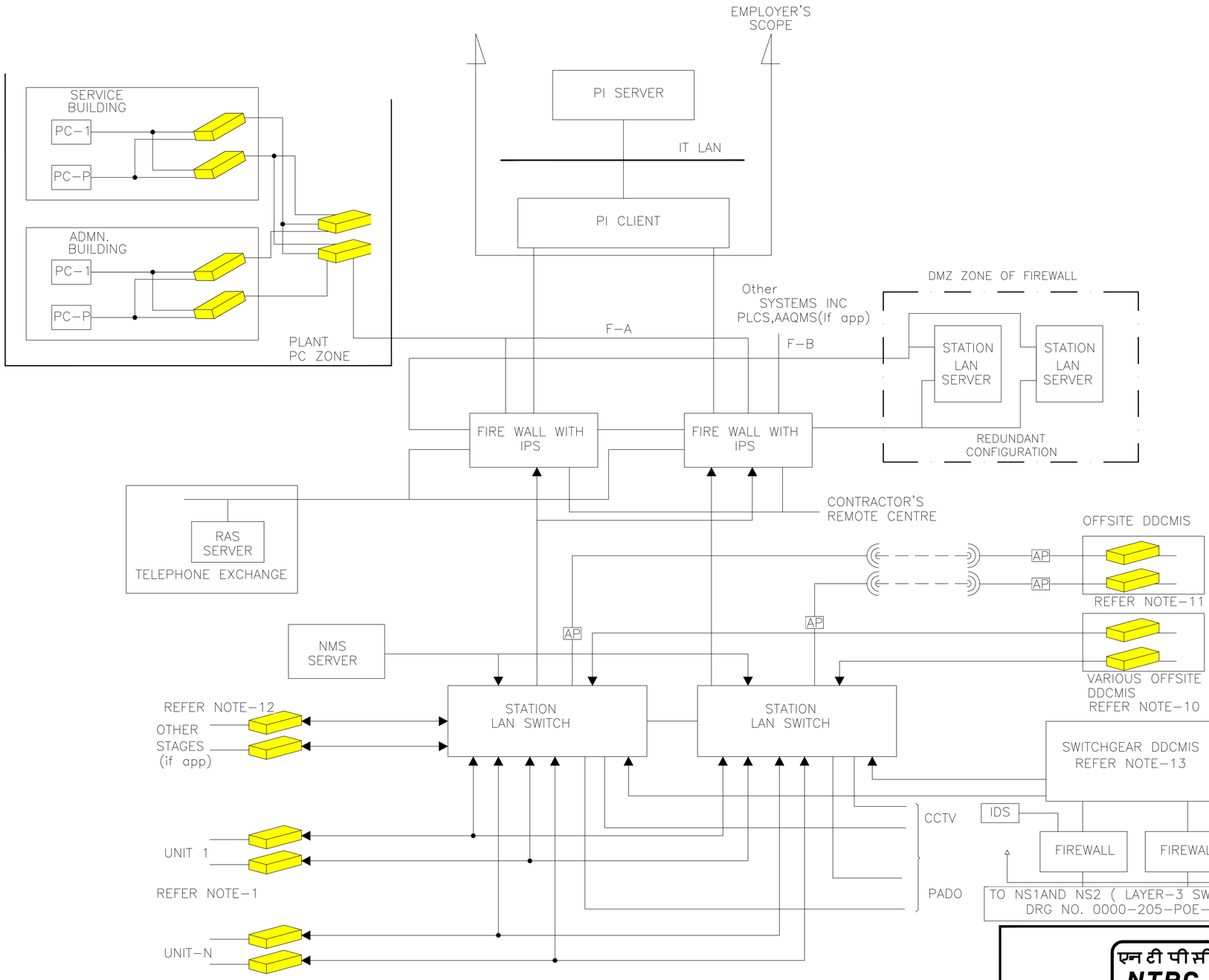


NOTES:-

1. ALL OFC CABLES SHALL HAVE MIN. 100% SPARE CORES.
2. FOR CONNECTIVITY OF CCTV SYSTEM WITH STATION LAN REFER DRG NO 0000-999-POI-A-072
3. SINGLE MODE FIBRE OPTIC CABLE WILL BE USED, SO THAT USE OF REPEATERS ARE MINIMISED.
4. DISTANCES OF VARIOUS SUB-SYSTEM, PC STN.'s ETC. LOCATED AT VARIOUS PLANTS LOCATIONS IS TO BE ESTIMATED BY BIDDER.
5. ALL FIBRE OPTIC LINKS SHALL BE FULL DUPLEX REDUNDANT TYPE.
6. FOR NUMBER & LOCATIONS OF PC BASED STATIONS AND PLC BASED CONTROL SYSTEM, REFER APPENDIX-I TO PART-A OF TECHNICAL SPEC.
7. IF CW PUMPS ARE BEING SUPPLIED, THEN COMMUNICATION BUS BETWEEN CONTROLLERS AND REMOTE I/O PANELS LOCATED IN CW PUMP HOUSE SHALL BE THROUGH FIBRE OPTIC CABLE BACKED UP BY WIRELESS LINK.
8. ANY CONVERTOR FOR FO-TO STP CONVERSION WILL BE IN CONTRACTOR"s SCOPE.
9. ALL THE SWITCHES SHOWN WILL OPERATE IN REDUNDANT MODE.
10. REFER PART-A SUB SECTION-II FOR NO. OF UNIT DDCMIS. AND OFFSITE DDCMIS(s).
11. REFER PART-A Sub Section-II FOR THE OFFSITE AREAS TO BE CONNECTED WITH WIRELESS SYSTEMS.
12. REFER PART-A SUB SECTION-IIFOR THE NO. OF STAGES.
13. REFER PART-A SUB SSCTION-II FOR SWITCHGEAR DDCMIS TO BE CONNECTED TO SWITCHGEAR RELAY NETWORK (REFER SECTION-VI, PART-B SUB SECTION B-05 (B) MV SWGR-PROTECTION, CONTROL & METERING).

SYMBOL	DESCRIPTION
AP	ACCESS POINT
	SECONDARY SWITCH SWITCH PART OF RESPECTIVE DDCMIS
	ANTENNA WITH MAST (BOQ)
— — — —	WIRELESS LINK

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

NTPC LIMITED

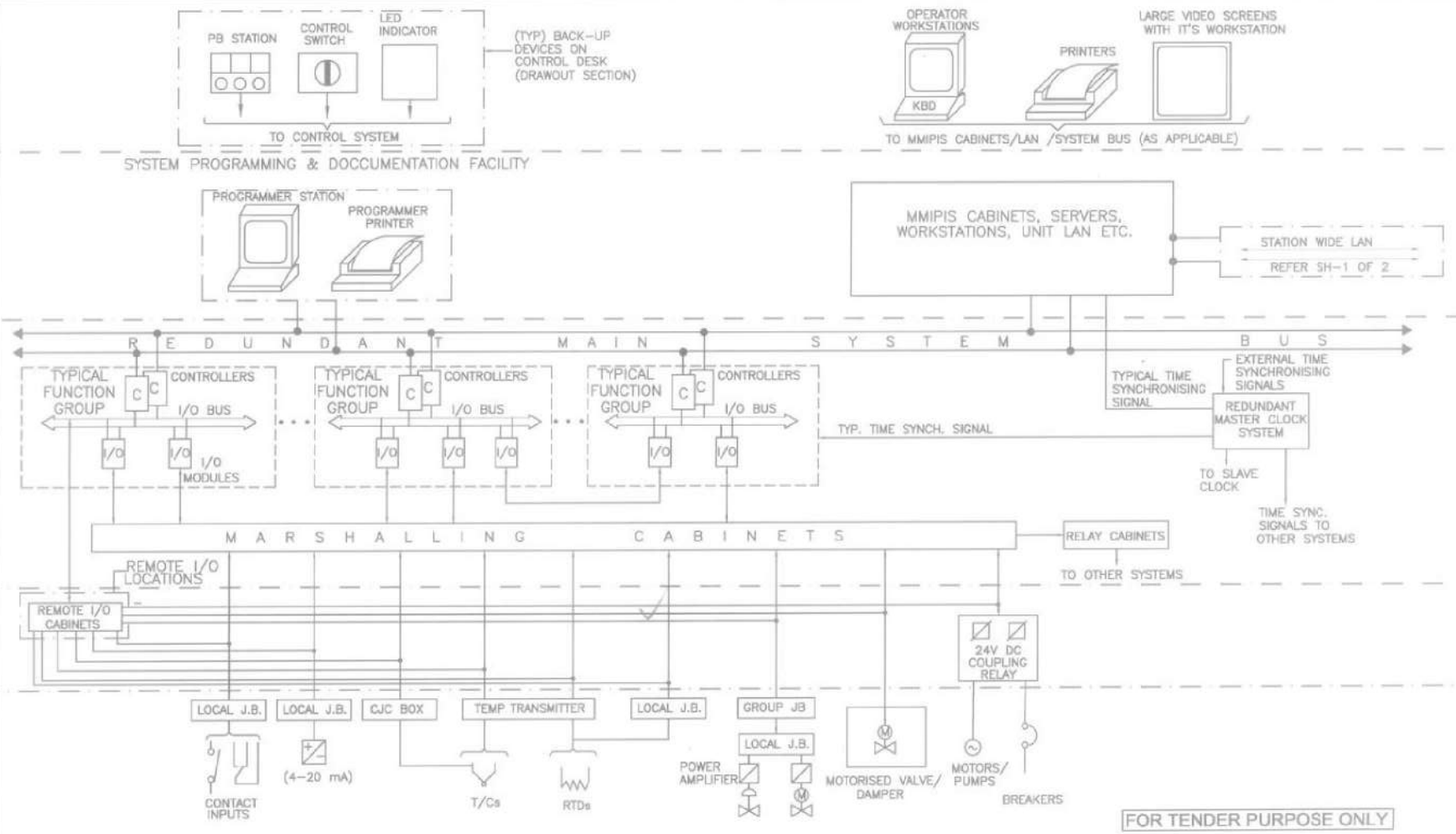
(A GOVT. OF INDIA ENTERPRISE)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.07.19
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT(EPC)

TITLE: CONFIGURATION DIAGRAM FOR STATION LAN

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-001 SH 1 OF 2	B



FOR TENDER PURPOSE ONLY

NOTES:

1. THIS SKETCH IS INDICATIVE , TO EXPLAIN CONFIGURATION .PLEASE REFER PART-A & B OF TECHNICAL SPECIFICATION FOR DETAILS.

एन टी पी सी NTPC

NTPC LIMITED
(GOVT. OF INDIA ENTERPRISE)

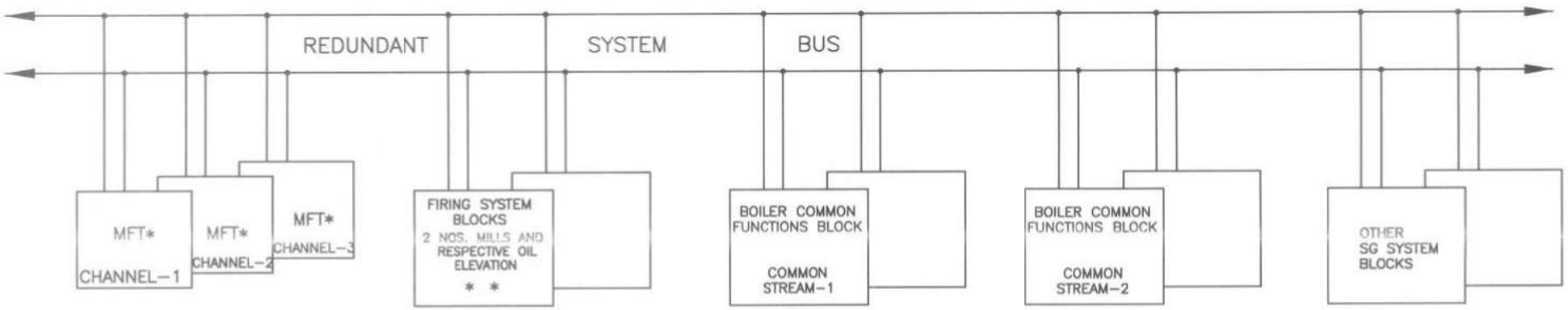
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: DDCMIS CONFIGURATION DIAGRAM

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										10.03.11

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-001 Sh-2 Of 2	A



NOTES:–

1. THE HARDWARE BLOCKS SHOWN ABOVE ARE TYPICAL FOR THE SYSTEM MENTIONED AND ARE MINIMUM REQUIRED. BIDDER SHALL PROVIDED REQUISITE HARDWARE / SOFTWARE INCLUDING NO. OF FG AS DETAILED IN SCOPE OF SUPPLY & SERVICES, PART–A , SECTION–VI OF TECHNICAL SPECIFICATION.

* 2. REFER DRG. BURNER MANAGEMENT SYSTEM (MFT SUBGROUP) CONFIGURATION DIAGRAM

** 3. THE NO. OF FGs SHALL DEPEND ON NO. MILLS & RESPECTIVE OIL ELEVATIONS PROVIDED BY THE CONTRACTOR.

4. FOR COMMON STREAM–1 AND COMMON STREAM–2 UNDER BOILER COMMON FUNCTION BLOCK REFER ANNEXURE–III TO APPENDIX–1 TO PART–A, SUB SECTION–II C PART–A OF TECHNICAL SPECIFICATION.

FOR TENDER PURPOSE ONLY

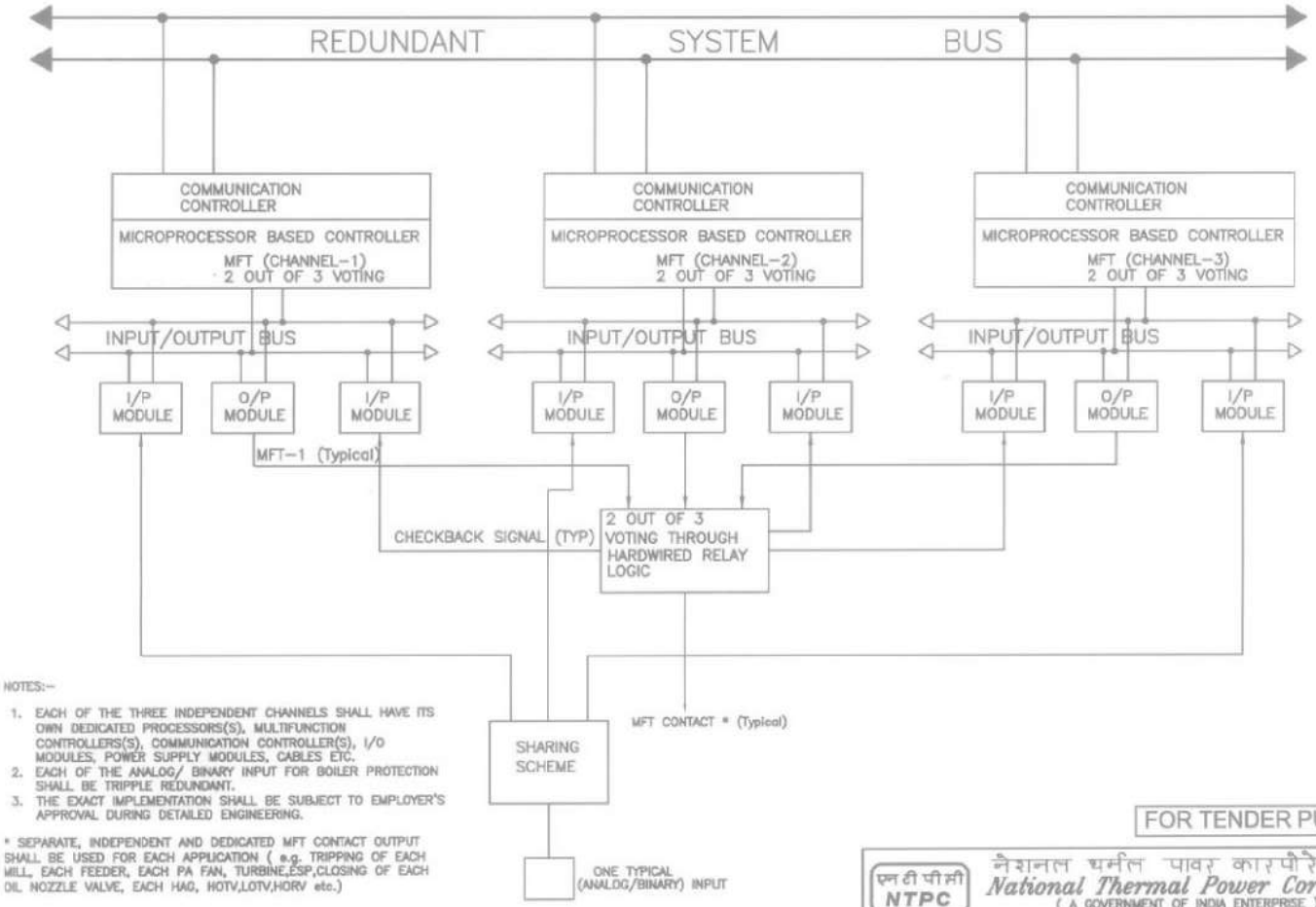
एन टी पी सी NTPC
नेशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: BMS CONFIGURATION DIAGRAM

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
C	REVISED										21.08.12
					CLEARED BY						

SIZE	SCALE	DRG. NO.	REV. NO.
	N.T.S.	0000-999-POI-A-002 SH 1 OF 2	C



NOTES:-

1. EACH OF THE THREE INDEPENDENT CHANNELS SHALL HAVE ITS OWN DEDICATED PROCESSORS(S), MULTIFUNCTION CONTROLLERS(S), COMMUNICATION CONTROLLER(S), I/O MODULES, POWER SUPPLY MODULES, CABLES ETC.
2. EACH OF THE ANALOG/ BINARY INPUT FOR BOILER PROTECTION SHALL BE TRIPPLE REDUNDANT.
3. THE EXACT IMPLEMENTATION SHALL BE SUBJECT TO EMPLOYER'S APPROVAL DURING DETAILED ENGINEERING.

* SEPARATE, INDEPENDENT AND DEDICATED MFT CONTACT OUTPUT SHALL BE USED FOR EACH APPLICATION (e.g. TRIPPING OF EACH MILL, EACH FEEDER, EACH PA FAN, TURBINE,ESP,CLOSING OF EACH OIL NOZZLE VALVE, EACH HAG, HOTV,LOTV,HORV etc.)

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC
नेशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

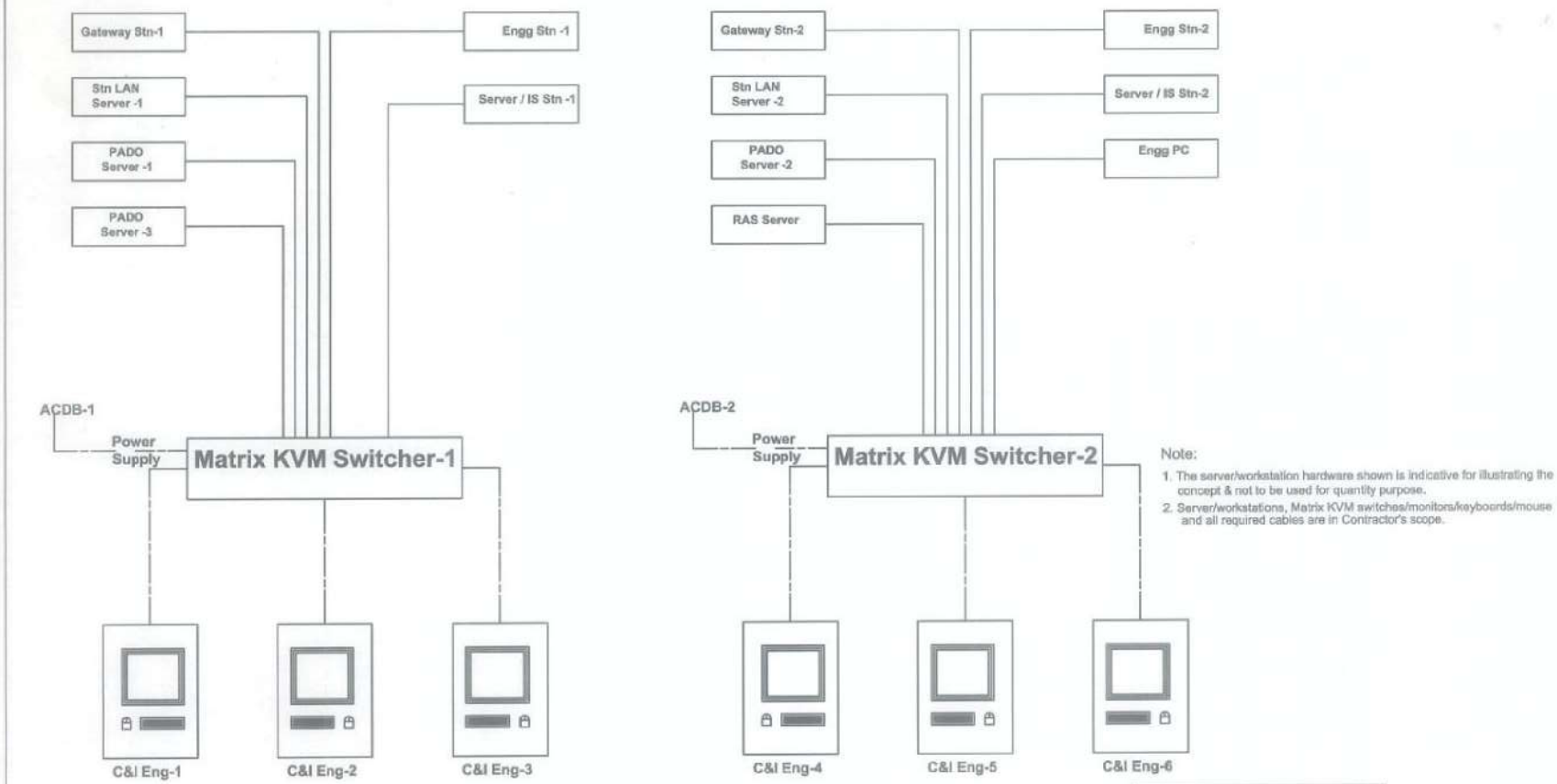
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
B	FIRST ISSUE										18.02.11

CLEARED BY

PROJECT: TYPICAL THERMAL POWER PROJECT
EPC PACKAGE

TITLE: BURNER MANAGEMENT SYSTEM (MFT SUBGROUP)
CONFIGURATION DIAGRAM

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-002 SH-02 OF 02	B



Note:

1. The server/workstation hardware shown is indicative for illustrating the concept & not to be used for quantity purpose.
2. Server/workstations, Matrix KVM switches/monitors/keyboards/mouse and all required cables are in Contractor's scope.

FOR TENDER PURPOSE ONLY

एनटीपीसी NTPC

एनटीपीसी लिमिटेड
NTPC Limited
(A Government of India Enterprise)
ENGINEERING DIVISION

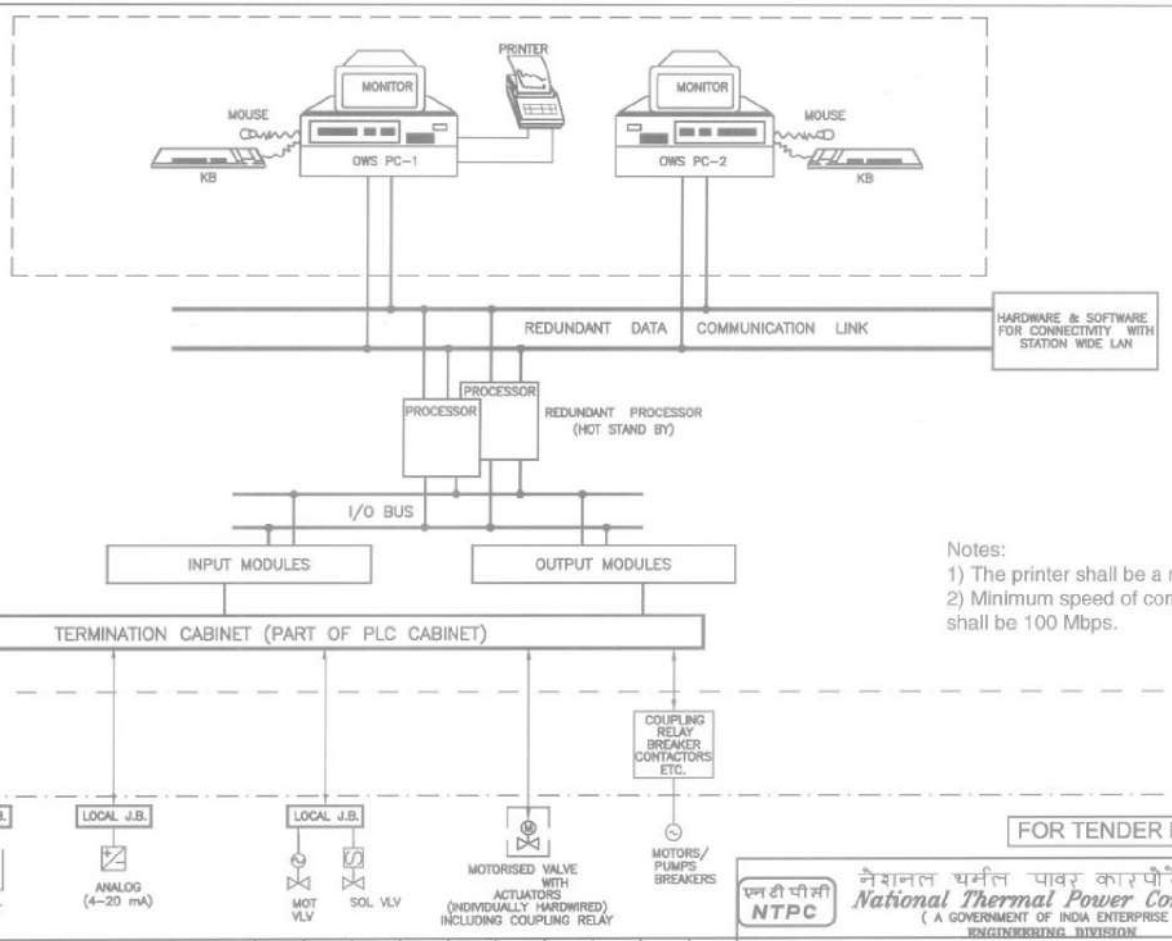
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: SCHEME OF PROGRAMMER'S ROOM HARDWARE MULTIPLEXING

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-006 SH 1 OF 1	A



Notes:
1) The printer shall be a network printer.
2) Minimum speed of communication bus shall be 100 Mbps.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC
नेशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

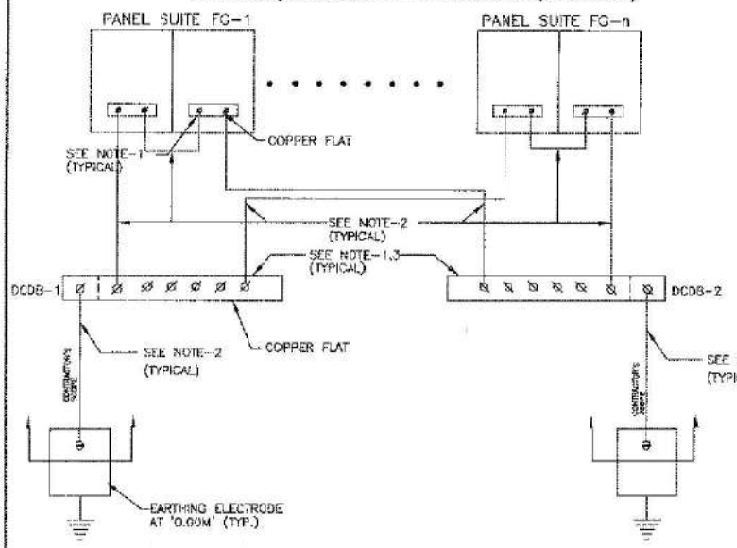
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: STANDARD CONFIGURATION DIAGRAM FOR PLC BASED OFFSITE CONTROL SYSTEMS

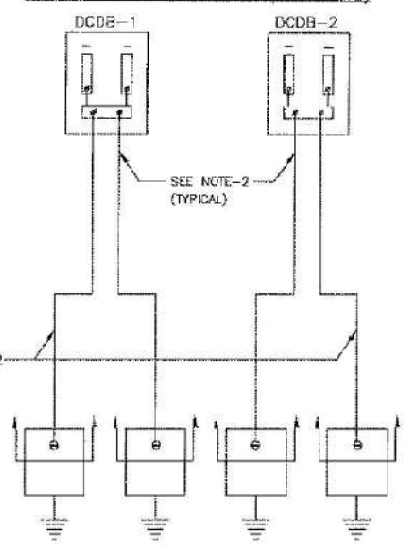
DESCRIPTION	M	E	C	C&I	ARCH.
	CLEARED BY				

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-013	A

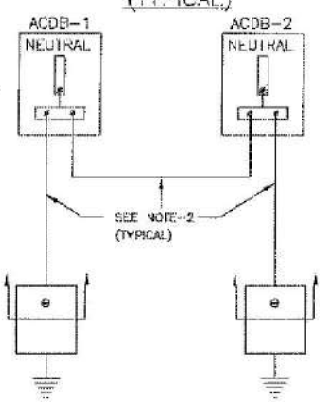
SYSTEM/SHIELD GROUNDING (TYPICAL)



POWER GROUNDING (TYPICAL)



ACDB GROUNDING (TYPICAL)



NOTES:—

1. SUPPLY, ERECTION, TERMINATION OF CABLES, FLATS ETC. REQUIRED FOR PROPER GROUNDING OF CONTRACTOR's CONTROL SYSTEM, SYSTEM CABINETS, POWER SUPPLY CABINETS ETC. ARE IN THE SCOPE OF CONTRACTOR.
2. CABLE IN CONTRACTOR'S SCOPE.
3. TO BE LOCATED IN DCDB.
4. EXACT LOCATION, ARRANGEMENTS OF FLATS ETC. SHALL BE AS FINALISED WITH CONTRACTOR. DURING DETAILED ENGINEERING.
5. CABINET BODY, CABINET BOTTOM PLATE, CABINET DOORS ARE TO BE CONNECTED TO PANEL EARTH FLAT COPPER CABLE BY CONTRACTOR.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

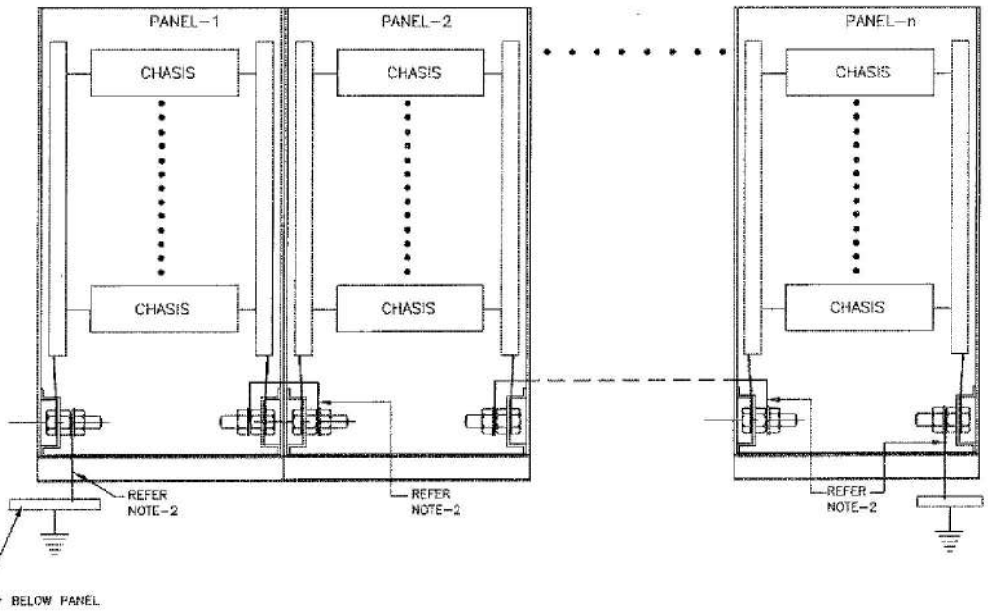
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										21.08.12
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENTATION CABLING DIAGRAM
GROUNDING SCHEME FOR CABINETS / PANELS / POWER SUPPLY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-019A SH-1 OF 2	A

GROUNDING FOR EACH ROW OF PANELS (TYPICAL)



NOTES:–

1. SUPPLY, ERECTION, TERMINATION OF CABLES, FLATS ETC. REQUIRED FOR PROPER GROUNDING OF CONTRACTOR's CONTROL SYSTEM, SYSTEM CABINETS, POWER SUPPLY CABINETS ETC. ARE IN THE SCOPE OF CONTRACTOR.
2. CABLE IN CONTRACTOR'S SCOPE.
3. TO BE LOCATED IN DCDB.
4. EXACT LOCATION, ARRANGEMENTS OF FLATS ETC. SHALL BE AS FINALISED WITH CONTRACTOR. DURING DETAILED ENGINEERING.
5. CABINET BODY, CABINET BOTTOM PLATE, CABINET DOORS ARE TO BE CONNECTED TO PANEL EARTH FLAT COPPER CABLE BY CONTRACTOR.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

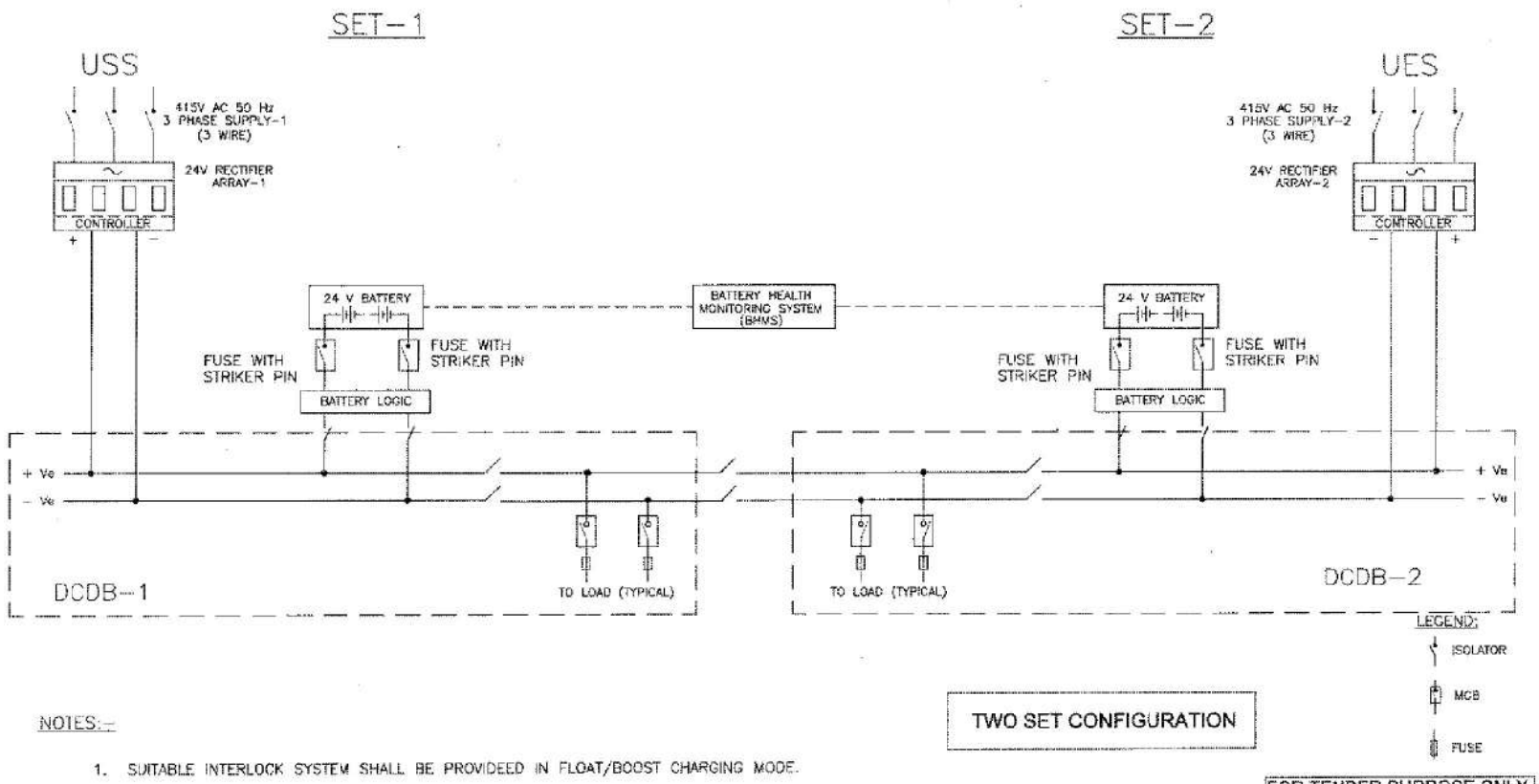
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										21.08.12
		CLEARED BY									

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENTATION CABLING DIAGRAM
GROUNDING SCHEME FOR CABINETS / PANELS / POWER SUPPLY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-019A SH–2 OF 2	A



NOTES:–

1. SUITABLE INTERLOCK SYSTEM SHALL BE PROVIDEED IN FLOAT/BOOST CHARGING MODE.

TWO SET CONFIGURATION

FOR TENDER PURPOSE ONLY

NTPC Limited
(A GOVT. OF INDIA ENTERPRISE)
ENGINEERING DIVISION

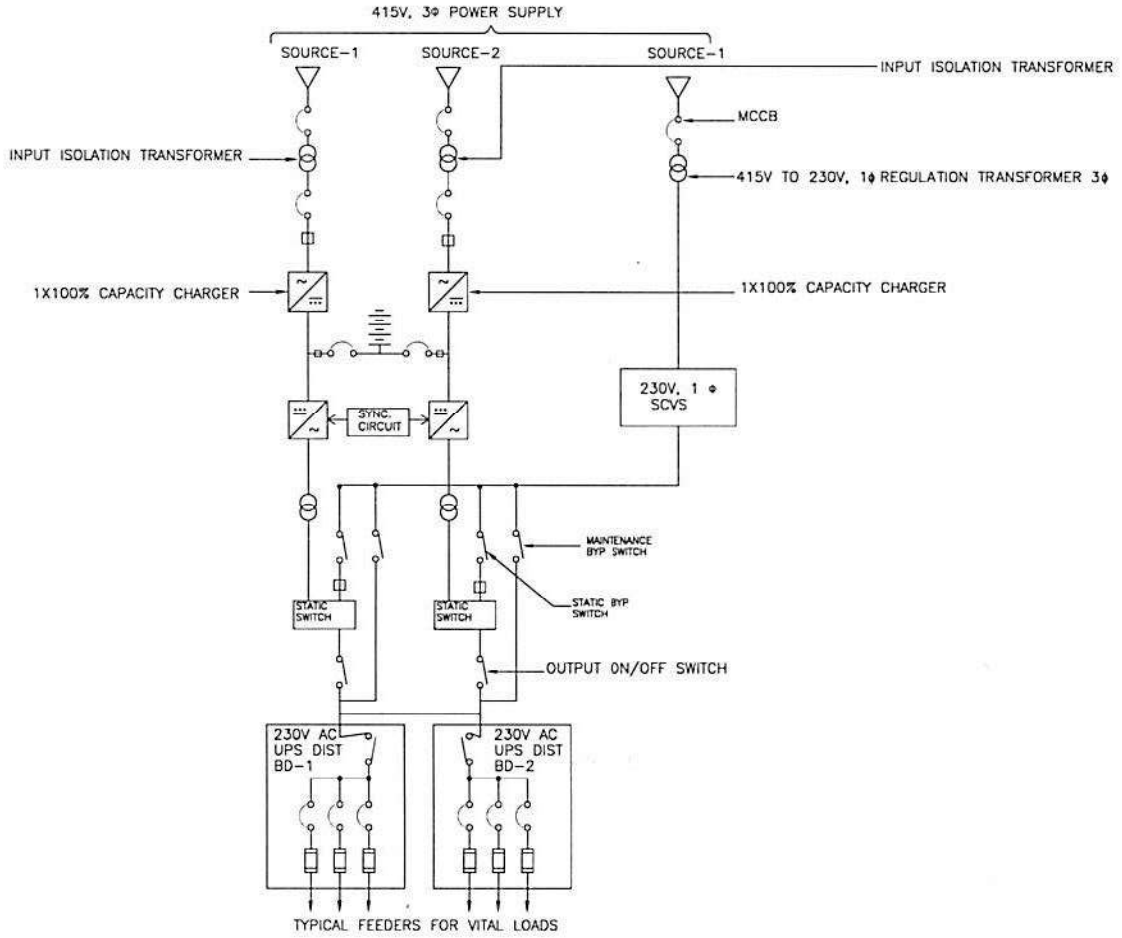
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										21.08.12

CLEARED BY

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: SCHEME FOR 24 V DC POWER SUPPLY SYSTEM

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-019B	A



LEGENDS :-

	CIRCUIT BREAKER
	TRANSFORMER
	FUSE
	BATTERY BANK
	CONTACTOR /SWITCH

NOTE :- ABOVE INDICATED IS A TYPICAL SCHEME OF CONFIGURATION-A UPS. SYSTEM . ANY ADDITIONAL COMPONENT, DEVICE AS REQUIRED BY THE BIDDER AS PER HIS PROVEN SCHEME CAN BE OFFERED OVER & ABOVE THE SCHEME INDICATED ABOVE.

FOR TENDER PURPOSE ONLY

एनटीपीसी NTPC
नेशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

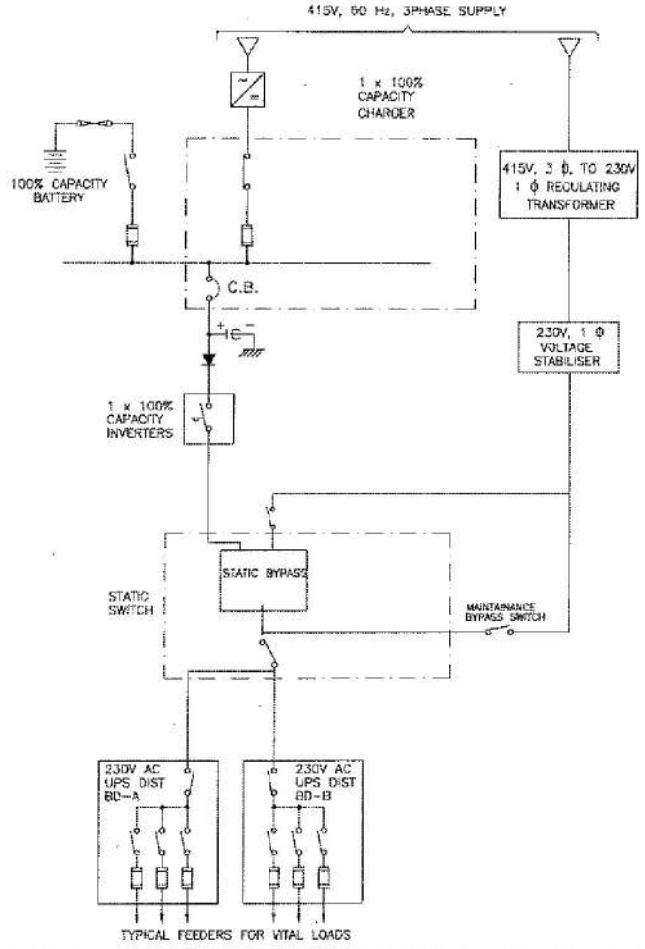
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE	MJ	AM	AKA				RK			01.08.17
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: SCHEME FOR UNINTERRUPTIBLE POWER SUPPLY SYSTEM -Conf-A

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-019C (SHEET 1 OF 2)	A

CAD FILE NAME: C:\PC_MS\TYPTPP_SG,TG,BOP\0000-999-POI-A-020rD.DWG



FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

ena ll pl sal llaimaloD

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

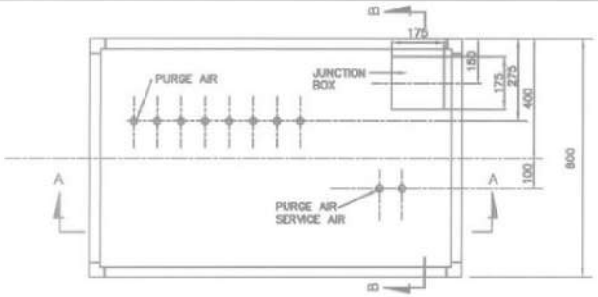
PROJECT: TYPICAL THERMAL POWER PROJECT FOR STATION C& I

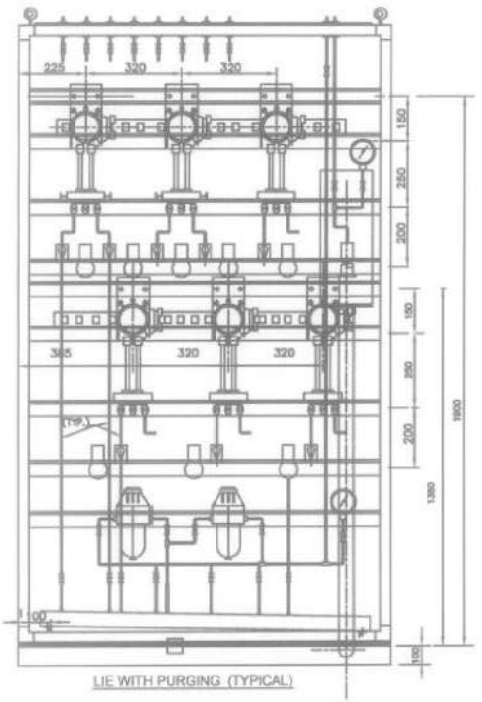
TITLE: SCHEME FOR UNINTERRUPTIBLE POWER SUPPLY SYSTEM -CONFIGURATION-B

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										22.10.12

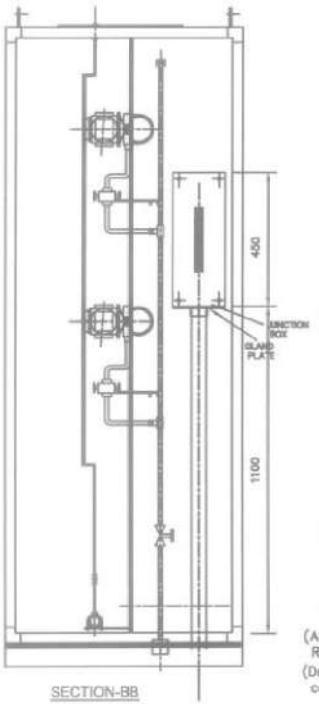
CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-019C (SH 2 of 2)	A





LIE WITH PURGING (TYPICAL)



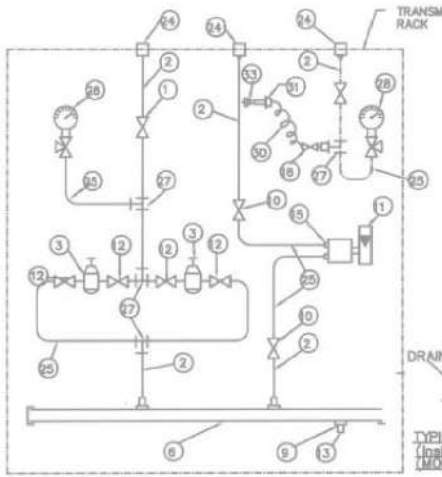
SECTION-BB

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	ISOLATION VALVE(gate/globe). SS.
2.	SEAMLESS SS PIPE.
3.	AIR FILTER REGULATOR.
6.	INST. AIR HEADER SS.
10.	COMP. NEEDLE VALVE SS.
11.	AIR PURGE SET.
12.	COMP VALVE SS.
13.	PLUG SS.
15.	TUBE SS CONNECTOR.
16.	TUBE COMP. EQUAL TEE UNION.
24.	BULKHEAD--SS SUITABLE FOR GI PIPE CONNECTION
25.	SEAMLESS TUBE SS.
27.	BRANCH TEE SS.
28.	PR. GAUGE.
30.	NYLON FLEX. HOSE BRAIDED WITH SS WIRE.
31.	HOSE BARBED CONN. SS.
33.	QUICK DISCONNECT SS (PURGE AIR CONNECTION TO INSTRUMENT SOURCE END).

LIST OF MATERIALS

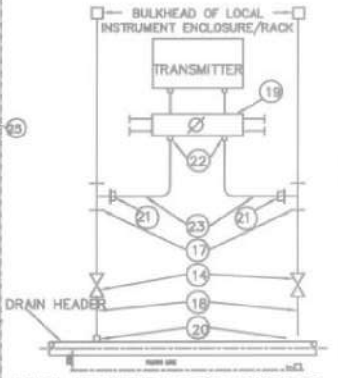
ITEM NO.	DESCRIPTION
14.	SW GLOBE VALVE.
17.	SW EQUAL TEE
18.	S.S. NIPPLE
19.	5 VALVE MANIFOLD
20.	SW HALF COUPLET CS
21.	PIPE x TUBE UNION
22.	SUITABLE ADAPTER
23.	SS TUBE



TYPICAL PURGE AIR CONNECTION INSIDE THE INST. ENCLOSURE

(APPLICABLE FOR MILL, AIR & FLUE GAS SERVICE INSTRUMENTS REQUIRING PURGE AIR)

(Drain Header of each LIE/LIR shall be connected to nearest plant drain)



TYPICAL ARRANGEMENT OF DP TRANSMITTER (Inside LIE/LIR) (MOUNTED BELOW INSTRUMENT SOURCE POINT)

FOR TENDER PURPOSE ONLY

NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

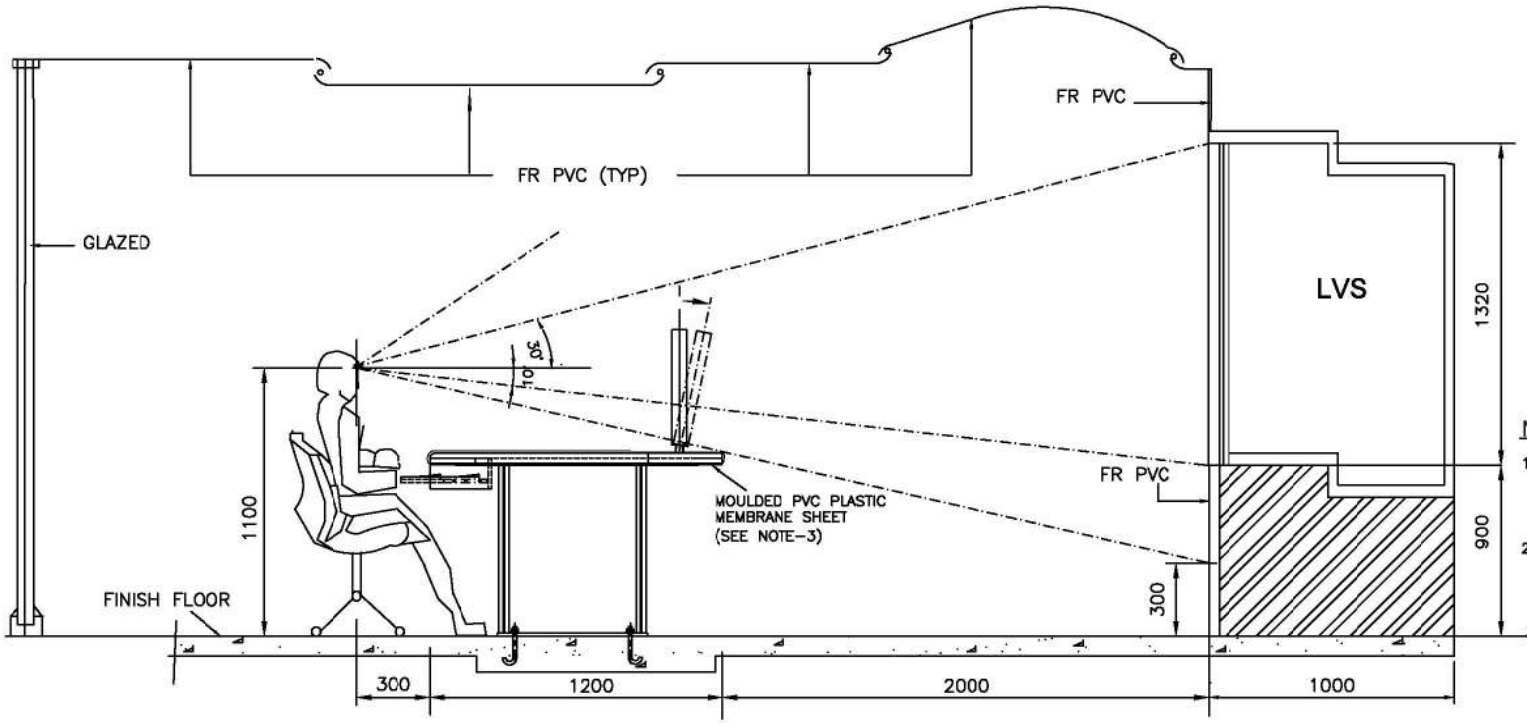
PROJECT: TYPICAL THERMAL POWER PROJECT (TURNKEY EPC PACKAGE)

TITLE: TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE, PURGING SCHEME, DP TRANSMITTER

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	GM	ARDN.	APPD	DATE
A	FIRST ISSUE										02.02.11

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A2	N.T.S.	0000-999-POI-A-036	A



NOTES:-

1. THIS IS ONLY AN INDICATIVE ARRANGEMENT. FINAL ARRANGEMENT SHALL BE AS APPROVED BY EMPLOYER DURING DETAILED ENGG.
2. THE CONTROL DESK SHALL BE PROVIDED WITH REMOTE OPERATION FACILITY MEMBRANE TYPE PUSHBUTTON ON THE DESK SHALL ALSO BE PROVIDED.
3. FOR MORE DURABILITY THE MEMBRANE COVER OF THE CONTROL DESK SHALL EXTEND ATLEAST 100 mm MORE INTO THE UNDERSIDE OF THE DESK.

FOR TENDER PURPOSE ONLY

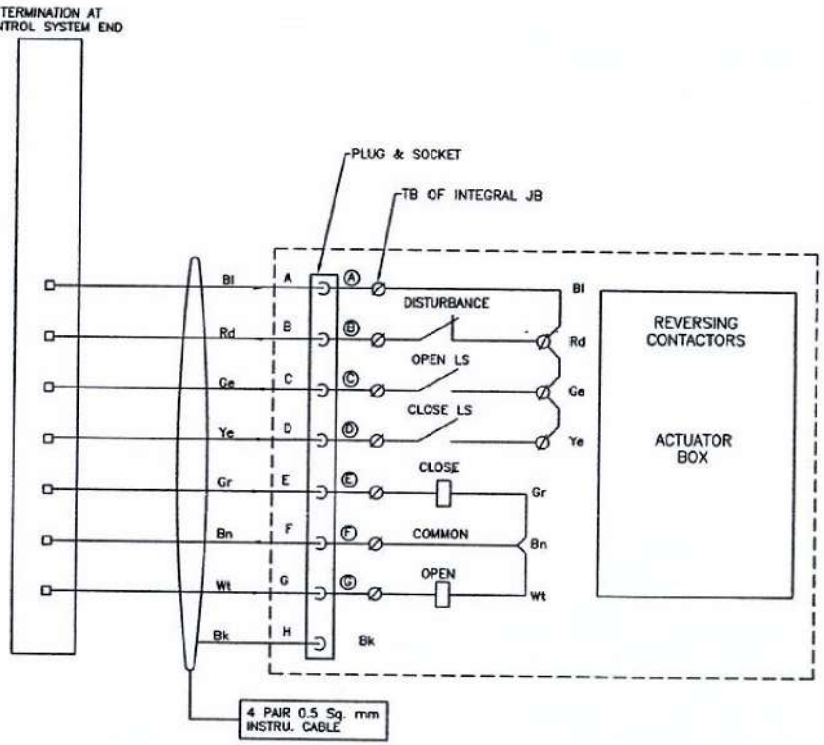
एन टी पी सी NTPC
नैशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										07.06.05
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: SKETCH OF CONTROL ROOM CONCEPT SHOWING LVS & OWS

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-061	B



FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

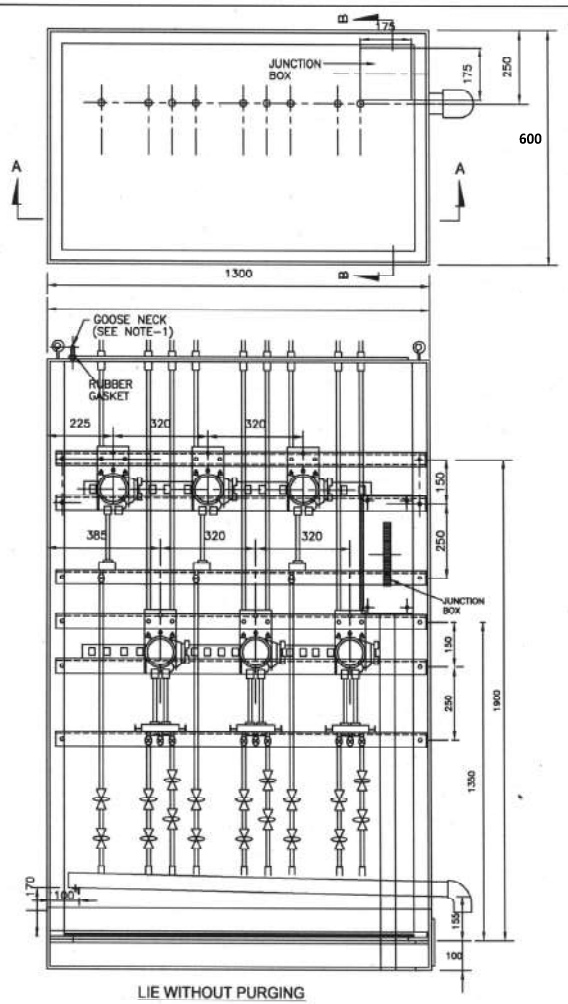
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF ACTUATORS

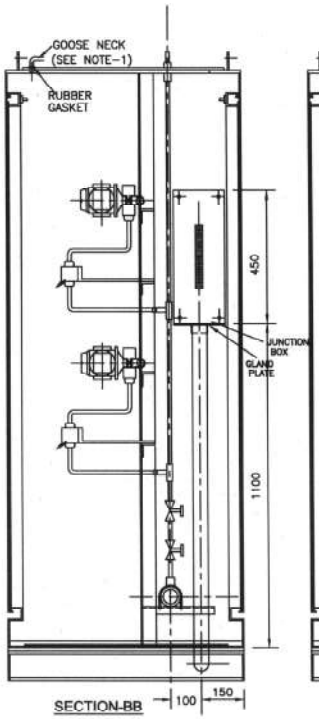
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										28.04.06

CLEARED BY

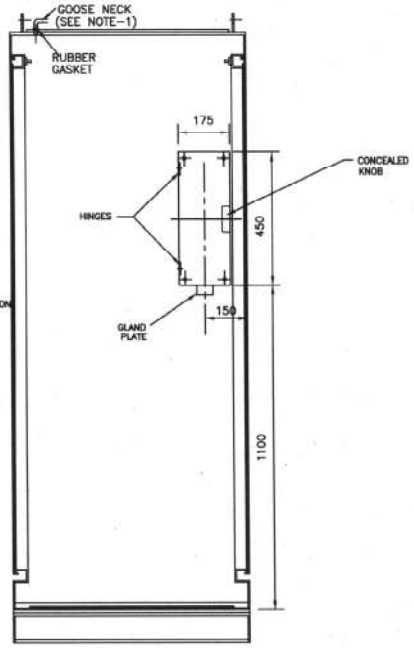
SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-063	A



LIE WITHOUT PURGING



SECTION-BB



SIDE ELEVATION

NOTES:-

1. TO BE PROVIDED FOR LIEs USED IN STEAM & WATER APPLICATION.
2. MATERIAL OF JBs FOR LIEs SHALL BE SAME AS THAT OF LIE.

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE						T.G.				21.08.12

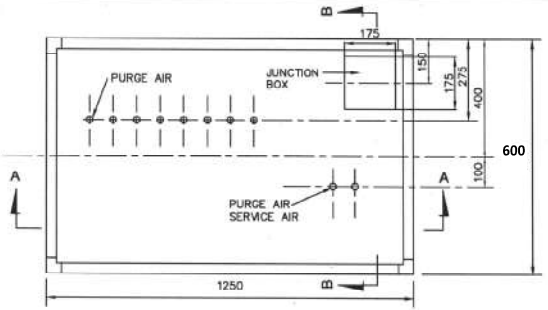
CLEARED BY

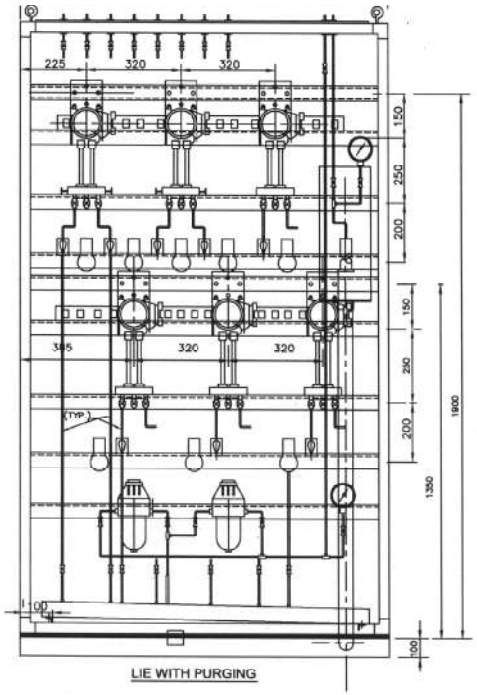
NTPC — N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

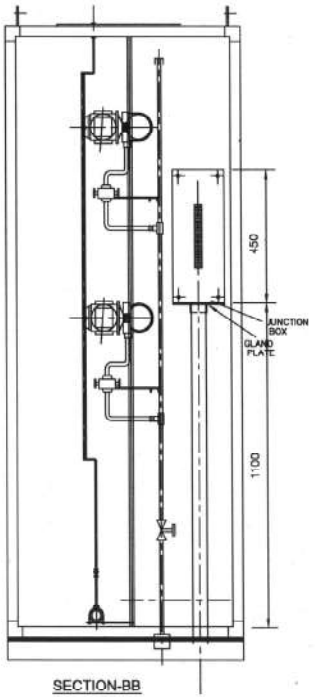
TITLE: TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK

SIZE	SCALE	DRG. NO.	REV. NO.
A2	N.T.S.	0000-999-POI-A-064 SHEET 01 OF 03	B





LIE WITH PURGING



SECTION-BB

NOTES:-

1. MATERIAL OF JBs FOR LIEs SHALL BE SAME AS THAT OF LIE.

FOR TENDER PURPOSE ONLY

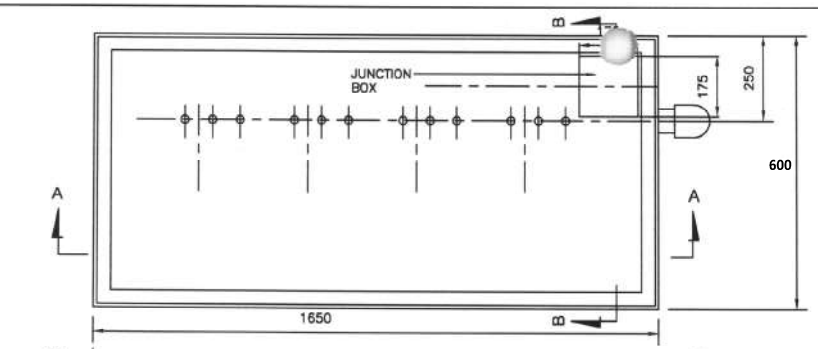
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			19.04.12
					CLEARED BY						

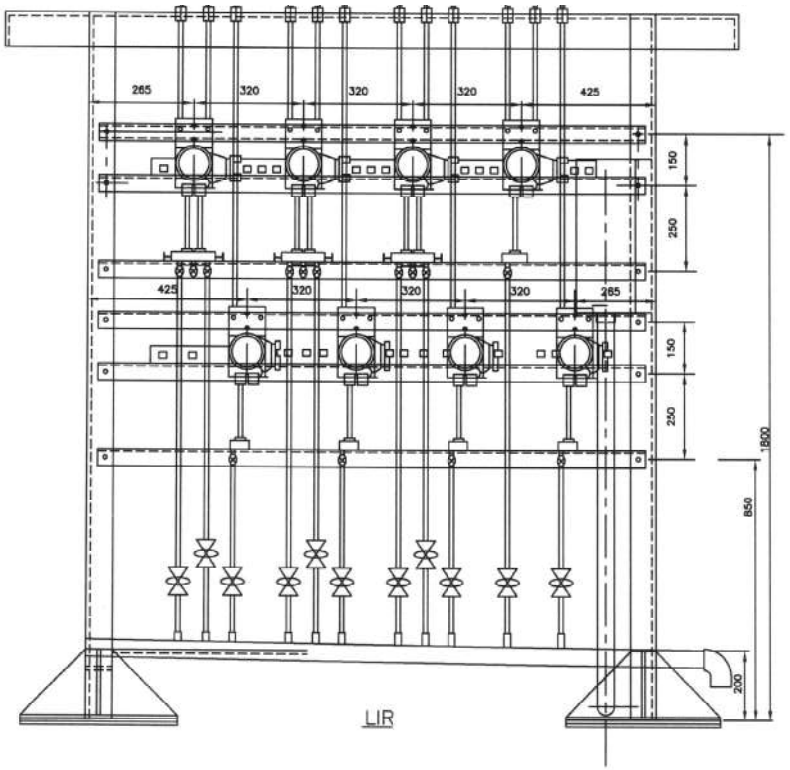
NTPC — N T P C LIMITED (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

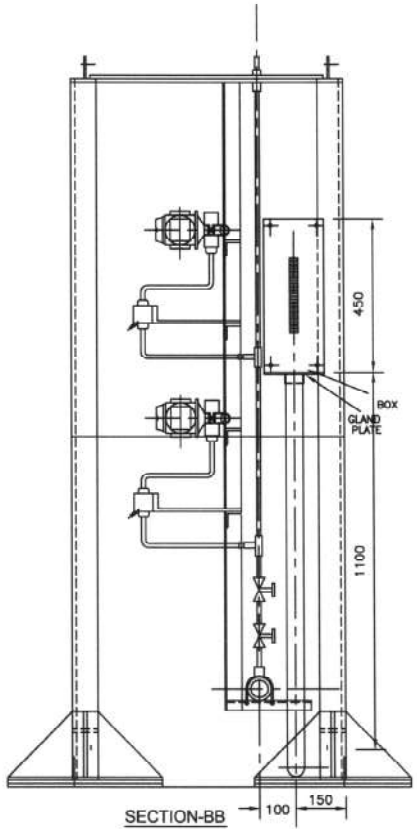
TITLE: TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK

SIZE	SCALE	DRG. NO.	REV. NO.
A2	N.T.S.	0000-999-POI-A-064 SH- 02 OF 03	B





LIR



SECTION-BB

NOTE:-

1. MATERIAL OF JBs FOR LIRs SHALL BE SAME AS THAT OF LIR.

SECTION-AA
LIR WITHOUT PURGING

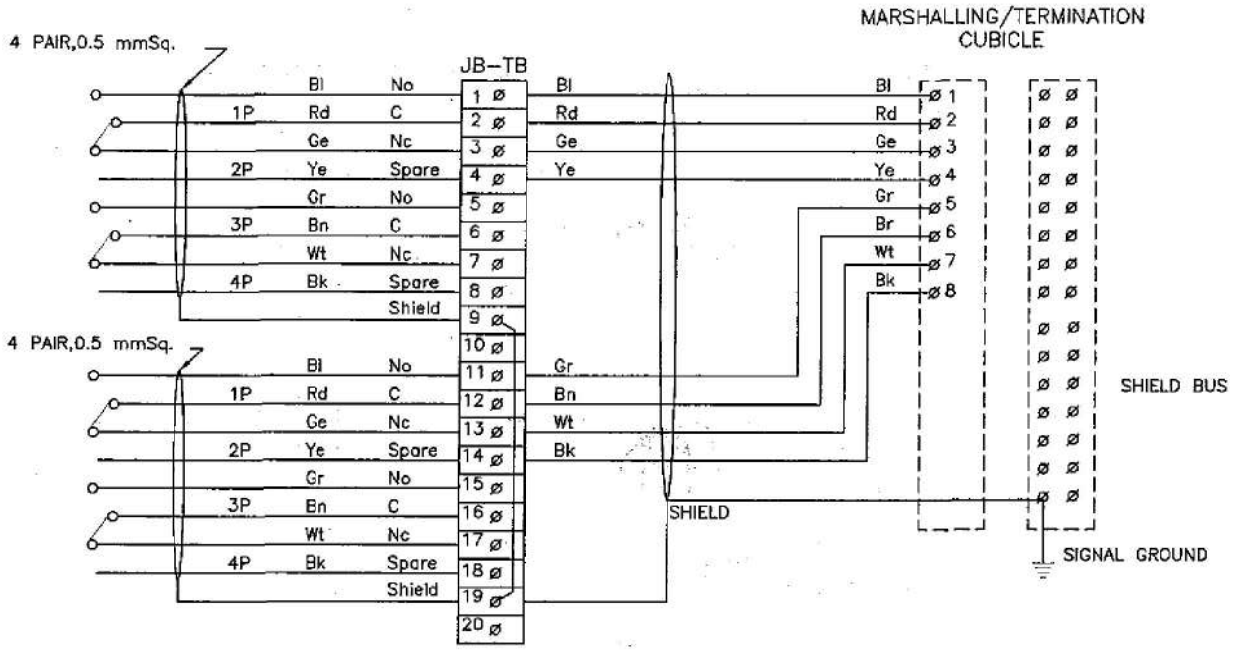
FOR TENDER PURPOSE ONLY

NTPC — NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE						T.G.				21.08.12

CLEARED BY

PROJECT	TITLE	SIZE	SCALE	DRG. NO.	REV. NO.
TYPICAL THERMAL POWER PROJECT	TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK	A3	N.T.S.	0000-999-POI-A-064 SH- 03 OF 03	A



FOR TENDER PURPOSE ONLY

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

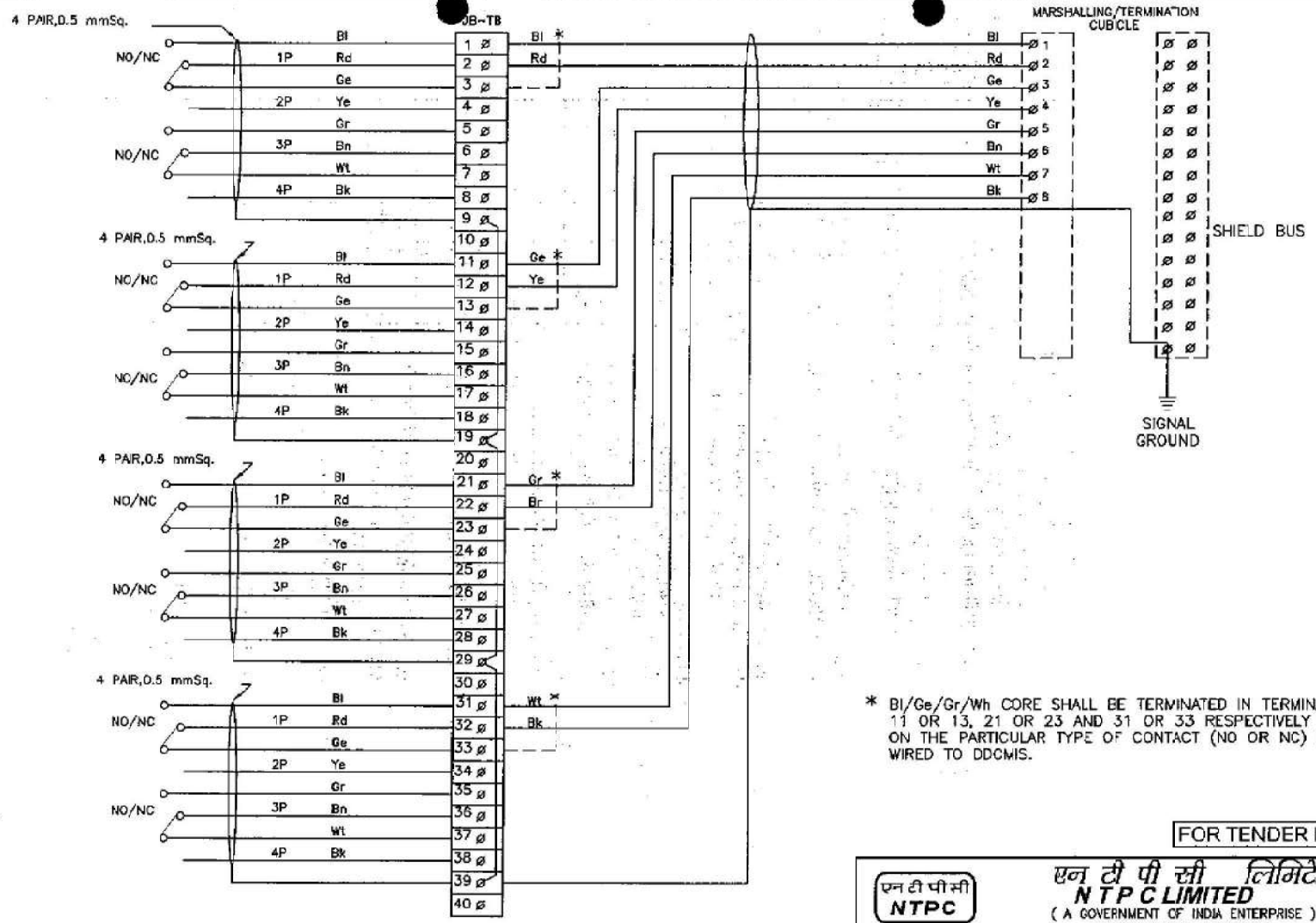
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS/ SWGR SWITCH (COC) TERMINATION DETAILS

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										29.04.06

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 01 OF 14	A



* Bl/Ge/Gr/Wh CORE SHALL BE TERMINATED IN TERMINAL 1 OR 3, 11 OR 13, 21 OR 23 AND 31 OR 33 RESPECTIVELY DEPENDING ON THE PARTICULAR TYPE OF CONTACT (NO OR NC) IS TO BE WIRED TO DDCMIS.

FOR TENDER PURPOSE ONLY

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

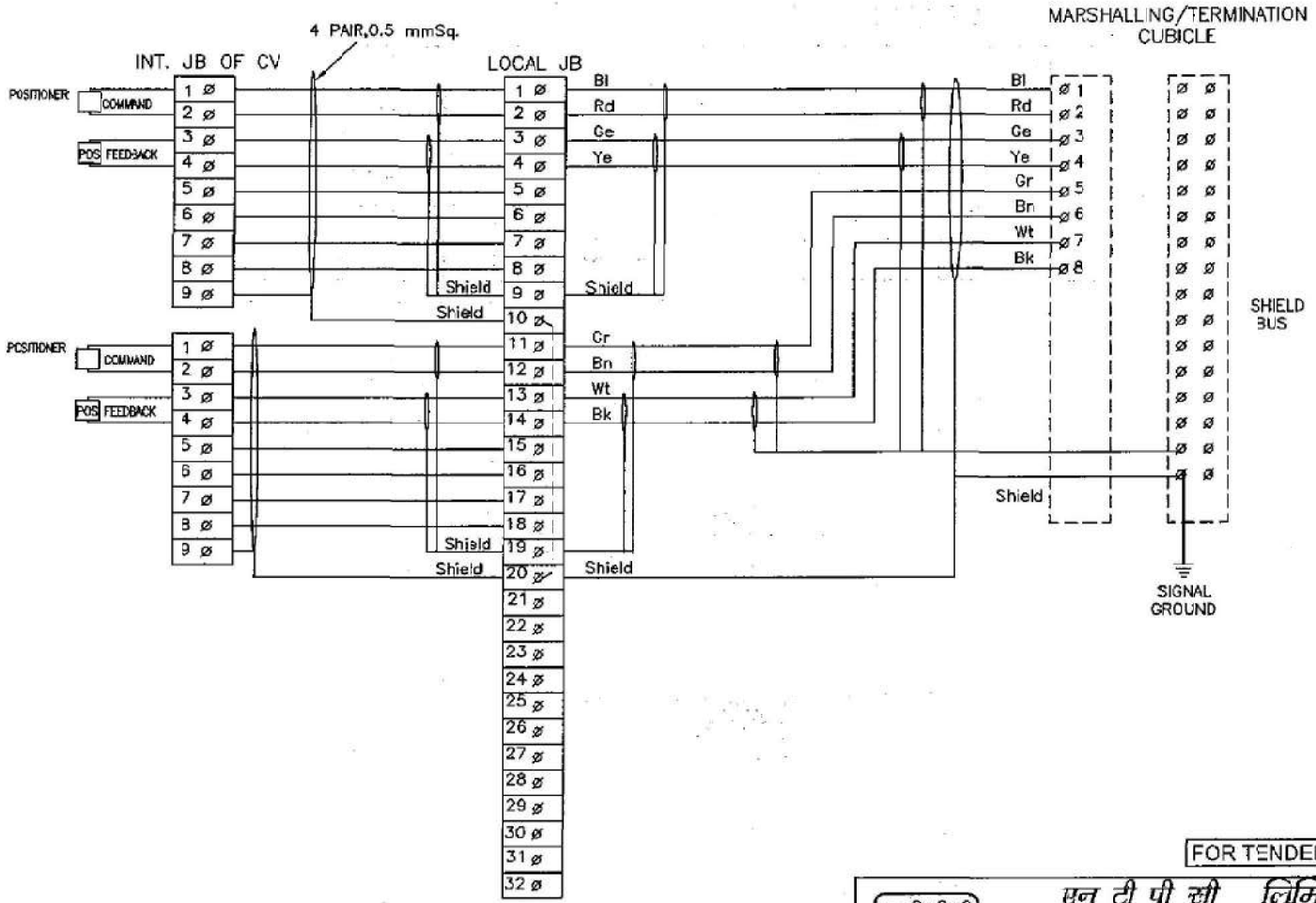
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
SWITCH TERMINATION DETAILS
NO/NC

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										29.04.06

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 02 OF 14	A



FOR TENDER PURPOSE ONLY

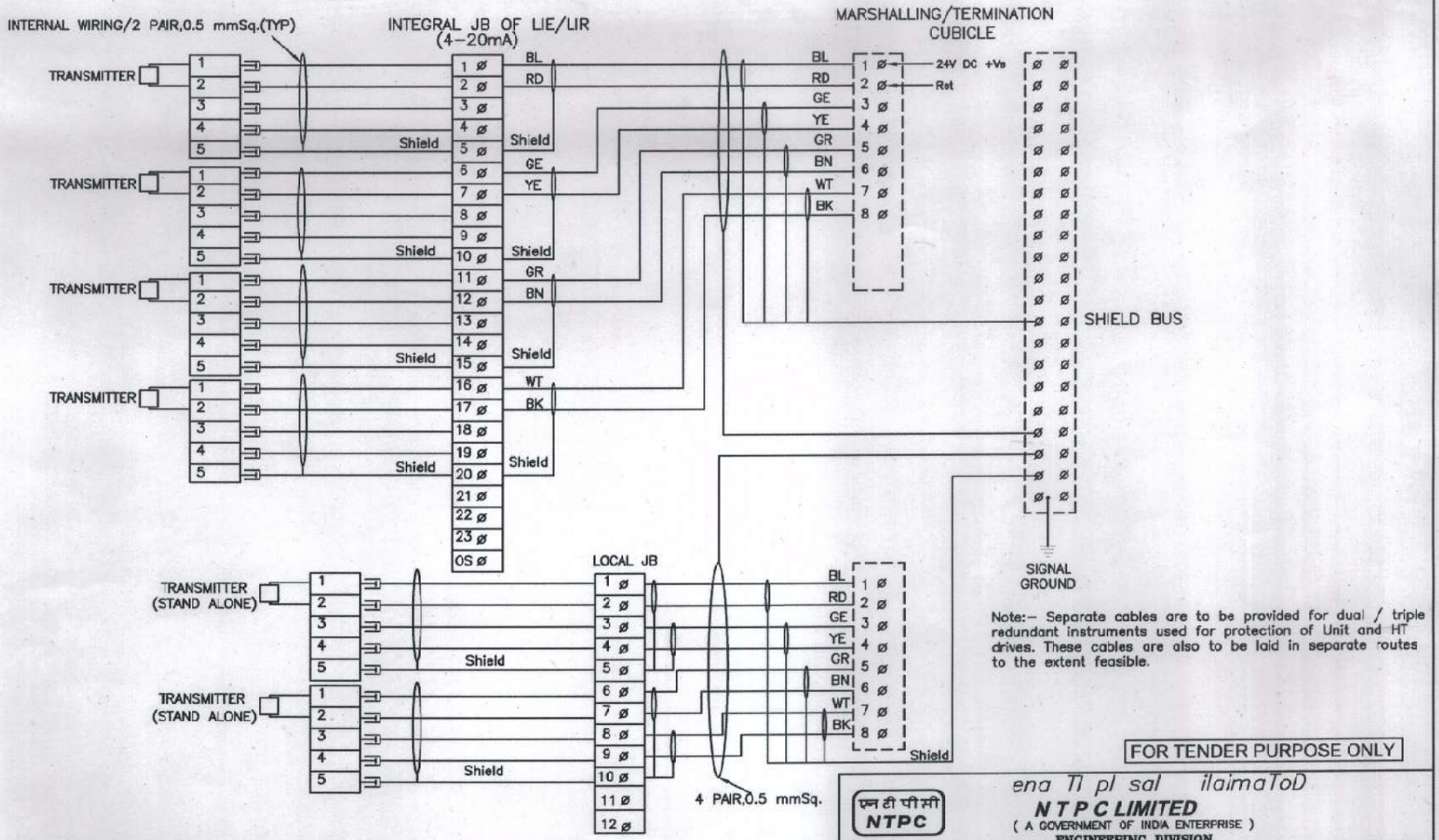
एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS CONTROL VALVE

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										29.04.06
					CLEARED BY						

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 03 OF 14	A



Note:– Separate cables are to be provided for dual / triple redundant instruments used for protection of Unit and HT drives. These cables are also to be laid in separate routes to the extent feasible.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

ena Ti pl sal ilaimaToD

NTPC LIMITED

(A GOVERNMENT OF INDIA ENTERPRISE)

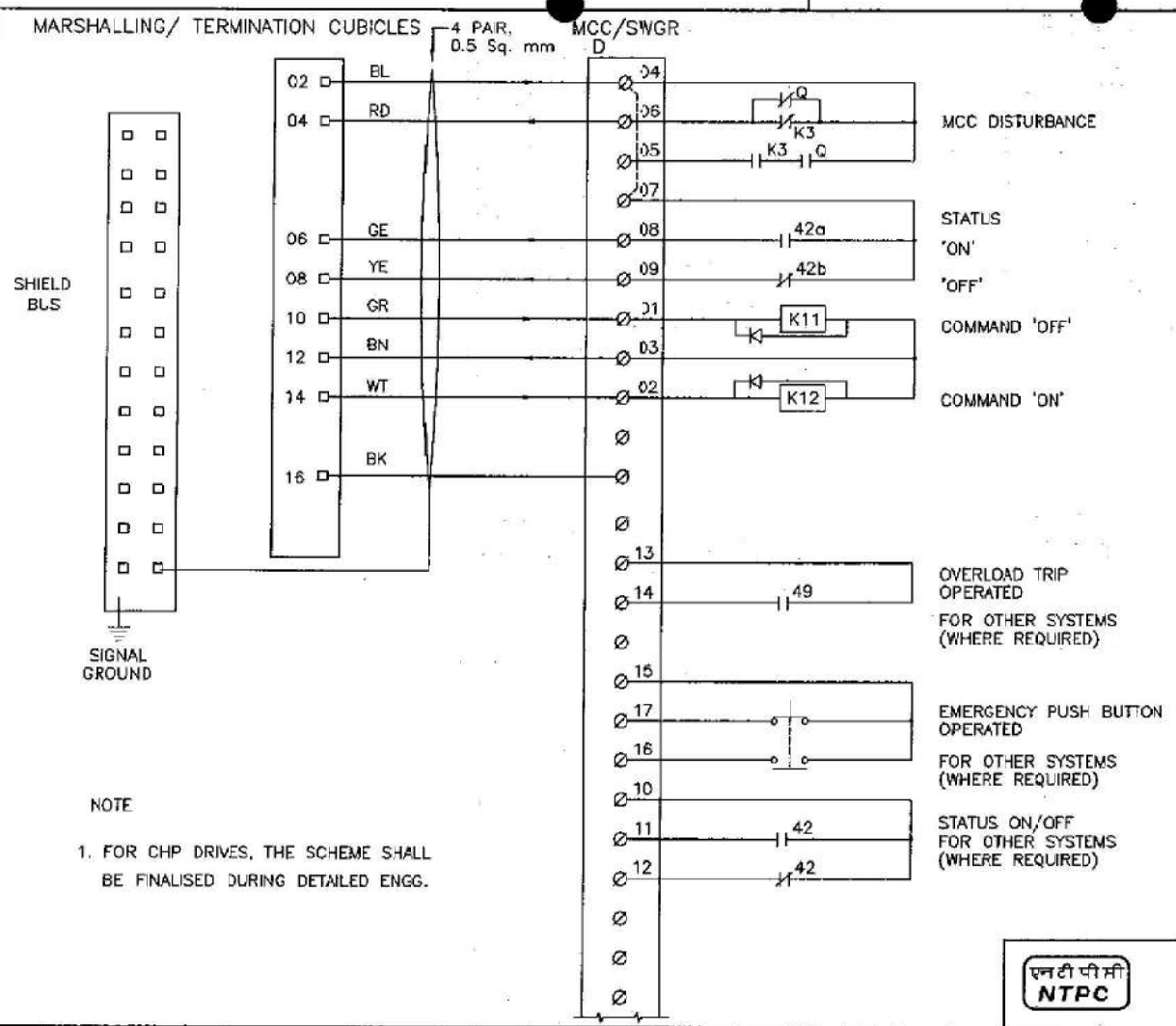
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
C	NOTE REGARDING CABLE IS ADDED.										10.12.13
B	INTERNAL WIRING FOR LIE/LIR MOUNTED SHOWN WIRING OF STAND ALONE TXTR SHOWN										10.12.06
A	FIRST ISSUE										12.1.05
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS 4-20mA

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 04 OF 14	C



NOTE

1. FOR CHP DRIVES, THE SCHEME SHALL BE FINALISED DURING DETAILED ENGG.

FOR TENDER PURPOSE ONLY

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

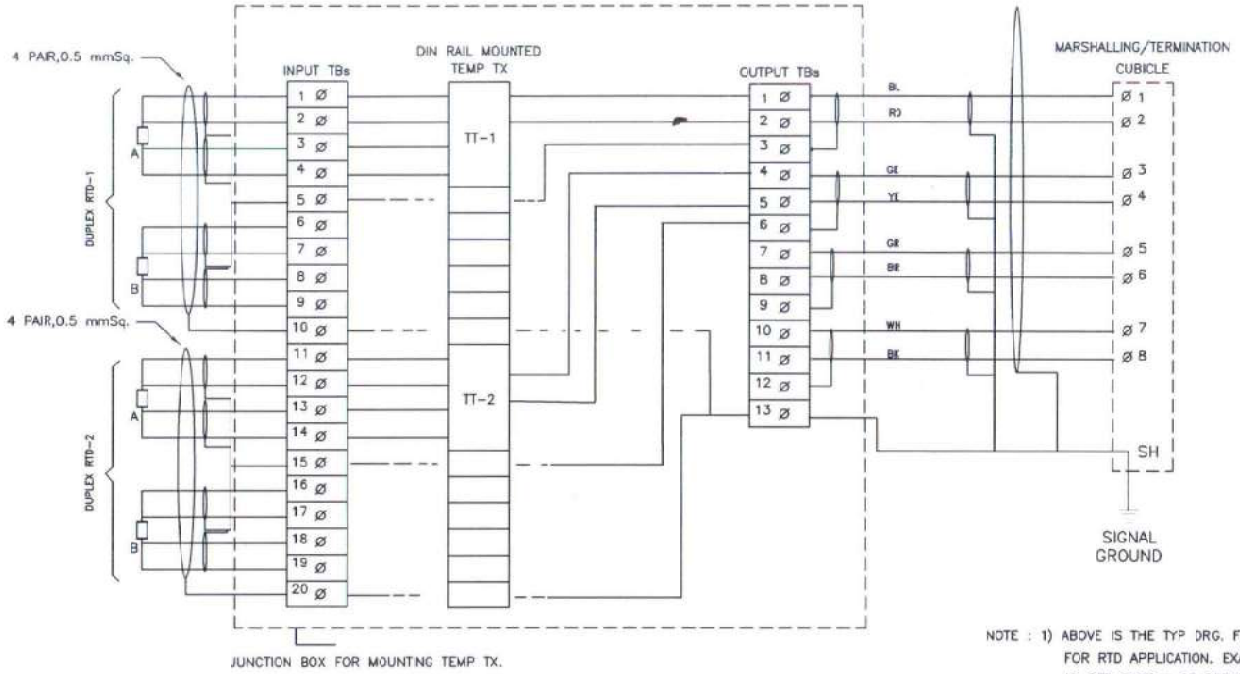
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR
(LT MOTORS)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										29.04.06

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 05 OF 14	A



NOTE : 1) ABOVE IS THE TYP DRG. FOR DIN RAIL MOUNTED TEMP TRANSMITTERS FOR RTD APPLICATION. EXACT TYPE OF TEMP TRANSMITTER SHALL BE AS PER PART-A OF SPECIFICATION.
2) THE EXACT GROUPING OF TEMP TXs SHALL BE FINALISED DURING DETAILED ENGG. STAGE.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

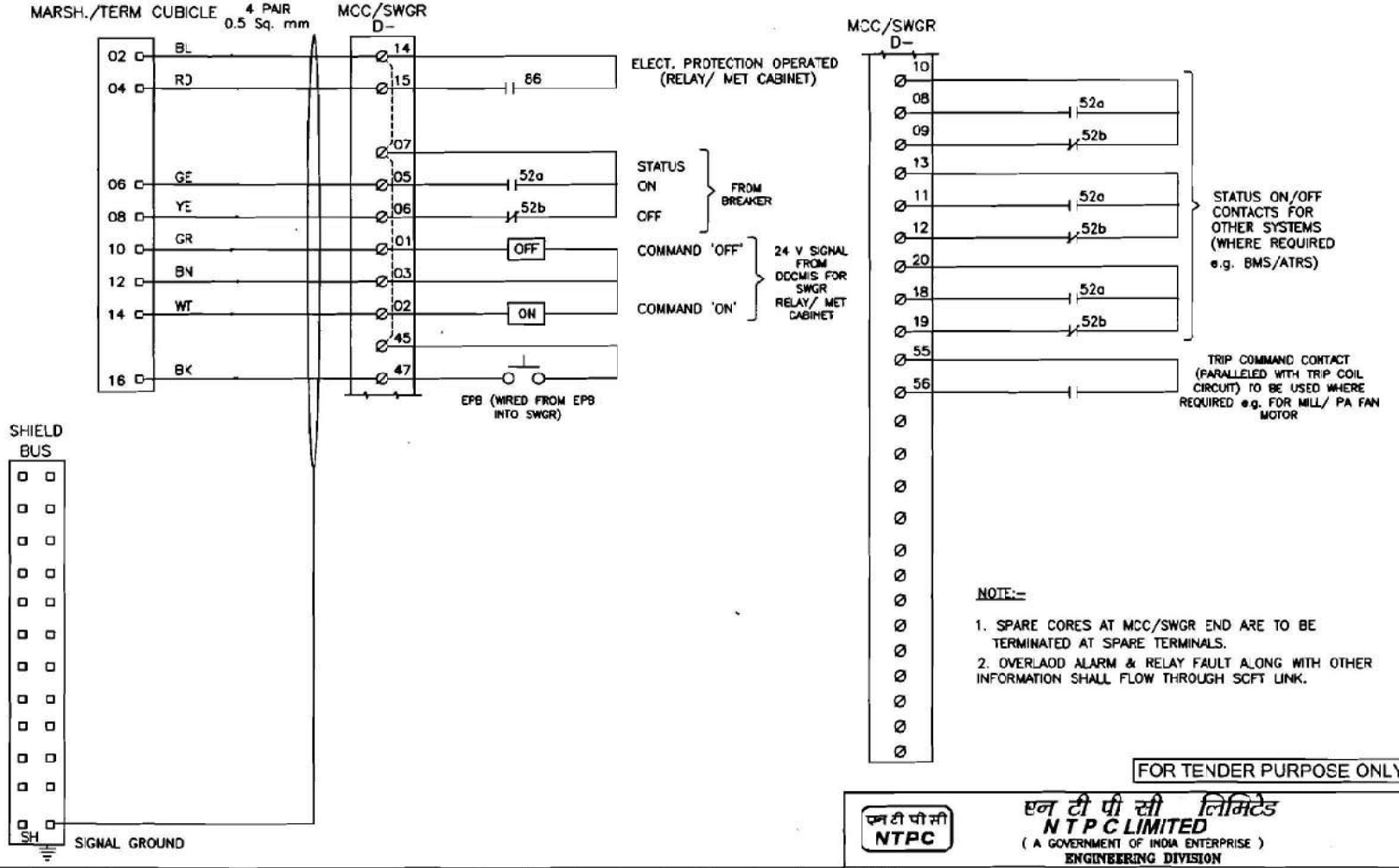
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										29.04.06

CLEARED BY

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
TYPICAL RTD CONNECTION WITH TEMP TRANSMITTERS INJBs

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 06 OF 14	C



NOTE:-

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.
2. OVERLAOD ALARM & RELAY FAULT ALONG WITH OTHER INFORMATION SHALL FLOW THROUGH SOFT LINK.

FOR TENDER PURPOSE ONLY

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

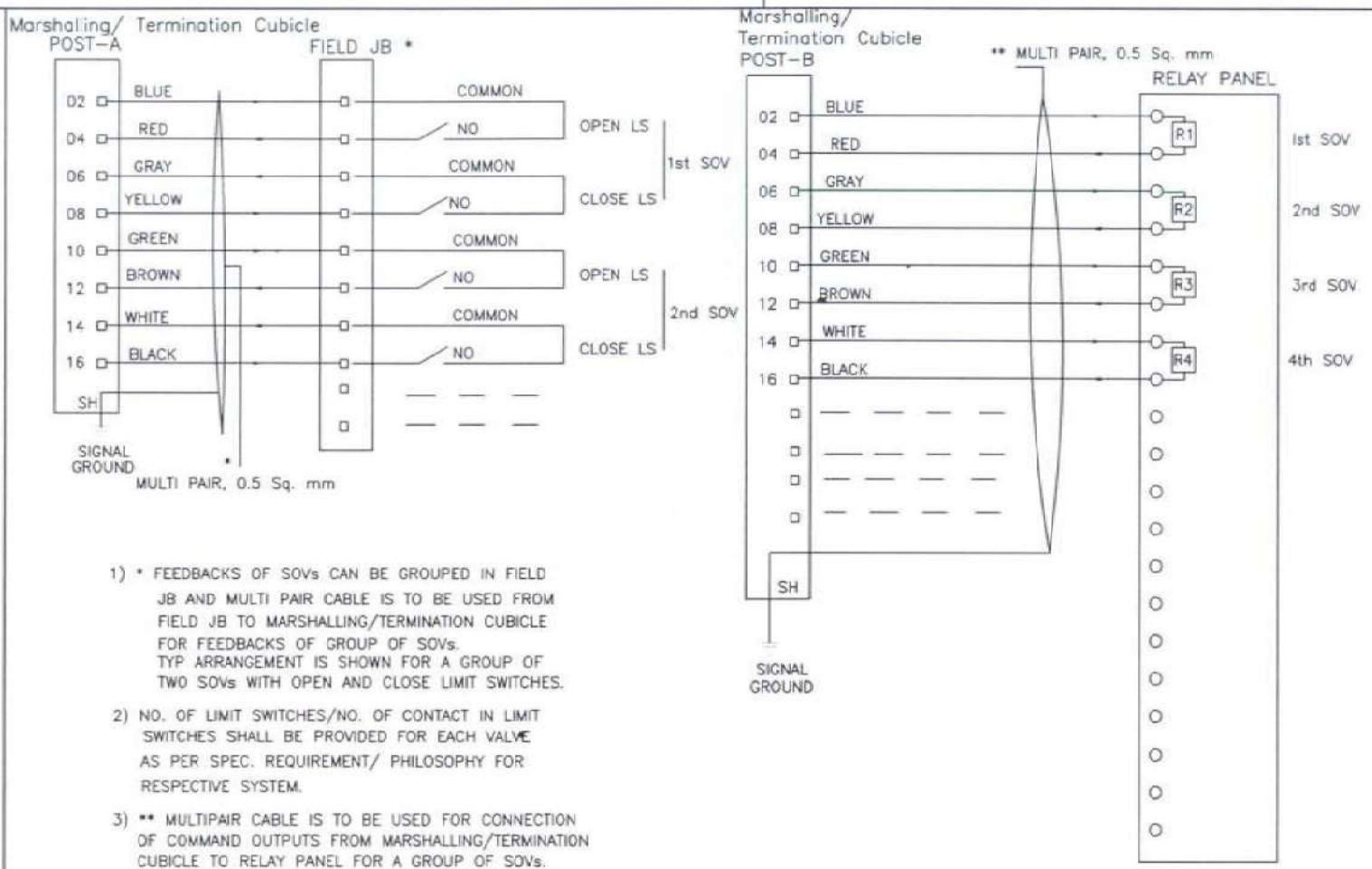
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR (HT MOTORS)

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	C	C&I	ARCH.	APPD	DATE
B	Revised for Numerical relay based SWGR									14.02.08

CLEARED BY

SIZE	SCALE	ORG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 07 OF 14	B



1) * FEEDBACKS OF SOVs CAN BE GROUPED IN FIELD JB AND MULTI PAIR CABLE IS TO BE USED FROM FIELD JB TO MARSHALLING/TERMINATION CUBICLE FOR FEEDBACKS OF GROUP OF SOVs. TYP ARRANGEMENT IS SHOWN FOR A GROUP OF TWO SOVs WITH OPEN AND CLOSE LIMIT SWITCHES.

2) NO. OF LIMIT SWITCHES/NO. OF CONTACT IN LIMIT SWITCHES SHALL BE PROVIDED FOR EACH VALVE AS PER SPEC. REQUIREMENT/ PHILOSOPHY FOR RESPECTIVE SYSTEM.

3) ** MULTIPAIR CABLE IS TO BE USED FOR CONNECTION OF COMMAND OUTPUTS FROM MARSHALLING/TERMINATION CUBICLE TO RELAY PANEL FOR A GROUP OF SOVs.

एन टी पी सी NTPC
नेशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

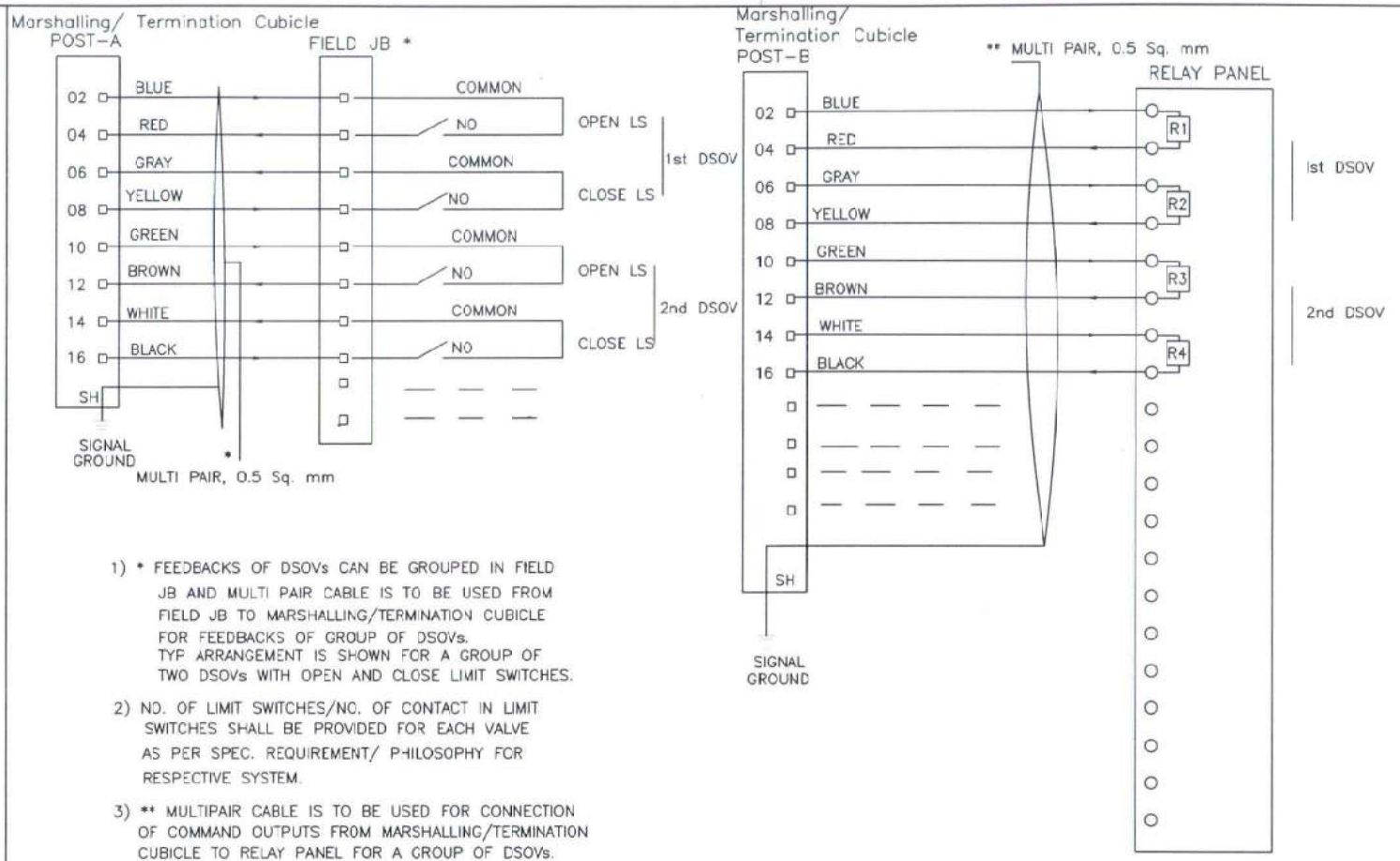
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR
(SINGLE COIL SOLENOID)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
B	FIRST ISSUE										30.10.02

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 08 OF 14	C



1) * FEEDBACKS OF DSOVs CAN BE GROUPED IN FIELD JB AND MULTI PAIR CABLE IS TO BE USED FROM FIELD JB TO MARSHALLING/TERMINATION CUBICLE FOR FEEDBACKS OF GROUP OF DSOVs. TYP ARRANGEMENT IS SHOWN FOR A GROUP OF TWO DSOVs WITH OPEN AND CLOSE LIMIT SWITCHES.

2) NO. OF LIMIT SWITCHES/NO. OF CONTACT IN LIMIT SWITCHES SHALL BE PROVIDED FOR EACH VALVE AS PER SPEC. REQUIREMENT/ PHILOSOPHY FOR RESPECTIVE SYSTEM.

3) ** MULTIPAIR CABLE IS TO BE USED FOR CONNECTION OF COMMAND OUTPUTS FROM MARSHALLING/TERMINATION CUBICLE TO RELAY PANEL FOR A GROUP OF DSOVs.

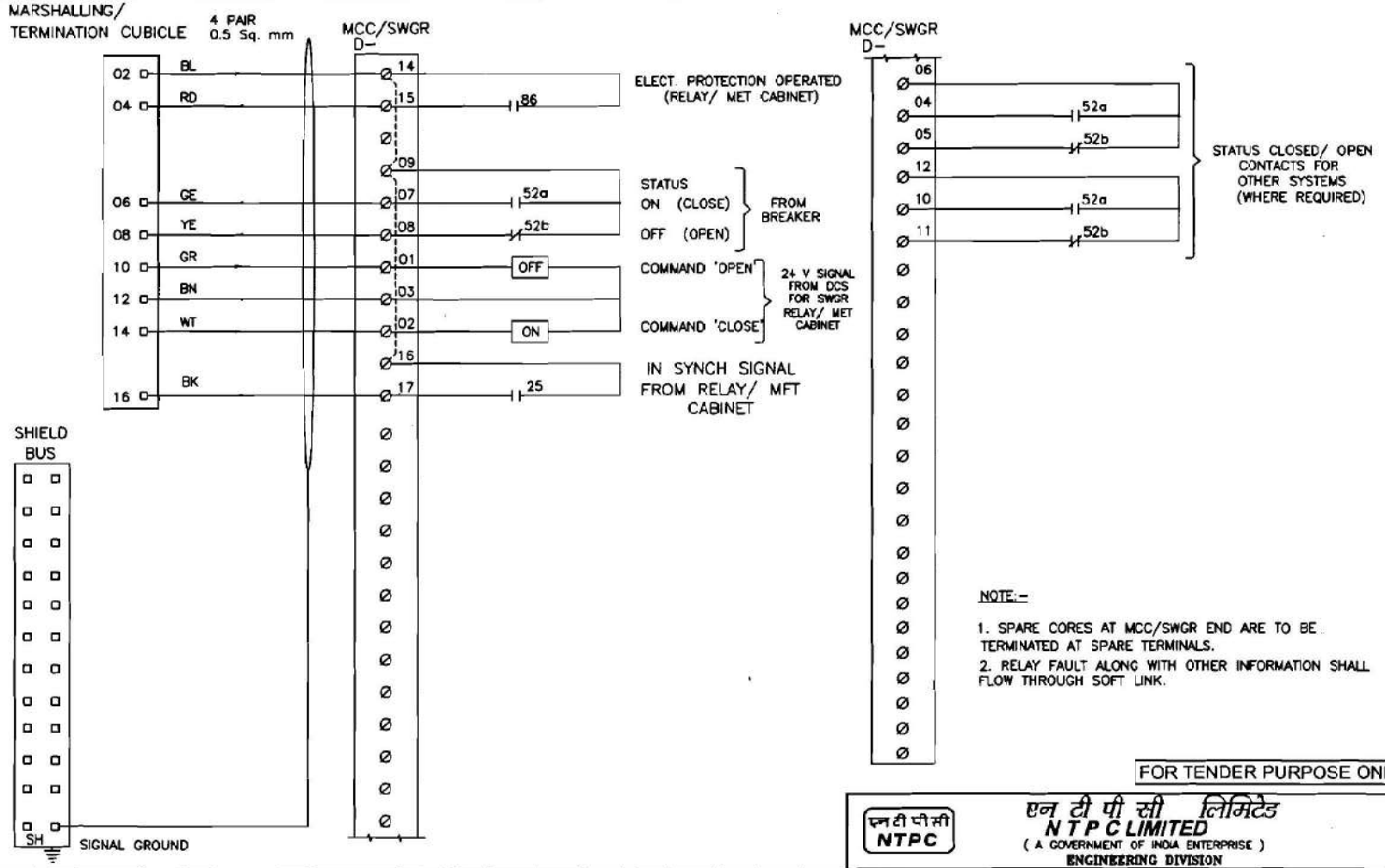
एन टी पी सी NTPC
नैशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
B	FIRST ISSUE										30.10.02
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR
(DOUBLE COIL SOLENOID)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 09 OF 14	C



NOTE:–

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.
2. RELAY FAULT ALONG WITH OTHER INFORMATION SHALL FLOW THROUGH SOFT LINK.

FOR TENDER PURPOSE ONLY

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

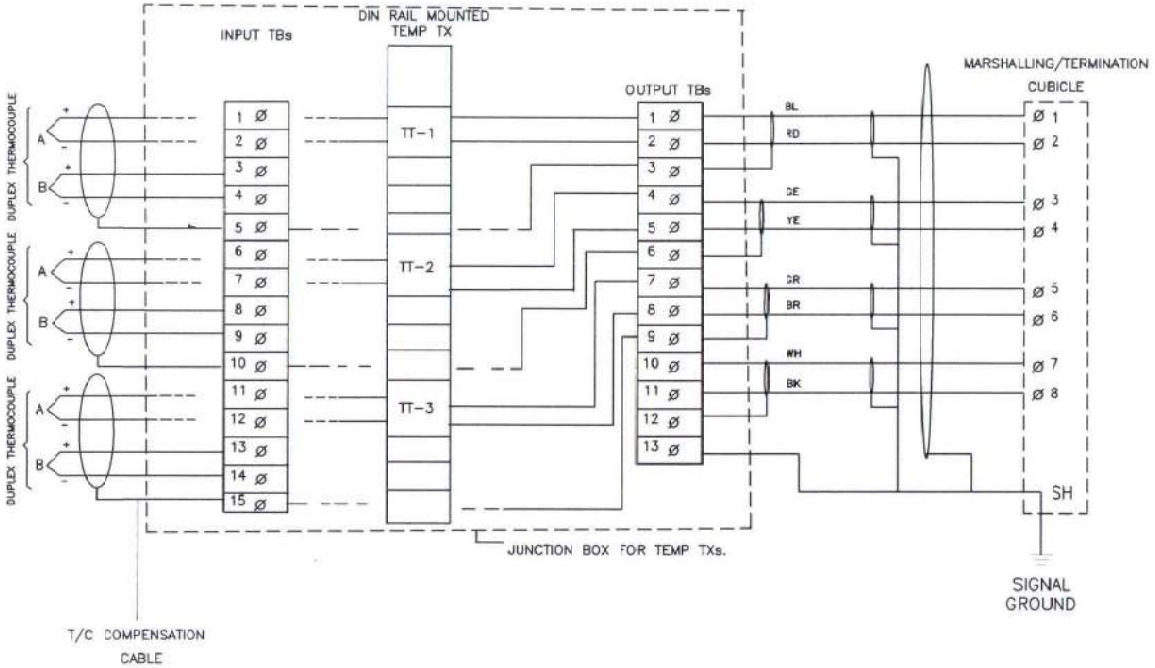
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	Cdl	ARCH	APPD	DATE
B	Revised for Numerical Relay based SWGR.										14.02.06

CLEARED BY

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR
(Elect. Bkr. - Sync.-LT)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-405-POI-A-065 SH 10 OF 14	B



NOTE: 1) ABOVE IS THE TYP DRG. FOR DIN RAIL MOUNTED TEMP TRANSMITTER FOR T/C APPLICATION. EXACT TYPE OF TEMP TRANSMITTERS SHALL BE AS PER PART-A OF SPECIFICATION.

2) THE EXACT GROUPING OF TEMP TXs SHALL BE FINALISED DURING DETAILED ENGG. STAGE.

3) AFTER GLANDING OF T/C CABLES ON JB, THE CABLE PAIR OF FIRST ELEMENT WILL BE DIRECTLY CONNECTED TO TT AND FOR CABLE PAIR OF SECOND ELEMENT LOOP SHALL BE KEPT, BEFORE TERMINATION AT INPUT TBs FOR FUTURE USE.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

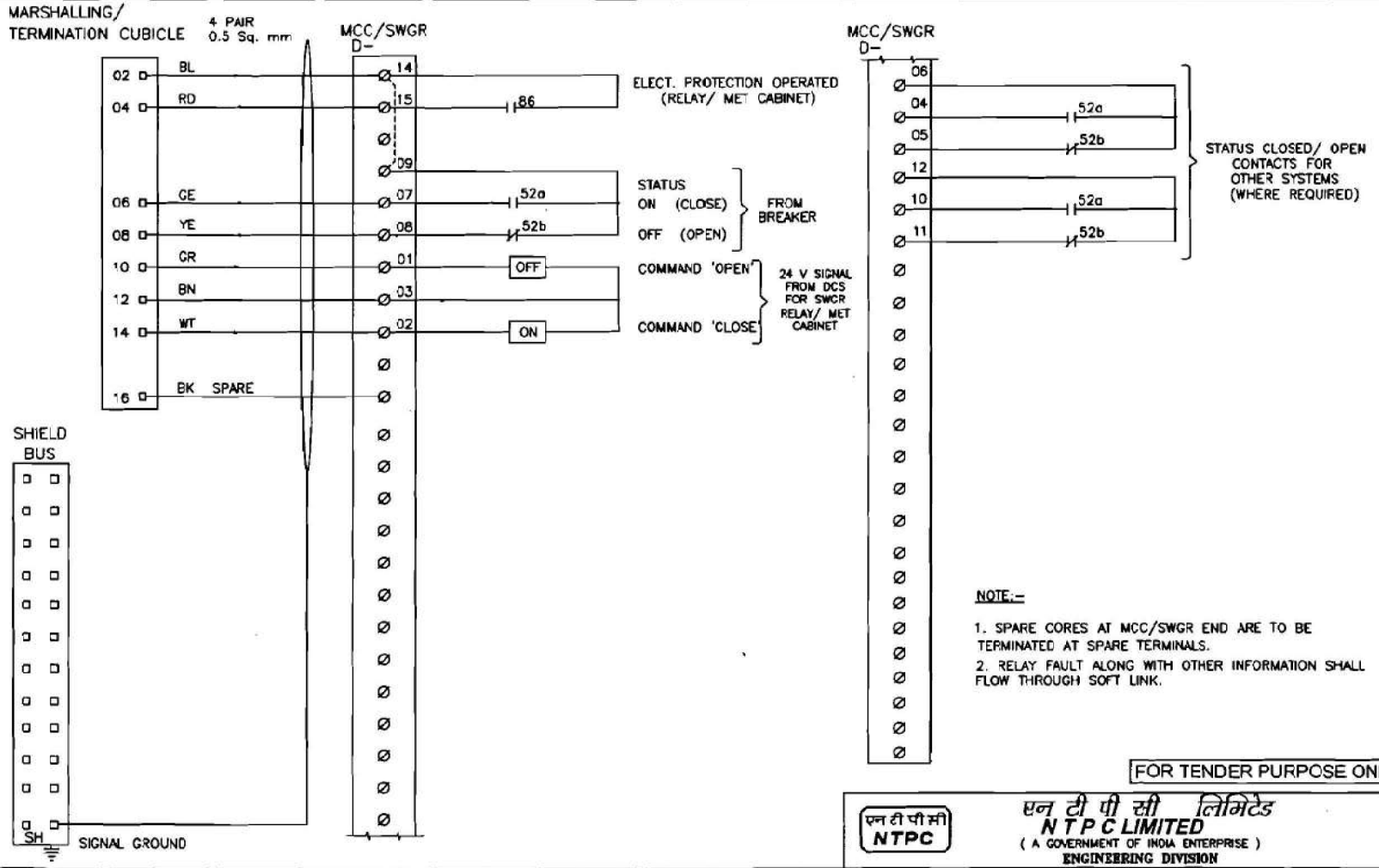
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										29.04.06

CLEARED BY

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
TYPICAL T/C CONNECTION WITH TEMP TXs IN JBs

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-065 SH 11 OF 14	C



NOTE:-

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.
2. RELAY FAULT ALONG WITH OTHER INFORMATION SHALL FLOW THROUGH SOFT LINK.

FOR TENDER PURPOSE ONLY

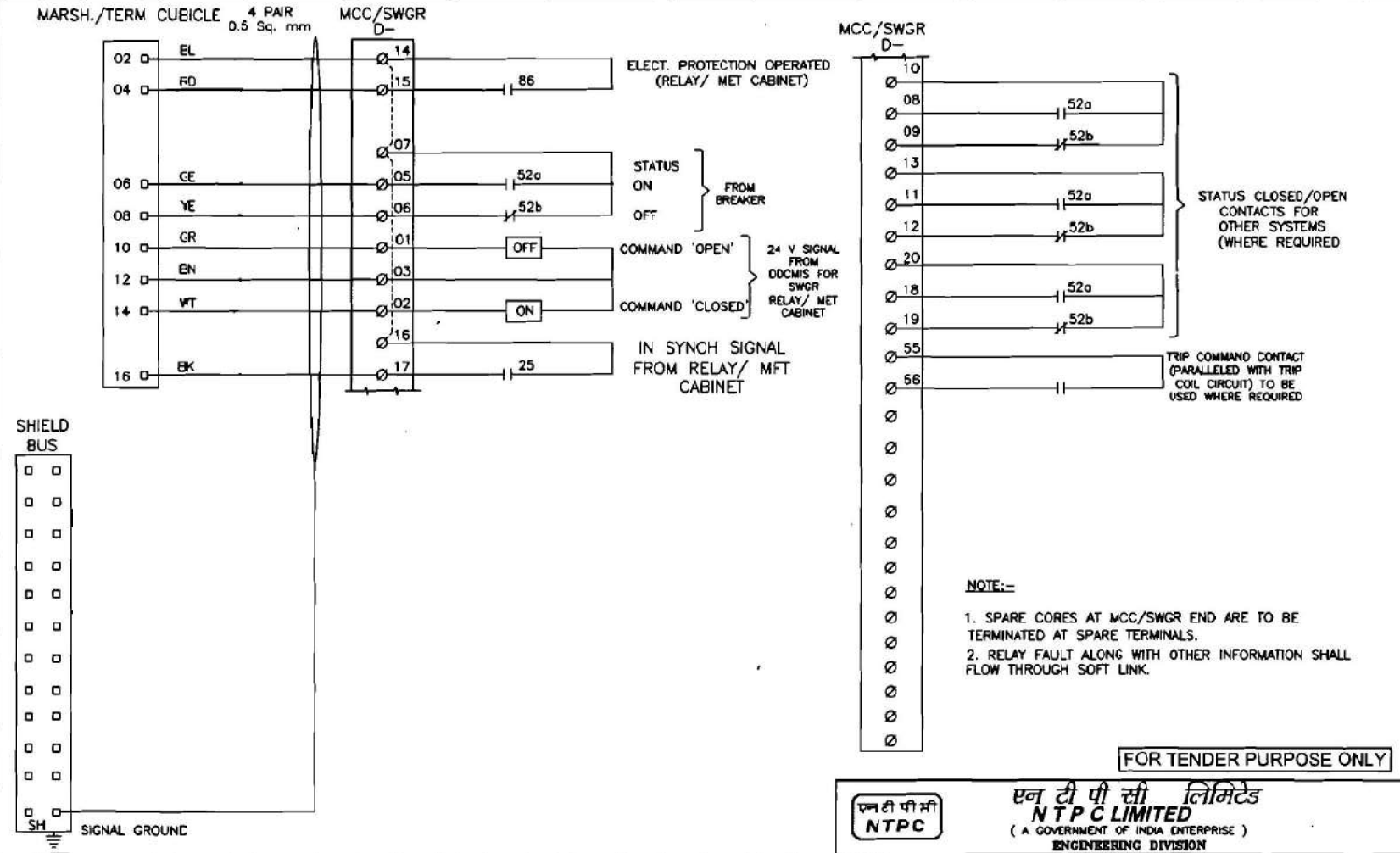
एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
B	Revised for Numerical Relay based SWGR.										14.02.08
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR
(Elect. Bkr. - Non. Sync.-LT)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	C000-999-POI-A-065 SH 12 OF 14	B



NOTE:–

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.
2. RELAY FAULT ALONG WITH OTHER INFORMATION SHALL FLOW THROUGH SOFT LINK.

FOR TENDER PURPOSE ONLY

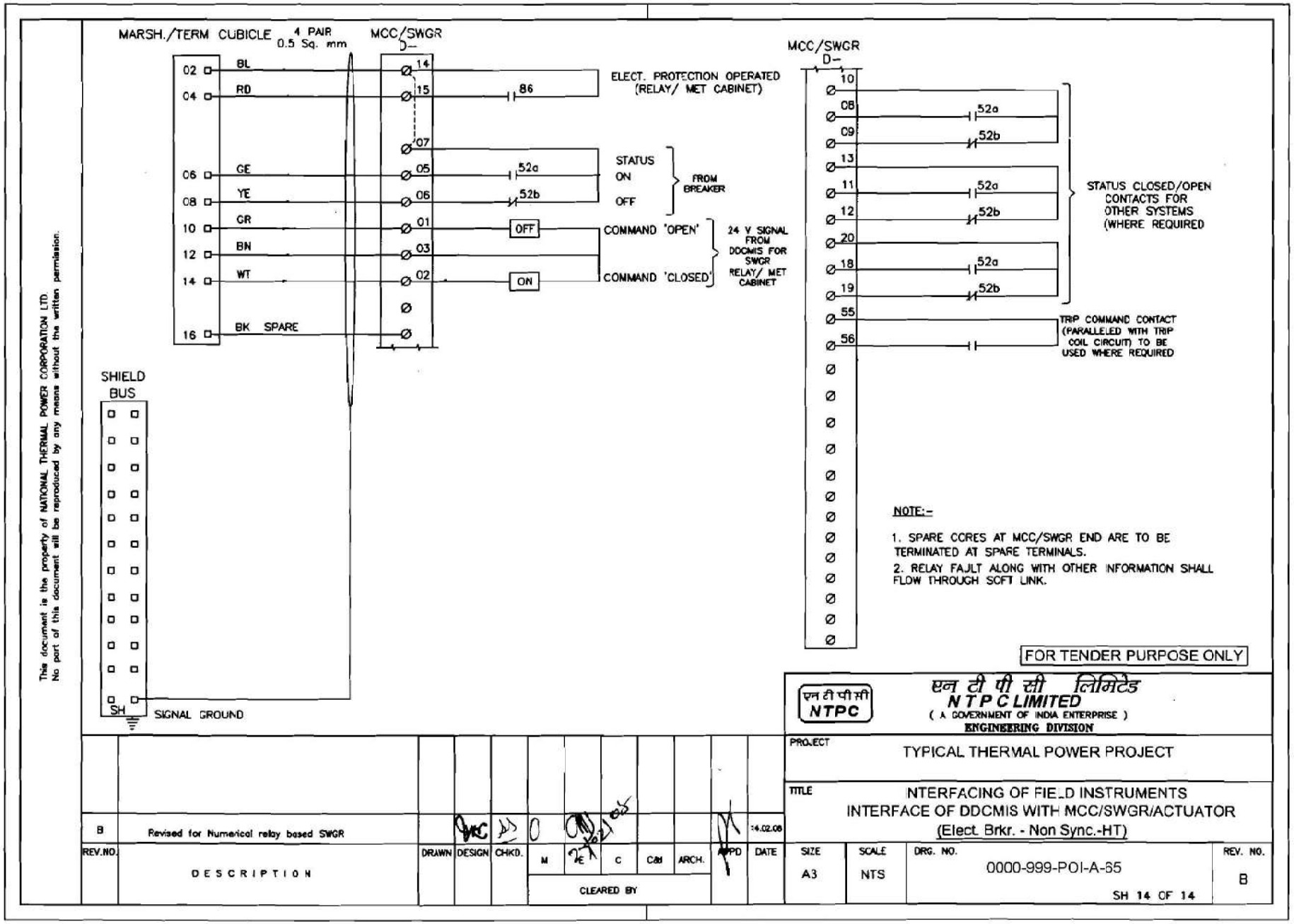
एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	PE	C	C&I	ARCH.	PPO	DATE
B	Revised for Numerical relay based SWGR										14.02.08
		CLEARED BY									

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INTERFACING OF FIELD INSTRUMENTS
INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR
(Elect. Brkr. - Sync.-HT)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	000C-999-POI-A-65 SH 13 OF 14	B



NOTE:-

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.
2. RELAY FAULT ALONG WITH OTHER INFORMATION SHALL FLOW THROUGH SOFT LINK.

FOR TENDER PURPOSE ONLY

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

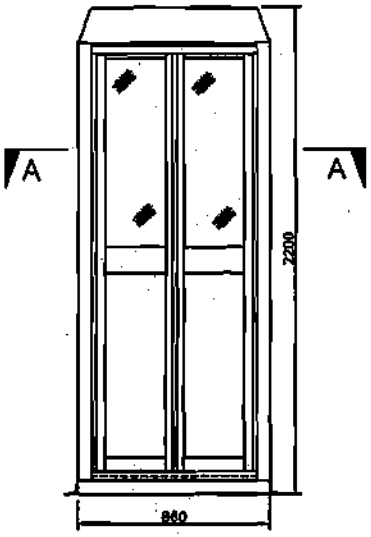
PROJECT: TYPICAL THERMAL POWER PROJECT

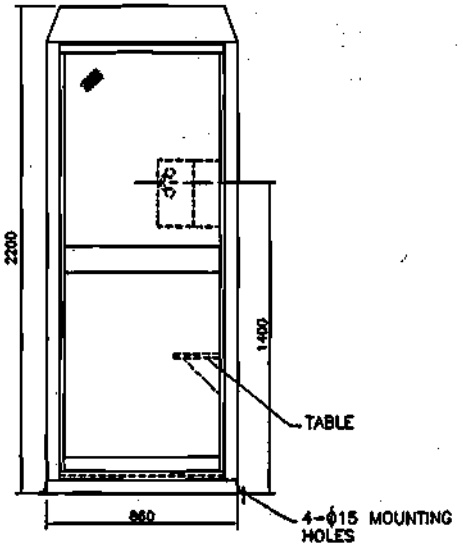
TITLE: NTERFACING OF FIE_D INSTRUMENTS
INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR
(Elect. Brkr. - Non Sync.-HT)

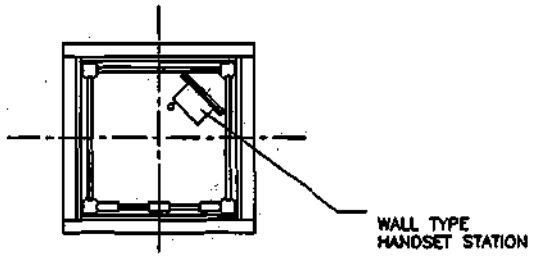
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
B	Revised for Numerical relay based SWGR										14.02.08

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-999-POI-A-85 SH 14 OF 14	B







SECTION A–A

NOTES

1. LOCATIONS SHALL BE FINALISED DURING DETAILED ENGINEERING.

FOR TENDER PURPOSE ONLY

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

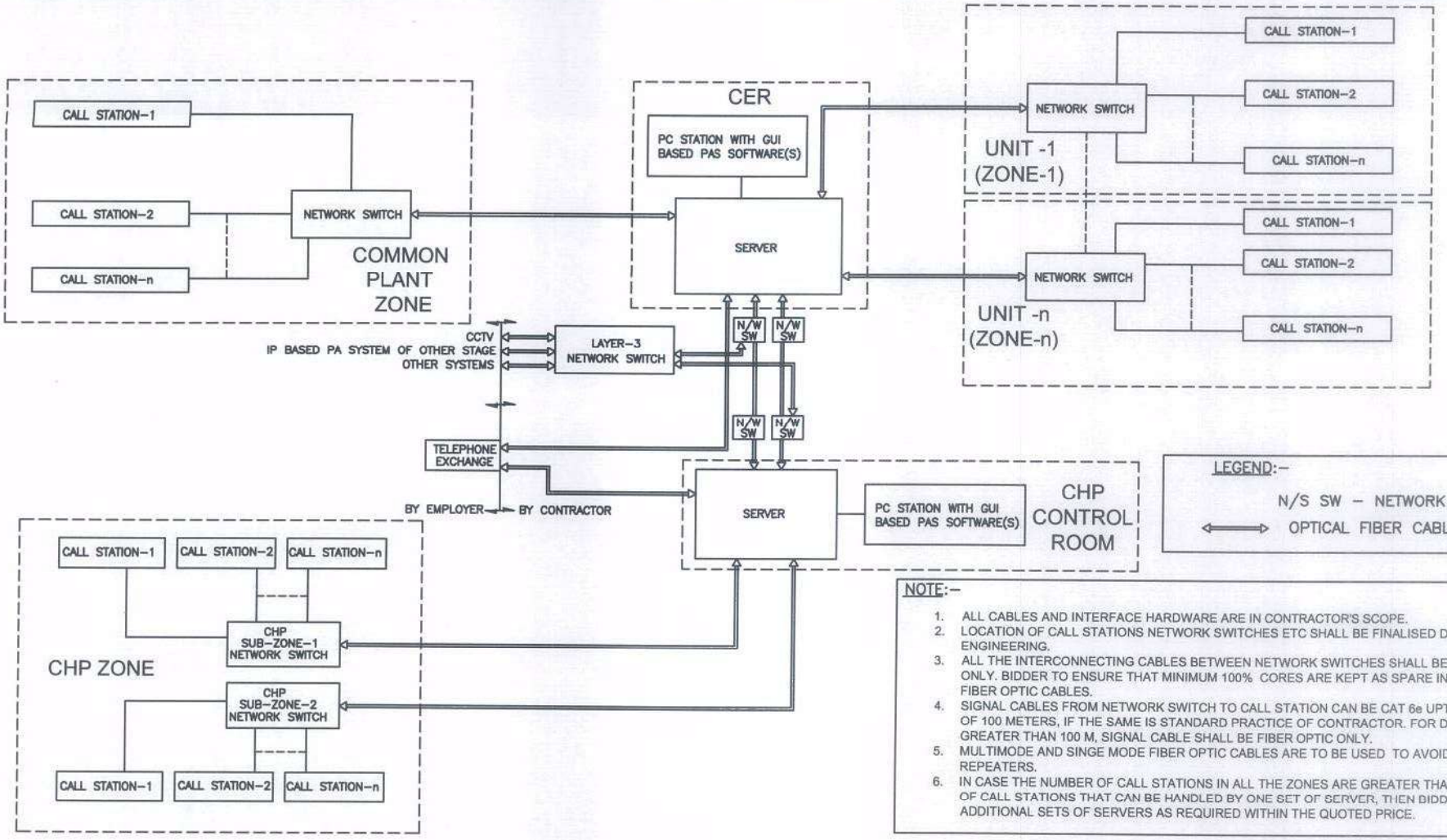
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: ACOUSTIC HOOD OUT LINE

REV.NO	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										29.04.06

CLEARED BY

SIZE	SCALE	ORG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-070	A



LEGEND:–

N/S SW – NETWORK SWITCH

⟺ OPTICAL FIBER CABLE (OFC)

NOTE:–

1. ALL CABLES AND INTERFACE HARDWARE ARE IN CONTRACTOR'S SCOPE.
2. LOCATION OF CALL STATIONS NETWORK SWITCHES ETC SHALL BE FINALISED DURING DETAIL ENGINEERING.
3. ALL THE INTERCONNECTING CABLES BETWEEN NETWORK SWITCHES SHALL BE FIBER OPTIC ONLY. BIDDER TO ENSURE THAT MINIMUM 100% CORES ARE KEPT AS SPARE IN ALL TYPES OF FIBER OPTIC CABLES.
4. SIGNAL CABLES FROM NETWORK SWITCH TO CALL STATION CAN BE CAT 6e UPTO A DISTANCE OF 100 METERS, IF THE SAME IS STANDARD PRACTICE OF CONTRACTOR. FOR DISTANCE GREATER THAN 100 M, SIGNAL CABLE SHALL BE FIBER OPTIC ONLY.
5. MULTIMODE AND SINGE MODE FIBER OPTIC CABLES ARE TO BE USED TO AVOID THE USE OF REPEATERS.
6. IN CASE THE NUMBER OF CALL STATIONS IN ALL THE ZONES ARE GREATER THAN THE NUMBER OF CALL STATIONS THAT CAN BE HANDLED BY ONE SET OF SERVER, THEN BIDDER TO SUPPLY ADDITIONAL SETS OF SERVERS AS REQUIRED WITHIN THE QUOTED PRICE.

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
RA	FIRST ISSUE										06.08.14
					CLEARED BY						

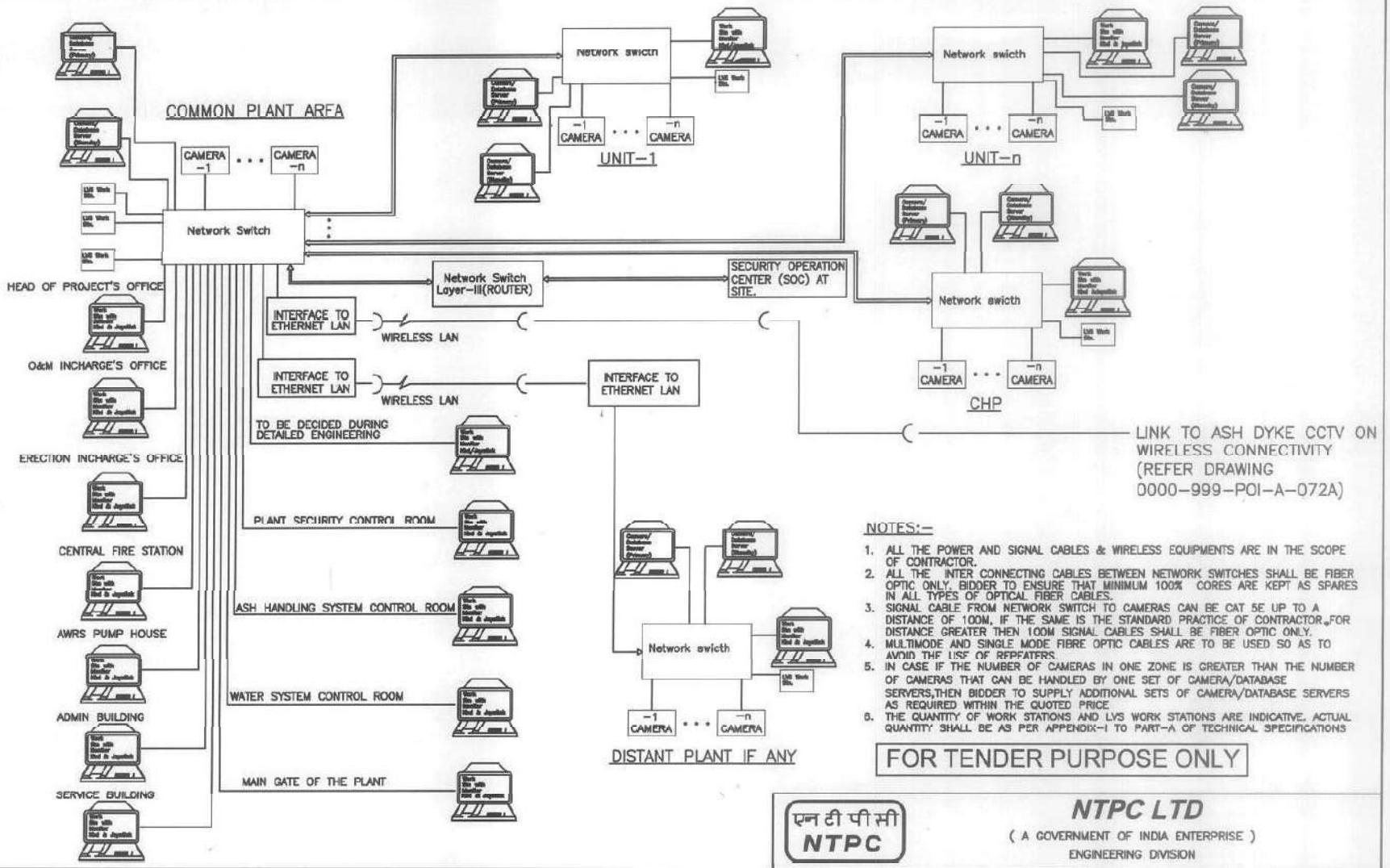
एन टी पी सी NTPC

NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: BLOCK DIAGRAM OF IP BASED PUBLIC ADDRESS SYSTEM

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-071A	RA



NOTES:-

1. ALL THE POWER AND SIGNAL CABLES & WIRELESS EQUIPMENTS ARE IN THE SCOPE OF CONTRACTOR.
2. ALL THE INTER CONNECTING CABLES BETWEEN NETWORK SWITCHES SHALL BE FIBER OPTIC ONLY. BIDDER TO ENSURE THAT MINIMUM 100% CORES ARE KEPT AS SPARES IN ALL TYPES OF OPTICAL FIBER CABLES.
3. SIGNAL CABLE FROM NETWORK SWITCH TO CAMERAS CAN BE CAT 5E UP TO A DISTANCE OF 100M, IF THE SAME IS THE STANDARD PRACTICE OF CONTRACTOR. FOR DISTANCE GREATER THEN 100M SIGNAL CABLES SHALL BE FIBER OPTIC ONLY.
4. MULTIMODE AND SINGLE MODE FIBRE OPTIC CABLES ARE TO BE USED SO AS TO AVOID THE USE OF REPEATERS.
5. IN CASE IF THE NUMBER OF CAMERAS IN ONE ZONE IS GREATER THAN THE NUMBER OF CAMERAS THAT CAN BE HANDLED BY ONE SET OF CAMERA/DATABASE SERVERS,THEN BIDDER TO SUPPLY ADDITIONAL SETS OF CAMERA/DATABASE SERVERS AS REQUIRED WITHIN THE QUOTED PRICE.
6. THE QUANTITY OF WORK STATIONS AND LVS WORK STATIONS ARE INDICATIVE. ACTUAL QUANTITY SHALL BE AS PER APPENDIX-I TO PART-A OF TECHNICAL SPECIFICATIONS

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

NTPC LTD

(A GOVERNMENT OF INDIA ENTERPRISE)

ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: BLOCK DIAGRAM OF CCTV SYSTEM

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE		AKS.	RS.	CLEARED BY					B.Ghosh	17.06.14

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-072	1

Annexure-I

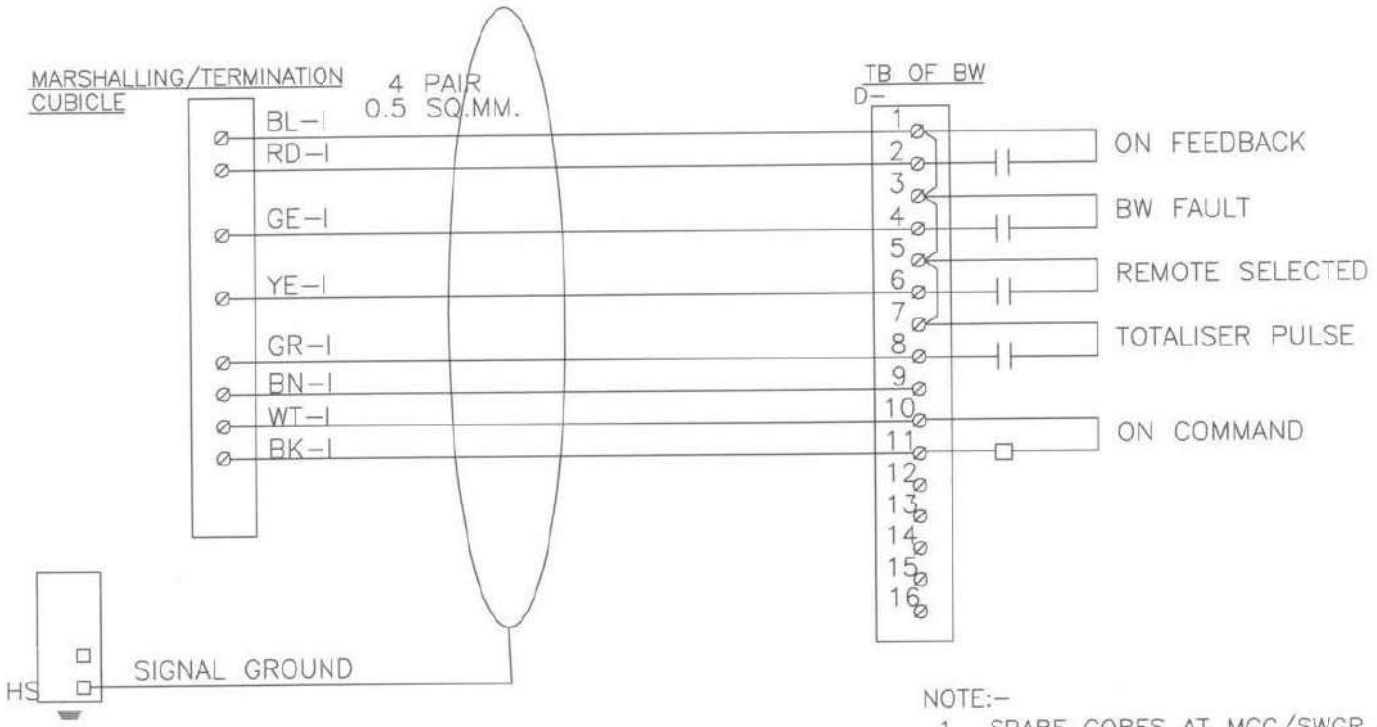
(A) **Drives: Various equipments of CHP to be controlled from DDCMIS shall be grouped in following types of drives. Each type of drive shall have standard no. of inputs/outputs and predefined type of operation. The type of cable to be used for connecting each type of drive to DDCMIS shall be as indicated below.**

(i) MCC/ SWGR/ LCP Type

S.No	DRIVE TYPE	TYPE OF SIGNAL FROM / TO DDCMIS	DESCRIPTION	CABLE TYPE	TYPE OF SIGNAL	TYPE OF COMMAND(PULSE/HOLDING)	KKS CODE	ANN	TYPICAL APPLICATION	REMARKS	Revision Remarks
1	**LT CHP (DOL)**										
		DI	ON Feedback		NO		XB11				
		DI	Feeder not healthy	G-4 PAIR	NC		XB46	ANN-1	LT Conveyor, Brake, Pumps, Fans etc		
		DI	Overload Trip		NO		XB36	ANN-1			
		DO	On Command		24V DC	Holding (no cut off from feedback)	XB91				
2	**BW (Belt Weigher)**										
		DI	Belt Weigher ON Feedback		NO		XB11				
		DI	Belt Weigher Panel Fault	G-4 PAIR	NO		XB46	ANN-1	Belt Weigher		
		DI	Totalizer Pulse		NO		XB33				
		DI	Remote Selected				XB47				
		DO	ON Command From DDCMIS		24 V DC	Holding (no cut off from feedback)	XB91				
3	**SM (Suspended Magnet)**										
		DI	ON Feedback		NO		XB11				
		DI	Under Current Relay Trip		NO		XB29	ANN-2			
		DI	Control Supply Not healthy		NC		XB46	ANN-2			
		DI	Remote Selected	G-8 PAIR	NO		XB47		Suspended Magnet		
		DI	Suspended Magnet Trip		NO		XB25	ANN-3			
		DI	Oil Temperature High		NO		XB63				
		DO	On Command		24V DC	Holding (no cut off from feedback)	XB91				
		DO	Local Mode Permissive		24V DC	Holding (no cut off from feedback)	XB60				
4	**MD (Metal Detector)**										
		DI	On Feedback		NO		XB11				
		DI	Metal Detector Fault		NO		XB46	ANN-1			
		DI	Metal Detected		NO		XB30	ANN-1			
		DI	Metal Detector Bypass		NO		XB31				
		DI	Remote Selected	G-8 PAIR	NO		XB47		Metal Detector		
		DI	Local Stop operated		NO		YB12	ANN-3			
		DI	Metal Detector not reset		NO		XB34	ANN-3			
		DI	Fault in MD search Coil		NO		XB95	ANN-□			
		DO	Start Command		24V DC	Holding (no cut off from feedback)	XB91				
		DO	Local Mode permissive		24V DC	Holding (no cut off from feedback)	XB60				
5	**ILMS (Inline Magnetic Seperator)**										
		DI	ON Feedback		NO		XB11				
		DI	Control Supply Not Healthy		NC		XB46	ANN-1			
		DI	Cleated Belt Trip		NO		XB28	ANN-1			
		DI	Under Current Relay Trip		NO		XB29	ANN-1			
		DI	Remote Selected		NO		XB47		Inline Magnetic Seperator		
		DI	Oil Temperatuer High	G-8 PAIR	NO		XB63	ANN-1			
		DI	ILMS Faulty		NO		XB56	ANN-1			
		DI	Mag. Seperator DC Supply ON		NO		XB27				
		DO	On Command		24V DC	Holding (no cut off from feedback)	XB91				
		DO	Conveyor System Trip Command		24V DC	Holding (no cut off from feedback)	XB49				
		DO	Local Mode permissive		24V DC	Holding (no cut off from feedback)	XB60				
6	**REV-I**										New Drive Type is added
		DI	Overload Trip		NO		XB36	ANN-1			
		DI	Control Supply not healthy		NC		XB46			Limit Switches and torque switches will be connected to MCC and after multiplying through relay limit switches and torque switches shall be wired to DCS	
		DI	FWD Limit Switch Feedback from Relay In MCC		NO		XB07				
		DI	REV Limit Switch Feedback from Relay in MCC	G-8 PAIR	NO		XB08		Scoop actuator		
		DI	FWD Torque Switch Feedback from Relay in MCC		NO		XB96				
		DI	REV Torque Switch Feedback from Relay in MCC		NO		XB97				
		DO	Forward Command		24V DC	Holding but cut off from LS	XB93				
		DO	Reverse Command		24V DC	Holding but cut off from LS	XB94				
7	**REV-II**										Drive Name & I/Os changed
		DI	Overload Trip		NO		XB36	ANN-1			
		DI	Control Supply not healthy	G-4 PAIR	NC		XB46		Flap Gate, RPG	Limit Switches and torque switched will be wired to DCS from field and will be covered in IO List	
		DO	Forward Command		24V DC	Holding but cut off from LS Wired to DDCMIS from Field	XB93				
		DO	Reverse Command		24V DC	Holding but cut off from LS Wired to DDCMIS from Field	XB94				

(A)	**Drives: Various equipments of CHP to be controlled from DDCMIS shall be grouped in following types of drives. Each type of drive shall have standard no. of inputs/outputs and predefined type of operation. The type of cable to be used for connecting each type of drive to DDCMIS shall be as indicated below.**										
8	**LT BREAKER-Synch**										
		DI	Open Status	G-4 PAIR	NC		XB11	ANN-1	LT Breakers-Incomer, Buscoupler		
		DI	Close Status		NO		XB12				
		DI	Electrical protection operated		NO		XB32				
		DI	In synch		NO		XB57				
		DO	BREAKER OPEN COMMAND		24V DC	Pulse	XB92				
		DO	BREAKER CLOSE COMMAND		24V DC	Pulse	XB91				
9	**VVVF (if applicable)**								Apron Feeder		
	(Other Signals Related to VVVF shall be covered in Process IO List)	DI	On / Off Feedback	G-4 PAIR	NO		XB11				
		DI	Fwd/Rev Feedback		NO		XB47				
		DI	VVVF Drive Fault		NO		XB56	ANN-1			
		DO	On / Off Command		24V DC	HOLDING(NOT CUTOFF ON F/B)	XB91				
		DO	Fwd/Rev Command		24V DC	HOLDING(NOT CUTOFF ON F/B)	XB92				
10	**HT Feeder CHP**								HT Conveyor,Crusher		
		DI	ON Feedback	G-4 PAIR	NO		XB11				
		DI	Electrical protection operated		NO		XB32	ANN-1			
		DO	ON Command		24V DC	Holding (no cut off from feedback)	XB91				
11	**HT BREAKER-Synch**								HT Breakers-Incomer, Buscoupler		
		DI	Open Status	G-4 PAIR	NO		XB12	ANN-1			
		DI	Close Status		NC		XB11				
		DI	Electrical Protection Operated		NO		XB32				
		DI	In synch		NO		XB57				
		DO	Open Command		24V DC	Pulse	XB92				
		DO	Close Command		24V DC	Pulse	XB91				
12	**HTBRK- Non Synch**								HT Breakers- Non synchronisation type		
		DI	Open Status	G-4 PAIR	NO		XB12	ANN-1			
		DI	Close Status		NC		XB11				
		DI	Electrical Protection Operated		NO		XB32				
		DO	Open Command		24V DC	Pulse	XB92				
		DO	Close Command		24V DC	Pulse	XB91				
Note:	1. For all the above mentioned DIs potential free contacts shall be provided. The DOs of DDCMIS will be of 24V DC type (current rating max 100mA). Suitable coupling relay shall be provided by Contractor for the DOs of above mentioned type of drives mounted in MCC/SWGR/LCP.										
	2. The interface drawings for various types of drives including cabling / TB nos to be followed shall be as indicated in the drawings 0000-155-POI-A-065.										
	(ii) Solenoids										
1	**Solenoid Valve (All are 110 V AC type) SOV**										
		DO	Flow Control Unit (FCU)/Solenoid Box (SB) Operation	Control cable, no. of cores shall depend on grouping.	DO DRY	Holding	XB92		Flow Control Unit FCU / Solenoid Box SB		

NOTE	1. Local control panels for power supply distribution for solenoids at respective locations shall be provided by the contractor. Interposing relays for SOVs shall be mounted in DDCMIS panels and potential free contacts will be wired to these local cabinets and generation of power supply / distribution will be taken care by the contractor in local panels.										
(B)	**Process I/Os**										
1	For Analog signals F type shall be used.										
2	For Digital signals G type shall be used.										
3	For each process signal separate pair shall be used (From local JB / panel to DDCMIS).										
4	Minimum 4 pair , 0.5 sq mm instrumentation cable (G Type/ F Type) shall be used from JB to DDCMIS marshalling panel.										



NOTE:-

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

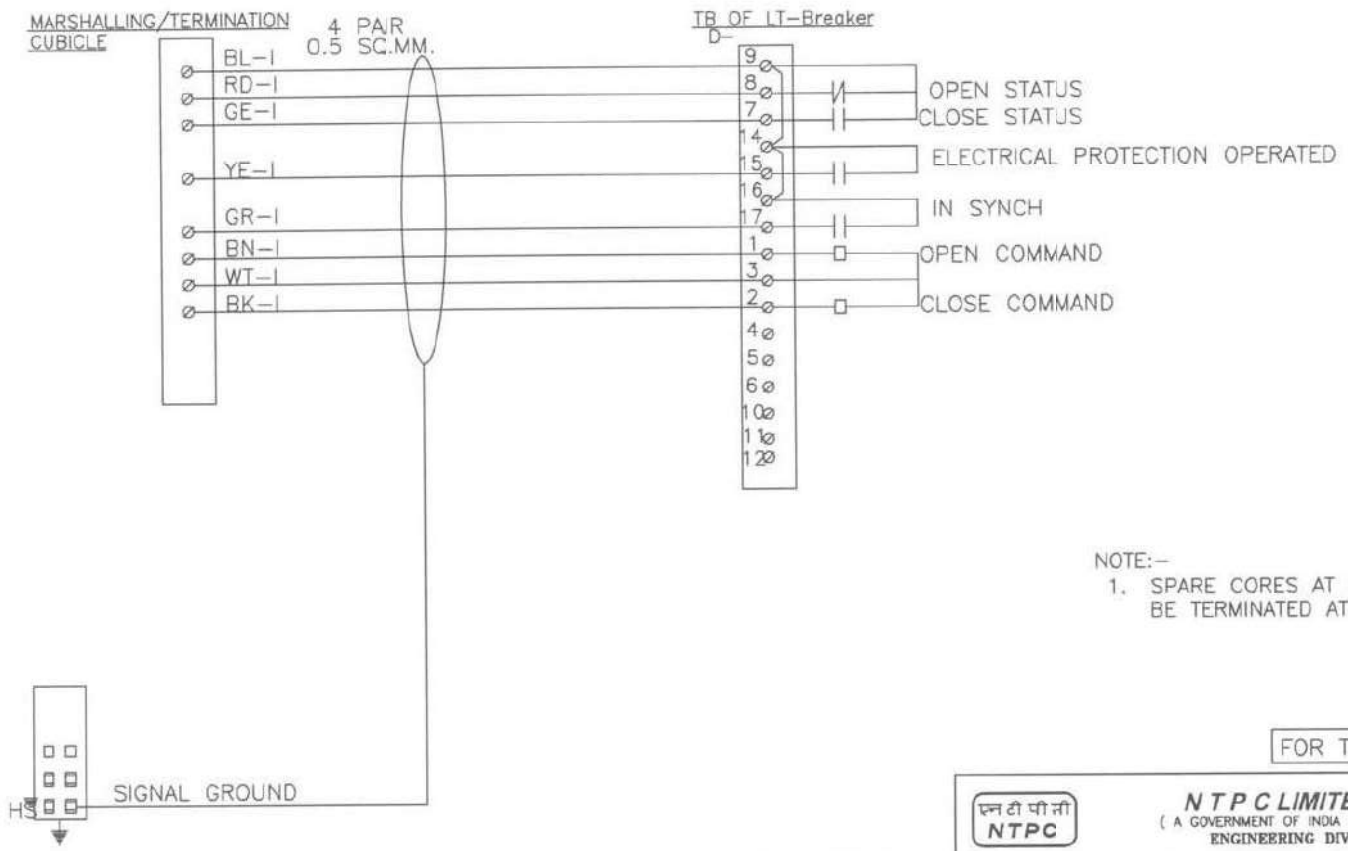
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT-CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (BW)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.04.10
					CLEARED BY						

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-155-POI-A-065 SH 01	A



NOTE:-
1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.

FOR TENDER PURPOSE ONLY

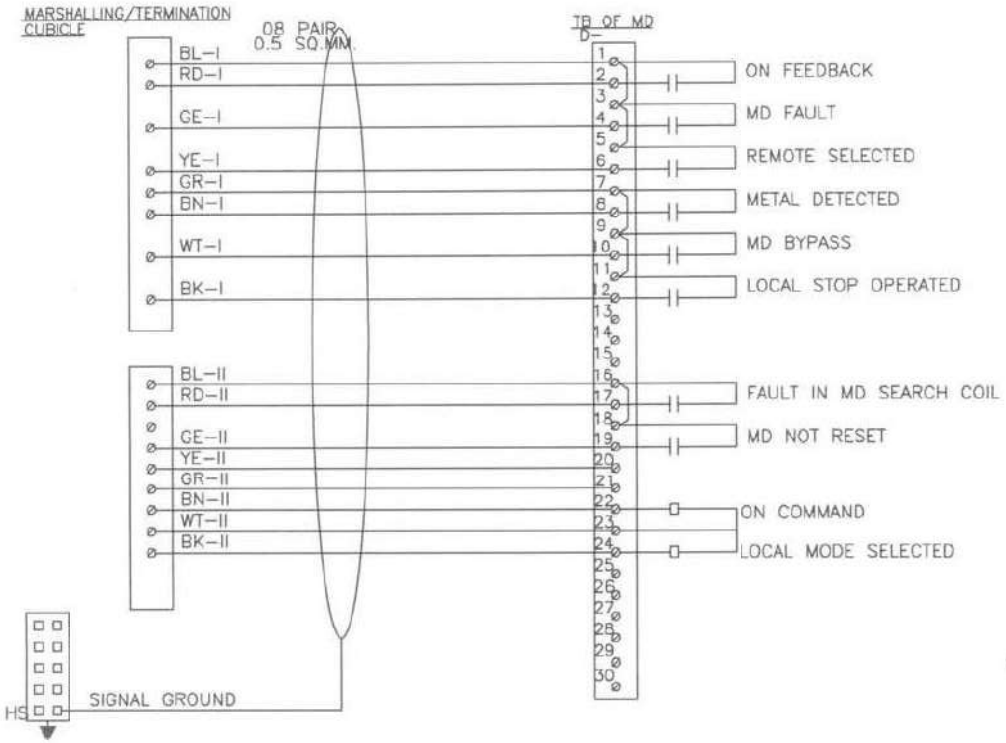
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.04.10
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT – CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (ELECT.BKR.-SYNC.-LT)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-155-POI-A-065 SH 02	A



NOTE:–
1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.

FOR TENDER PURPOSE ONLY

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

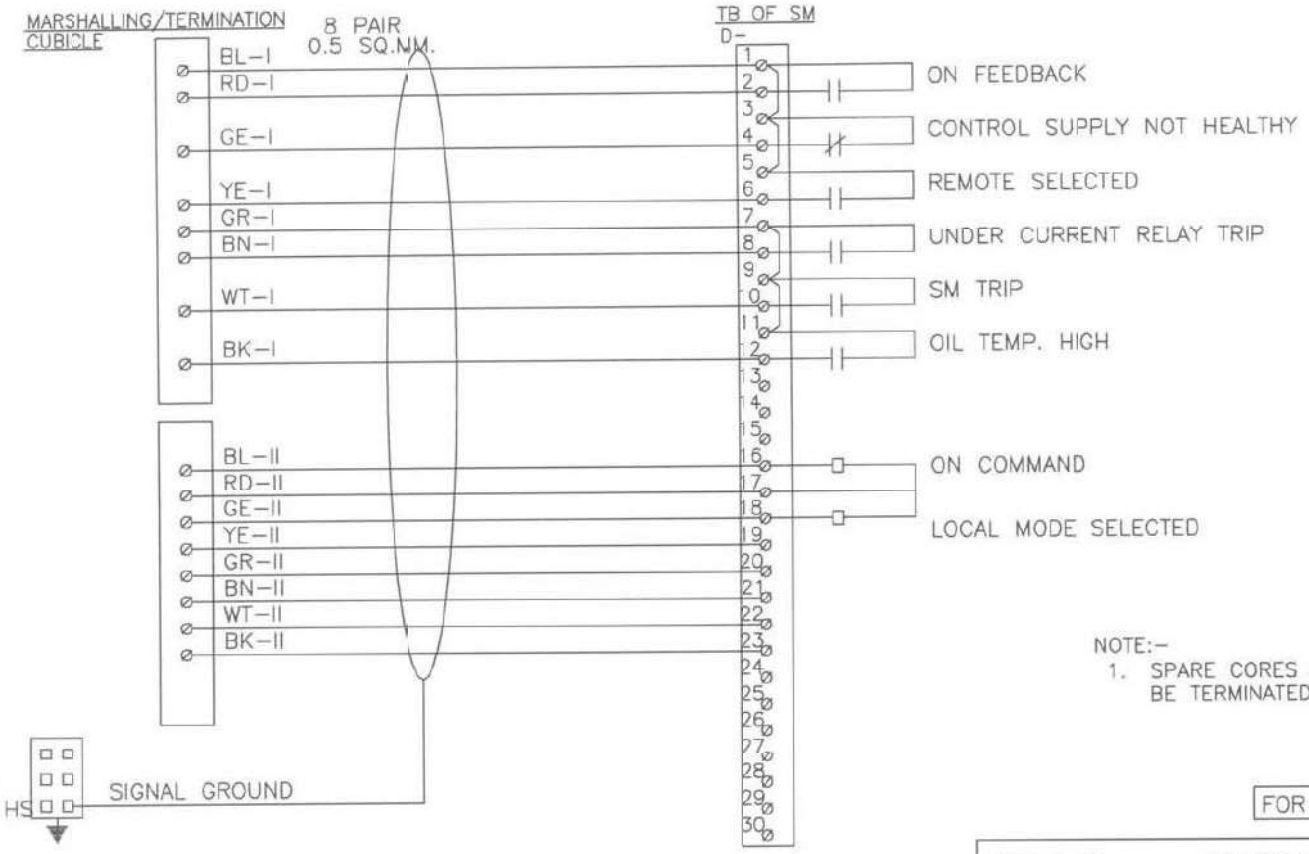
PROJECT: TYPICAL THERMAL POWER PROJECT –CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (MD)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.04.10

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000–155–POI–A–065 SH 03	A



NOTE:-
1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.

FOR TENDER PURPOSE ONLY

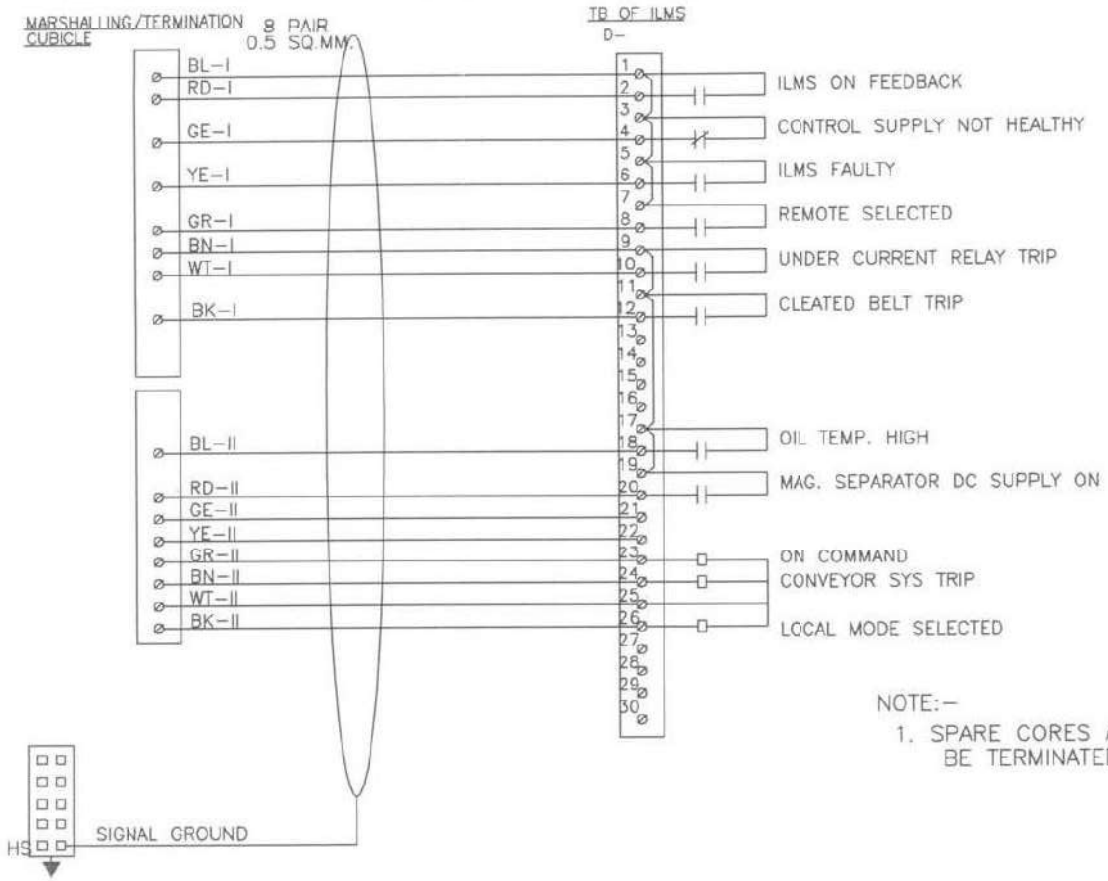
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT- CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (SM)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.04.10
					CLEARED BY						

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-155-POI-A-065 SH 04	A



NOTE:-

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.

FOR TENDER PURPOSE ONLY

NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

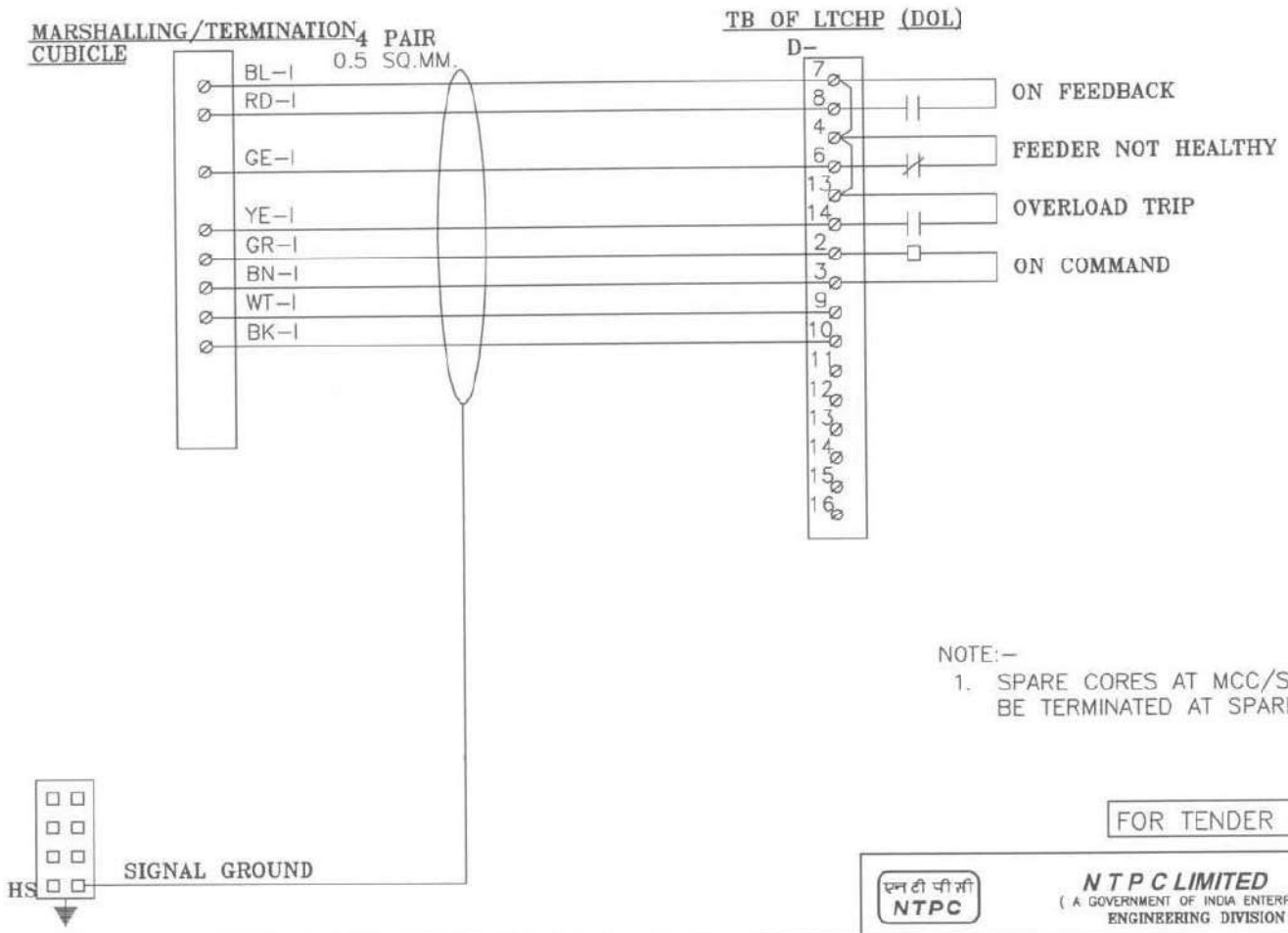
PROJECT: TYPICAL THERMAL POWER PROJECT – CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (ILMS)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.04.10

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-155-POI-A-065 SH 05	A



NOTE:–

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.04.10

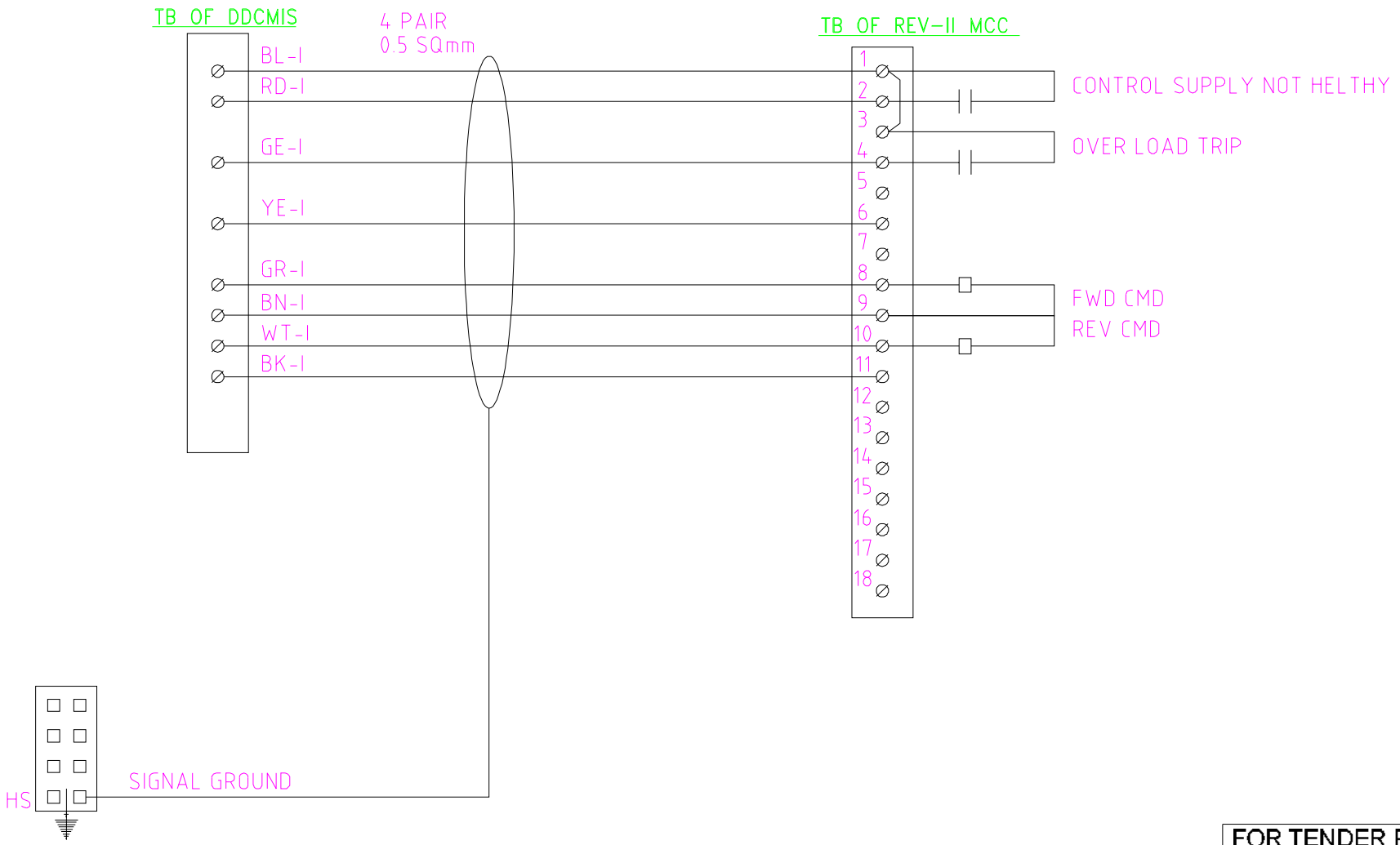
CLEARED BY

NTPC — NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT –CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (LTCHP–DOL)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000–155–POI–A–065 SH 06	A



FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

National Thermal Power Corporation Ltd.

(A GOVERNMENT OF INDIA ENTERPRISE)

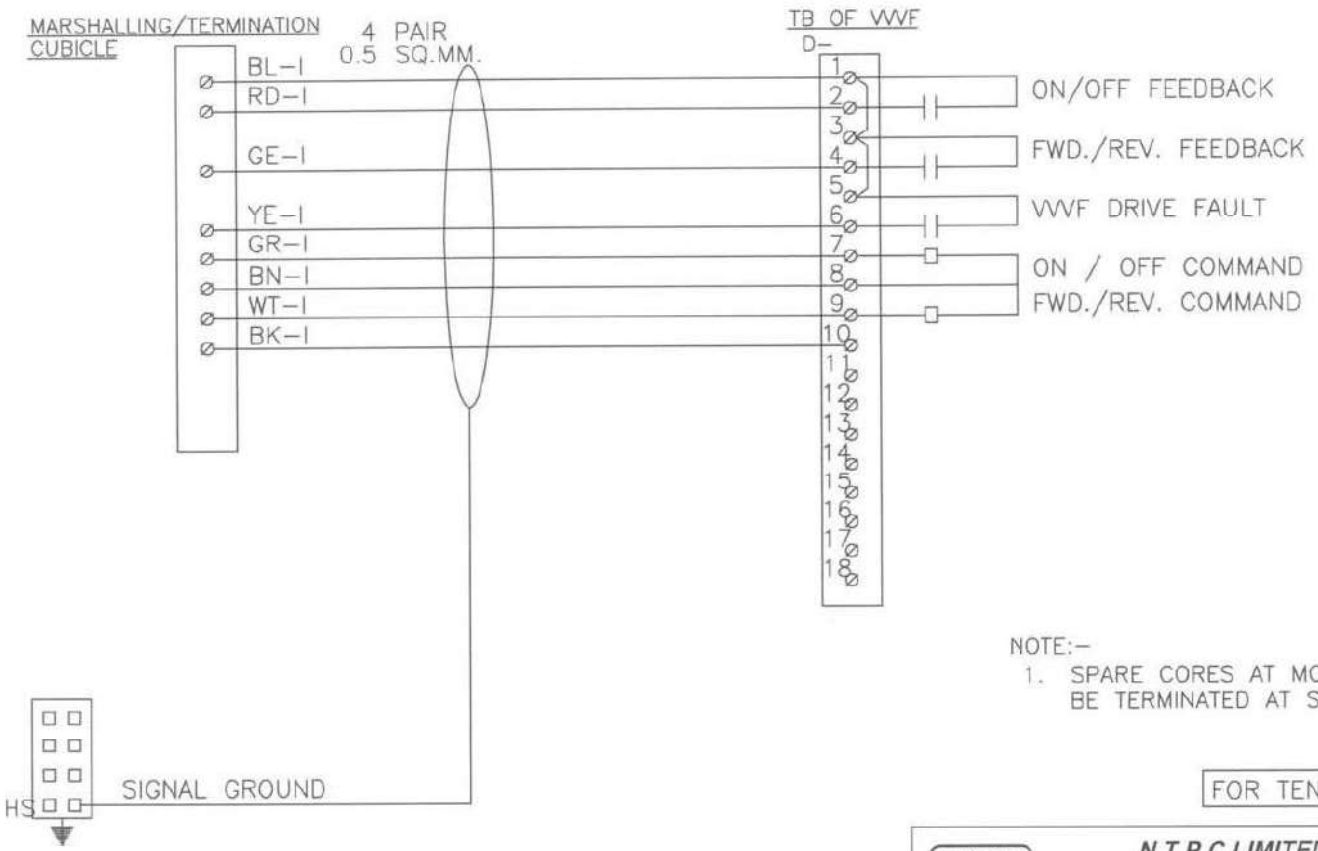
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (REV-II)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										11.01.17
					CLEARED BY						

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-155-POI-A-065 SH 07	A



NOTE:–

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

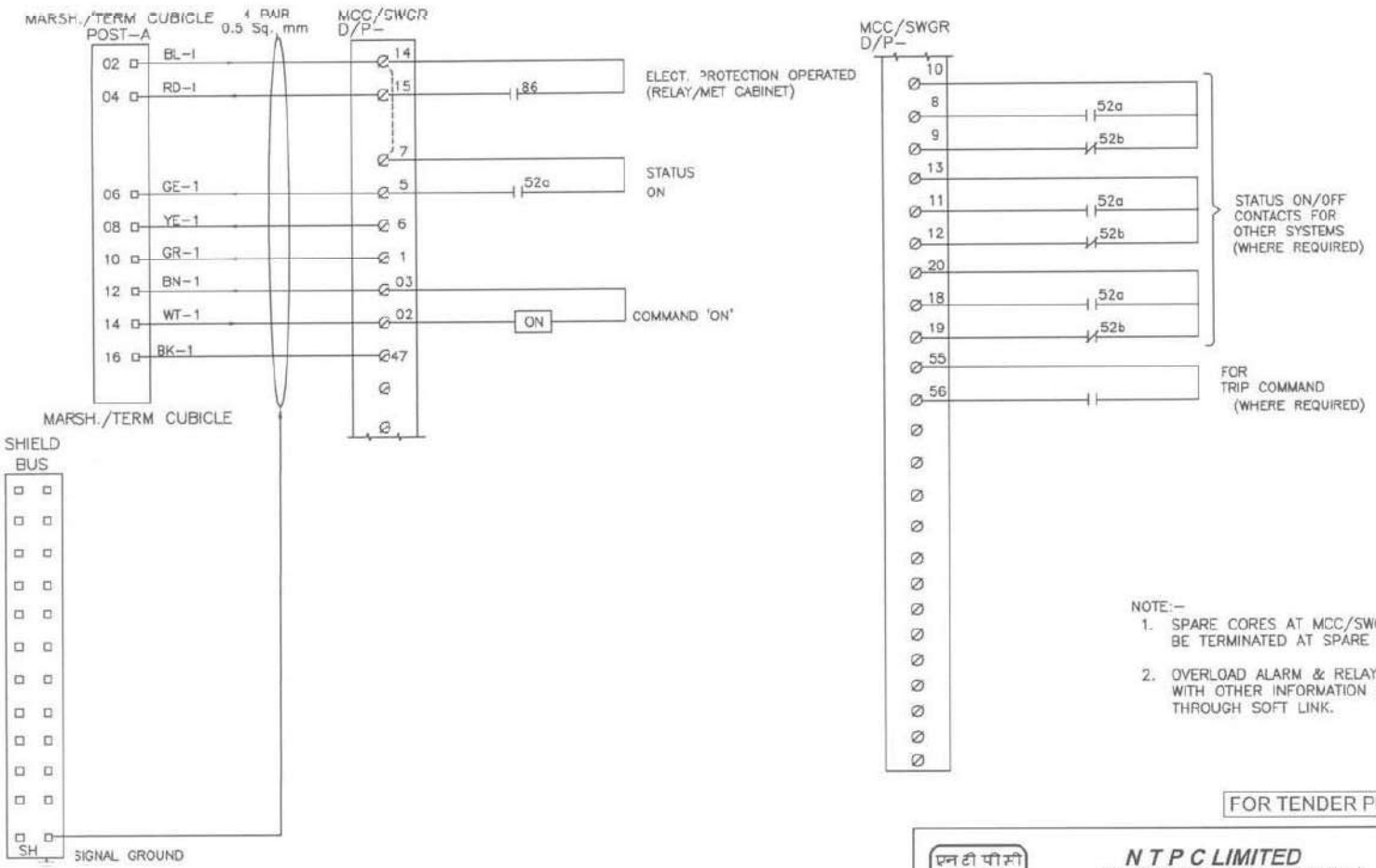
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.04.10
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT – CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (VVVF)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000–155–POI–A–065 SH 08	A



NOTE:-

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.
2. OVERLOAD ALARM & RELAY FAULT ALONG WITH OTHER INFORMATION SHALL FLOW THROUGH SOFT LINK.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

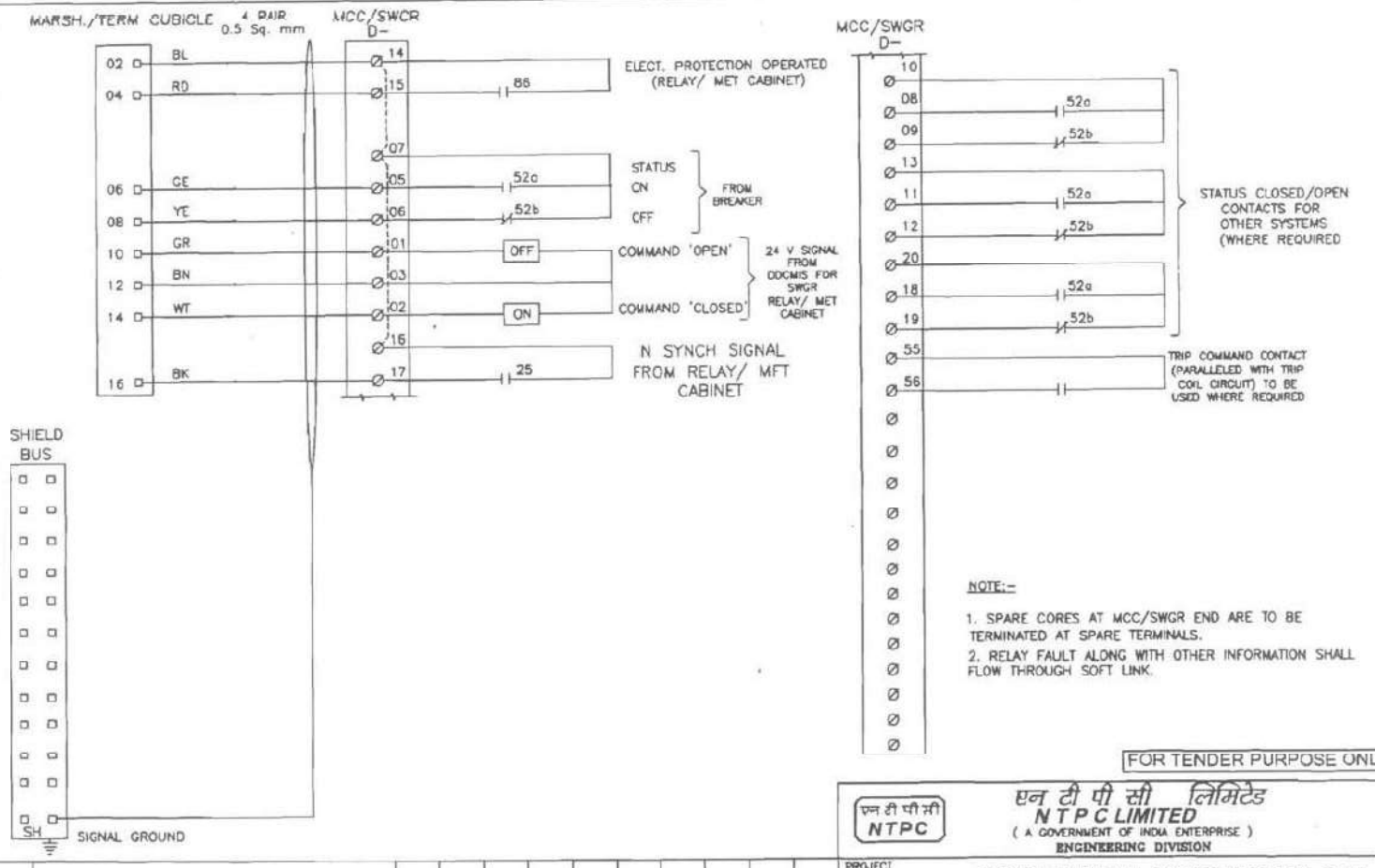
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										19.04.10
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT-CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/ACTUATOR (HTCHP MOTORS)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-155-POI-A-065 SH 09	A



NOTE:-

1. SPARE CORES AT MCC/SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.
2. RELAY FAULT ALONG WITH OTHER INFORMATION SHALL FLOW THROUGH SOFT LINK.

FOR TENDER PURPOSE ONLY

एन टी पी सी लिमिटेड
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

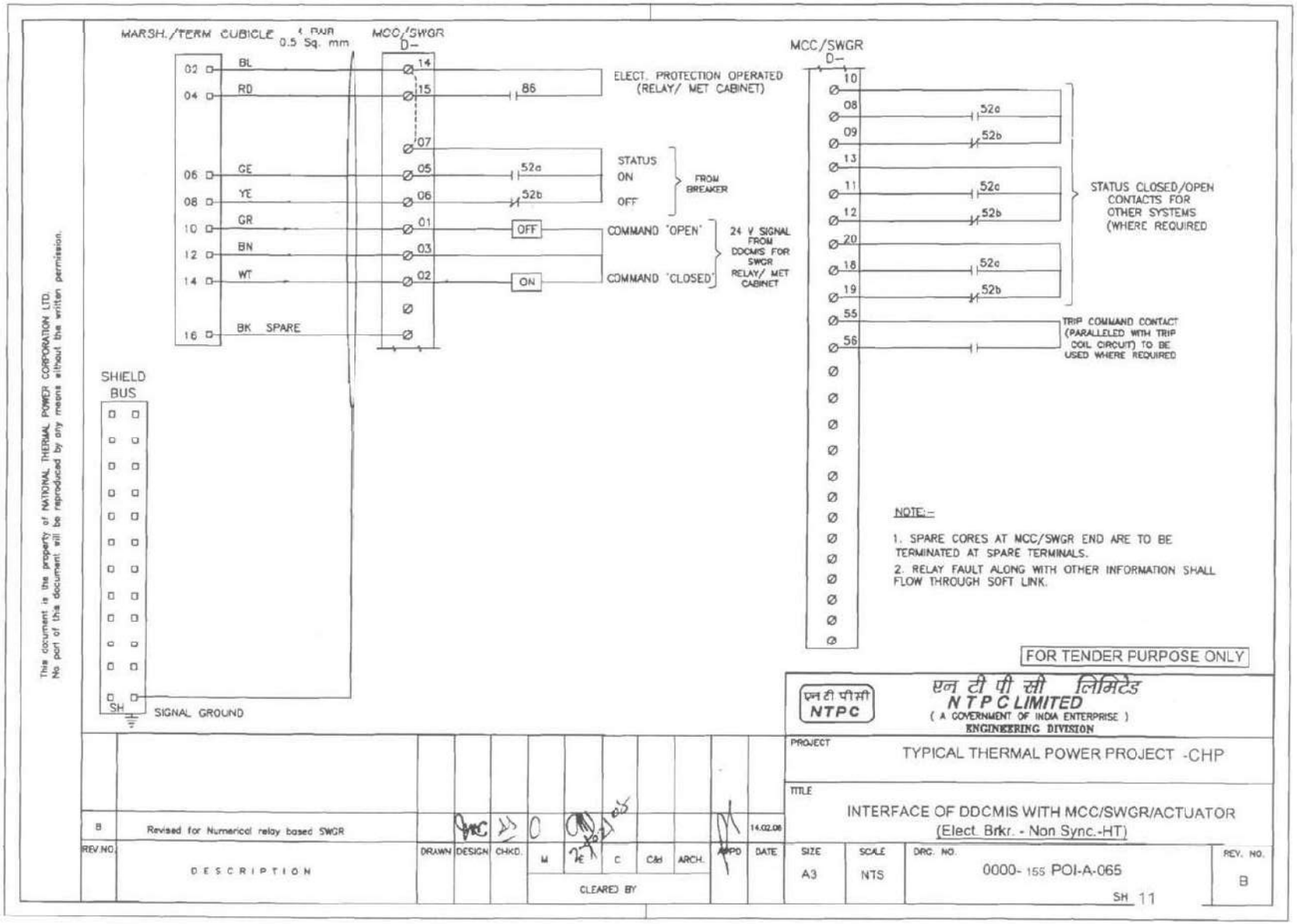
PROJECT: TYPICAL THERMAL POWER PROJECT -CHP

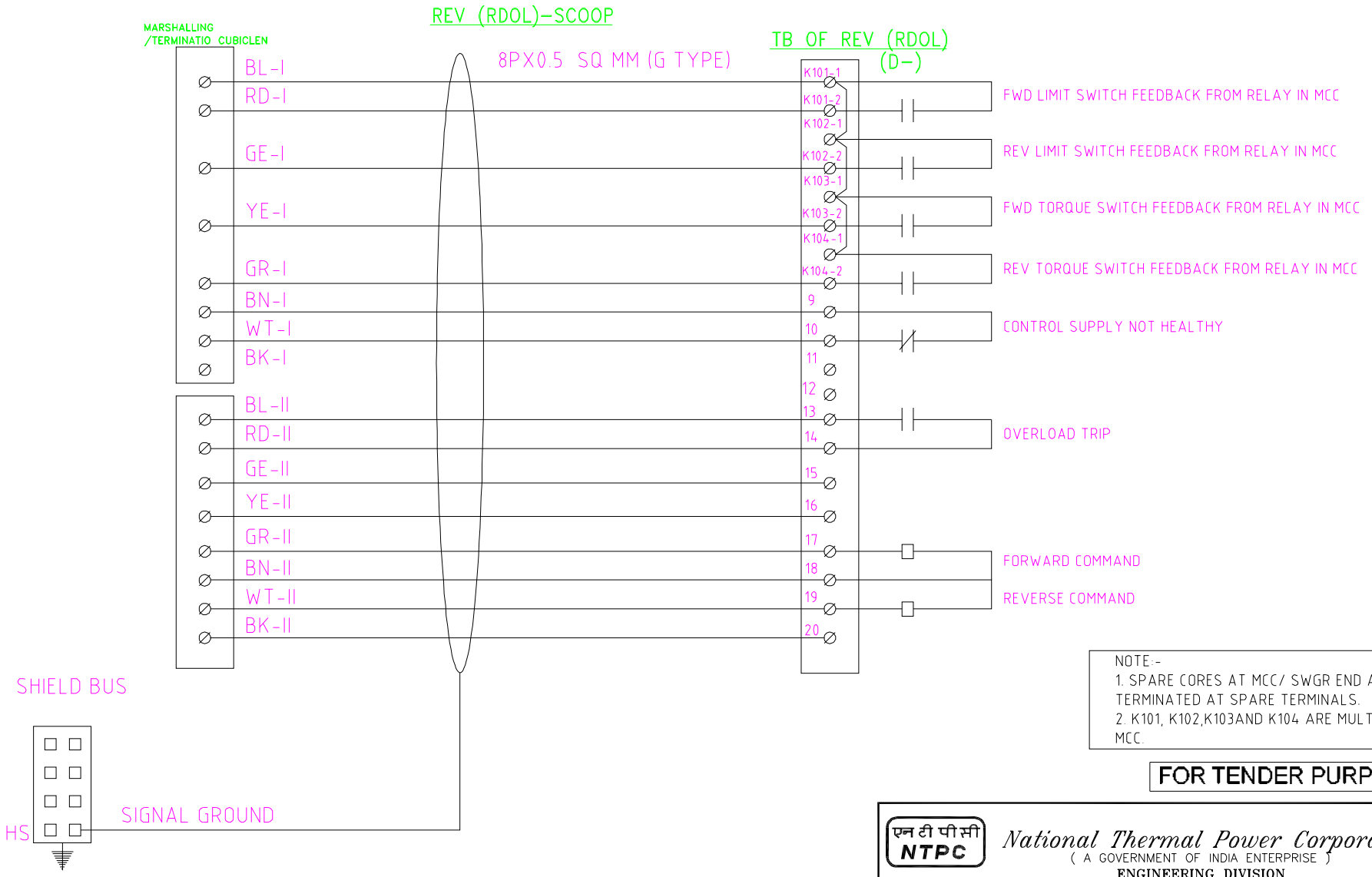
TITLE: INTERFACE OF DDCMIS WITH MCC/SWGR/ACTUATOR (Elect. Brkr. - Sync.-HT)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	DE	C	C&I	ARCH.	APPD	DATE
3	Revised for Numerical relay based SWGR										14.02.08

CLEARED BY

SIZE	SCALE	DRG. NO.	REV. NO.
A3	NTS	0000-155-POI-A-065 SH 10	B





NOTE:-
1. SPARE CORES AT MCC/ SWGR END ARE TO BE TERMINATED AT SPARE TERMINALS.
2. K101, K102,K103AND K104 ARE MULTIPLYING RELAY IN MCC.

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE										16.02.17
					CLEARED BY						

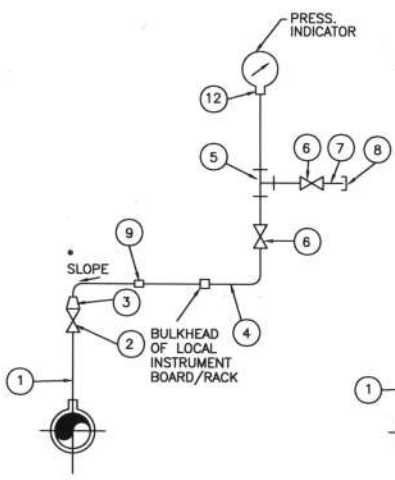
एन टी पी सी NTPC

National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

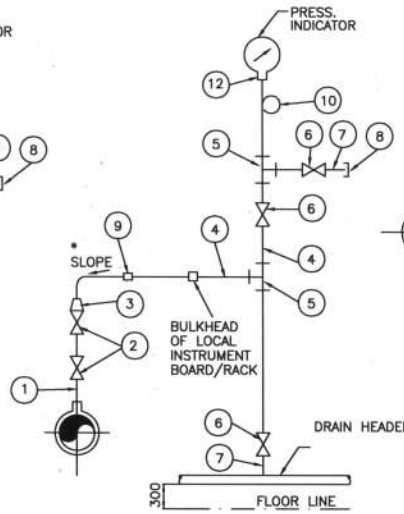
PROJECT: TYPICAL THERMAL POWER PROJECT
CHP

TITLE: INTERFACE OF DDCMIS WITH MCC /SWGR/LCP (REV-I)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-155-POI-A-065 SH 12	A

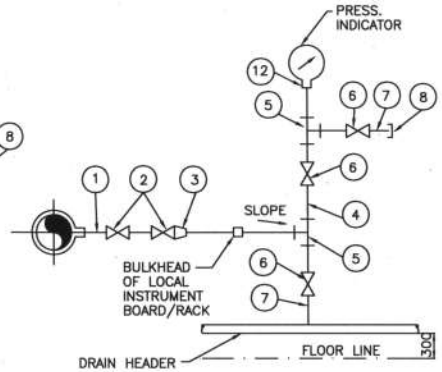


ELEVATION
INST./ SERVICE AIR



ELEVATION
STEAM SERVICE

(PRESSURE INDICATORS MOUNTED REMOTE FROM INSTRUMENT SOURCE POINT)

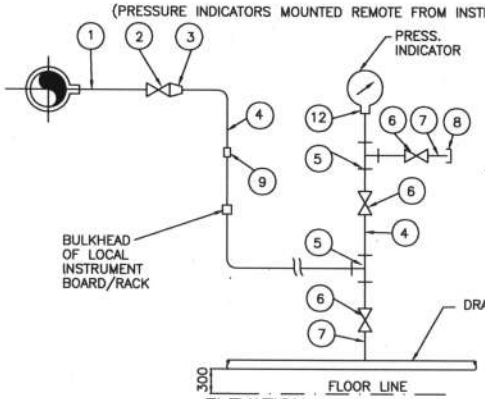


ELEVATION
LIQUID SOURCE

(GAUGE MOUNTED ABOVE INSTRUMENT SOURCE POINT)

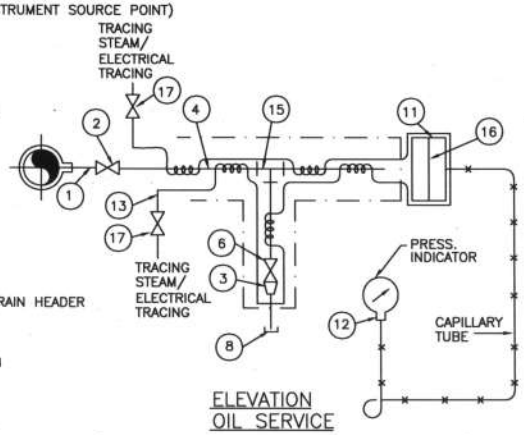
LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	1/2" , 3/4" , 1" NPS SCH 40/80/160/XXS/P91 (AS PER PROCESS REQUIREMENT) NIPPLE OF MATERIAL SAME AS THAT OF MAIN PIPE.
2.	1/2"/3/4"/1' SW GLOBE VALVE/GATE VALVE
3.	3/4" / 1" x 1/2" SW REDUCING INSERT
4.	1/2" / 3/4" PIPE
5.	1/2" / 3/4" SW EQUAL TEE
6.	1/2" / 3/4" SW GLOBE VALVE.
7.	1/2" / 3/4" NPS SW x 1/2" / 3/4" NPT(M) CARBON/ALLOY STEEL NIPPLE.
8.	1/2" / 3/4" NPT(F) CAP.
9.	1/2" / 3/4" PIPE UNION.
10.	6" SS SYPHON
11.	1/2" BLIND 300lbs RF ANSI FLANGE DRILLED AND TAPED FOR 1" NPT PIPE.
12.	SUITABLE ADAPTER.
13.	1/4" CHROME MOLY STEEL TUBE.
14.	
15.	1"/3/4" SW EQUAL TEE.
16.	DIAPHRAGM(WAFER ELEMENT)
17.	ISOLATION VALVE 316 SS,1/4"SW



ELEVATION
LIQUID SOURCE

(GAUGE MOUNTED BELOW INSTRUMENT SOURCE POINT)



ELEVATION
OIL SERVICE

(GAUGE MOUNTED BELOW INSTRUMENT SOURCE POINT)

NOTES:-

1. THE MATERIAL SPECIFICATION AND SCHEDULE NO. OF IMPULSE PIPE & NIPPLE AS LISTED HEREIN SHALL BE AS PER TECHNICAL SPECIFICATIONS.
2. THE MATERIAL SPECIFICATION AND RATING OF FITTINGS AS LISTED SHALL BE AS PER SPECIFICATIONS. WELDED/THREADED FITTINGS SHALL CONFIRM TO ANSI-B.16-11.
3. INSTRUMENTS VALVES BODY STEM MATERIAL AND PRESSURE CLASS SHALL BE AS PER TECHNICAL SPECIFICATIONS.
4. FOR BOILER AIR/FLUE GAS SERVICES SOURCE CONNECTIONS IMPULSE PIPING AND ALL FITTINGS SHALL BE OF 3/4" NB SIZE.
5. GAUGES SHALL NOT BE MOUNTED ON THE PIPE. IT WILL BE MOUNTED ON A CHANNEL OR FRAME OR A RACK..
6. * SLOPE APPROX. 50 MM / METRE.

FOR TENDER PURPOSE ONLY

एन टी पी सी
NTPC

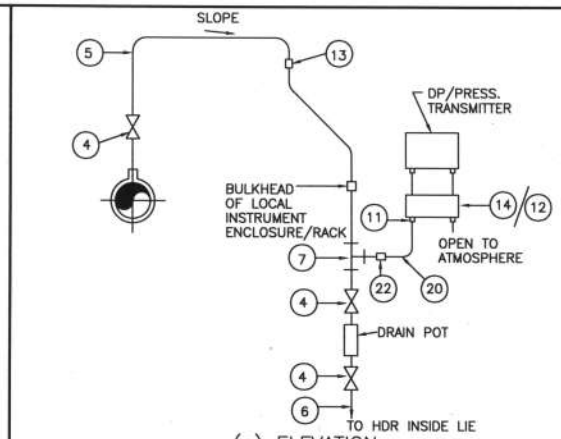
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
		CLEARED BY									

PROJECT: TYPICAL THERMAL POWER PROJECT

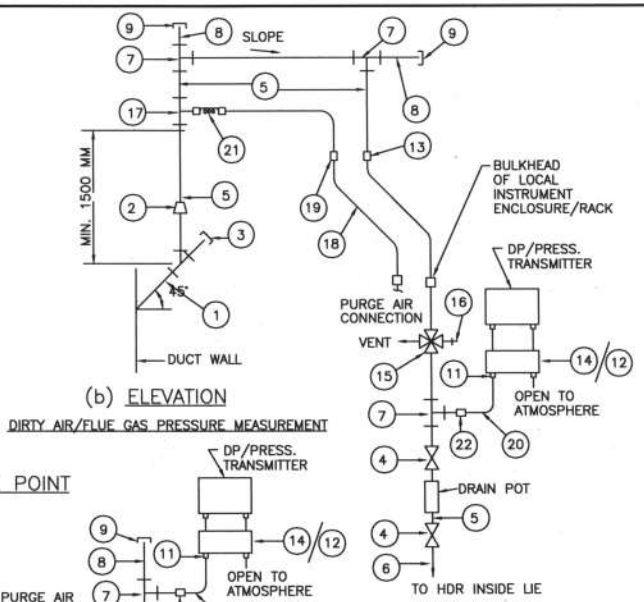
TITLE: INSTRUMENT INSTALLATION DIAGRAM (FOR PRESSURE GAUGE)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-022	A



(a) ELEVATION

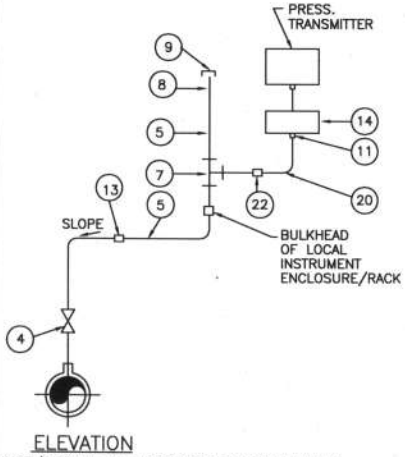
INST/SERVICE AIR PRESSURE MEASUREMENT



(b) ELEVATION

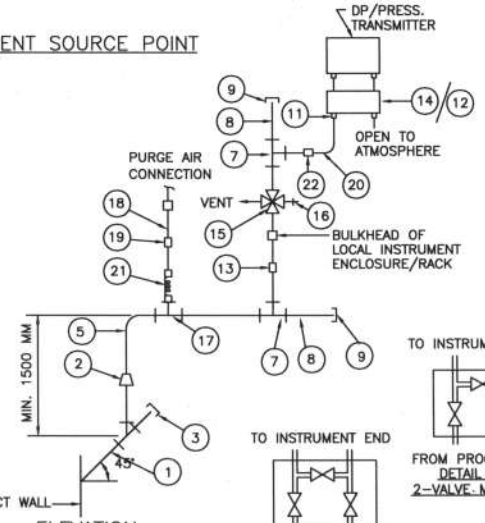
DIRTY AIR/FLUE GAS PRESSURE MEASUREMENT

TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT



ELEVATION

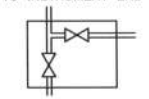
INST/SERVICE AIR PRESSURE MEASUREMENT



ELEVATION

DIRTY AIR/FLUE GAS PRESSURE MEASUREMENT

DETAIL OF 3-VALVE MANIFOLD



DETAIL OF 2-VALVE MANIFOLD

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	42 X 405 MM M.S. BLACK PIPE
2.	M42x2 TO 3/4" REDUCING INSERT
3.	M42x2(F) M.S.CAP
4.	3/4" SW GLOBE VALVE/GATE VALVE
5.	3/4" NPS PIPE
6.	3/4" NPS SW 3/4" NPT(M) CS/AS NIPPLE
7.	3/4" SW EQUAL TEE
8.	3/4" NPS SCH 80 CARBON/ALLOY STEEL NIPPLE
9.	3/4" NPT(F) CS/AS CAP
10.	3/4" SW CS/AS EQUAL CROSS
11.	1/2" TUBE ADOPTER
12.	3 VALVE MANIFOLD
13.	3/4" PIPE UNION
14.	2 VALVE MANIFOLD
15.	3/4" SW 4 WAY VALVE
16.	QUICK DISCONECT FITTING
17.	3/4"SWx1/2"SW BRANCH TEE
18.	1/2" NB SEAMLESS GI PIPE
19.	1/2" NPT (F) GI FITTING
20.	SS TUBE
21.	FLEXIBLE HOSE WITH ONE END SOCKET WELDED (PIPE SIDE) & OTHER END WITH SUITABLE FITTINGS.
22.	3/4" x 1/2" S.S. TUBE UNION

NOTES:-

1. SEE NOTES UNDER DRG. NO.0000-999-POI-A-022.
2. IMPULSE LINE DRAIN CONNECTIONS SHALL BE DONE AS PER TECHNICAL SPECIFICATIONS
3. THE SLOPE IN THE HORIZONTAL OF THE IMPULSE PIPE SHALL BE APPROX. 50 mm/mtr.
4. THE EXACT ORIENTATION OF THE TRANSMITTERS WITH RESPECT TO VALVE MANIFOLDS ETC. WILL BE FINALISED DURING DETAILED ENGINEERING KEEPING IN VIEW THE MANUFACTURER'S RECOMMENDATIONS.
5. COMMON INSTRUMENT AIR HEADER (1"NB) USING REDUNDANT AIR FILTER REGULATORS WILL BE MADE IN EACH TRANSMITTER ENCLOSURE REQUIRING PURGE AIR. PURGE AIR FOR EACH INSTRUMENT LINE SHALL BE TAPPED FROM THIS HEADER USING INDIVIDUAL PURGE ROTAMETERS AS SHOWN IN DRG. NO. 0000-999-POI-A-034 TYPICALLY.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

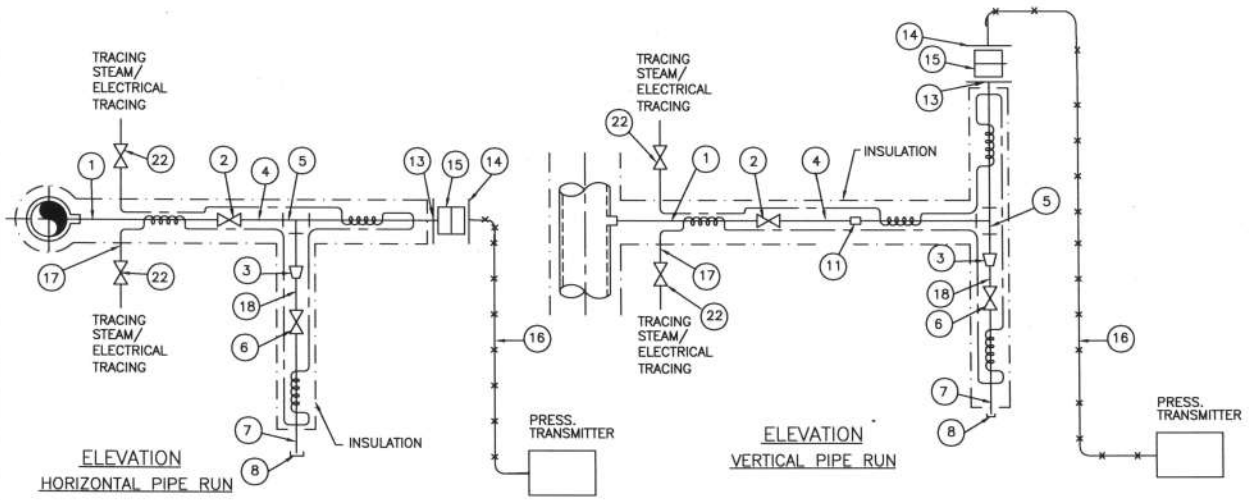
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENT INSTALLATION DIAGRAM (PRESSURE MEASUREMENT USING PRESS / DP TRANSMITTERS (INST./SERVICE, DIRTY AIR/FLUE GAS)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-023	A



HEAVY FUEL PRESS. MEASUREMENT USING WAFER TYPE TRANSMITTER WITH REMOTE SEAL

NOTES:–

1. SAME NOTES AS UNDER DRG. NO.0000–999–POI–A–023.
1. FOR LFO STEAM TRACING NOT APPLICABLE.

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	1" NPS SCH 40/80 (AS PER PROCESS REQUIREMENT) NIPPLE OF MATERIAL SAME AS THAT OF MAIN PIPE
2.	1" SW GLOBE VALVE
3.	1" x 1/2" SW REDUCING INSERT
4.	1" NPS SCH 40/80 CS PIPE
5.	1"SW EQUAL TEE
6.	1/2" SW GLOBE VALVE.
7.	1/2" NPS SCH 40/80 SW x 1/2"NPT (M) CS NIPPLE
8.	1/2" NPT (F) CS CAP.
9.	–
10.	–
11.	1/2" PIPE UNION
12.	–
13.	2½" BLIND 300lbs RF ANSI FLANGE DRILLED & TAPPED FOR 1" NPT PIPE
14.	2½" MATCHING BLIND FLANGE
15.	WAFER ELEMENT FOR USE WITH 2 1/2" ANSI RF FLANGE
16.	SPECIAL LIQUID FILLED 300 SS POLYTHINE JACKETED CAPILLARY TUBE OF PRESSURE TRANSMITTER.
17.	1/4" CHROME MOLY STEEL PIPE.
18.	1/2" NPS SCH. 40/80 CS PIPE.
19.	–
20.	–
21.	–
22	1/4" SW 316 SS ISOLATION VALVE.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

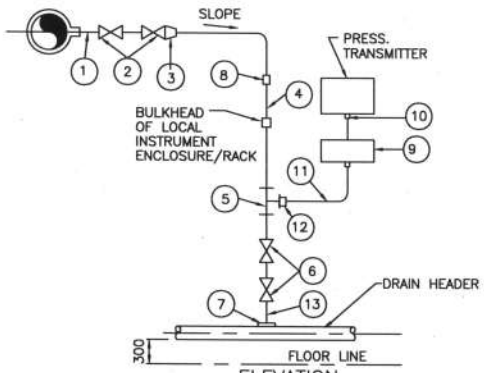
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

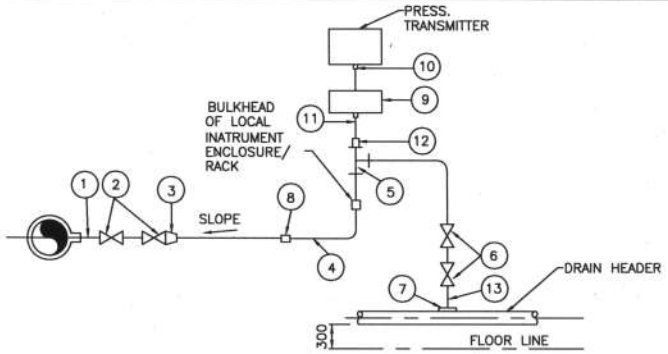
TITLE: INSTRUMENT INSTALLATION DIAGRAM (PRESSURE TRANSMITTER FUEL OIL)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-024	A



ELEVATION

TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT



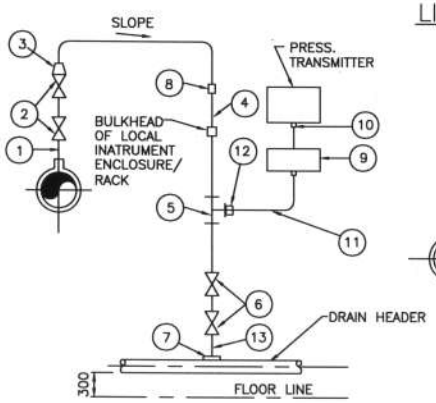
ELEVATION

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT

LIQUID PRESSURE MEASUREMENT

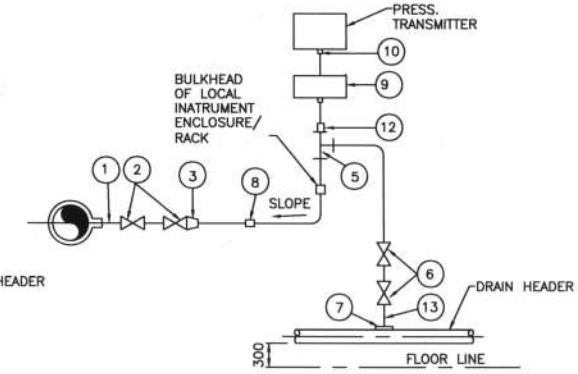
LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	1/2"/ 3/4"/1"NPS SCH. 80/160/XXS/P91 NIPPLE OF MATERIAL SAME AS THAT OF MAIN PIPE.
2.	3/4"/1" SW GLOBE VALVE.
3.	3/4"/1" TO 1/2" REDUCING INSERT
4.	1/2" NPS PIPE
5.	1/2" SW EQUAL TEE
6.	1/2"SW GLOBE VALVE
7.	1/2"NPS SCH. 80/160 SWx1/2"CS/AS COUPLER
8.	1/2" PIPE UNION
9.	2/3 VALVE MANIFOLD (FOR DETAIL SEE DRAWING NO.0000-102-POI-A-023.
10.	SUITABLE ADAPTER
11.	SS TUBE
12.	1/2" PIPE x 1/2"TUBE UNION
13.	1/2"NPS SCH. 80/160 SWx1/2" NPT(M) CS/AS NIPPLE



ELEVATION

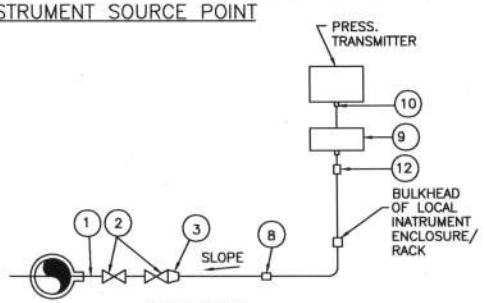
TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT



ELEVATION

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT

STEAM PRESSURE MEASUREMENT



ELEVATION

VACCUM PRESSURE MEASUREMENT

NOTES:-

1. SAME NOTES UNDER DRG. NO. 0000-999-POI-A-023.
2. FOR VACUUM APPLICATION OTHER PORT OF TRANSMITTER SHALL BE KEPT OPEN TO ATMOSPHERE.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

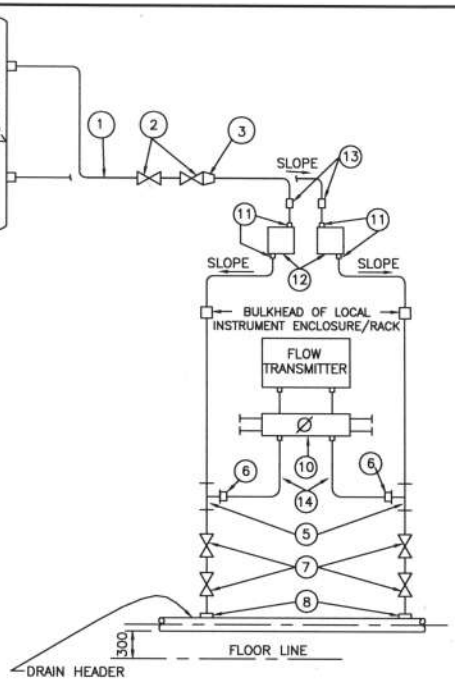
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
					CLEARED BY						
A	FIRST ISSUE							T.G.			21.08.12

PROJECT: TYPICAL THERMAL POWER PROJECT

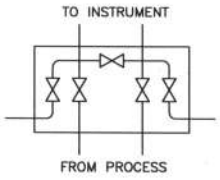
TITLE: INSTRUMENT INSTALLATION DIAGRAM (PRESSURE MEASUREMENT USING PRESS /DP TRANSMITTERS STEAM/LIQUID VACUUM)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-025	A

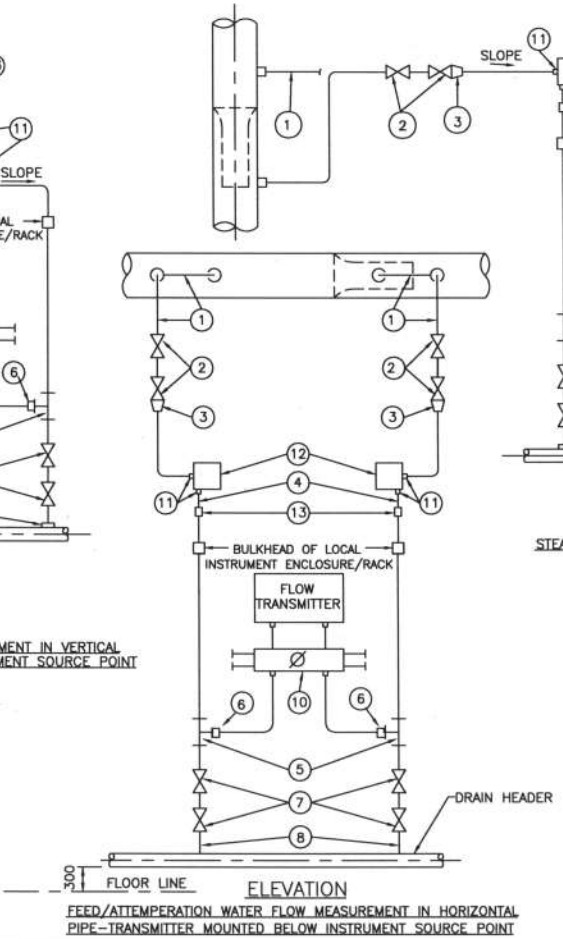


ELEVATION

FEED/ATTEMPERATION WATER FLOW MEASUREMENT IN VERTICAL PIPE–TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT

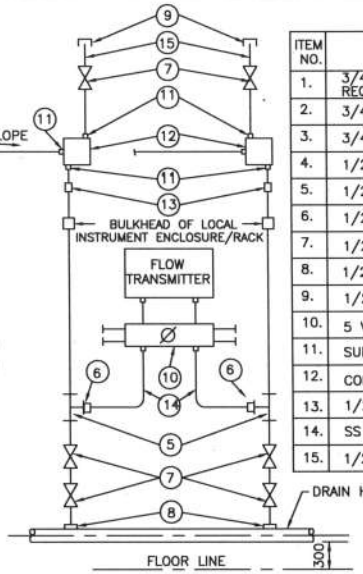


DETAIL OF 5 VALVE MANIFOLD
(ITEM NO. 10)



ELEVATION

FEED/ATTEMPERATION WATER FLOW MEASUREMENT IN HORIZONTAL PIPE–TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT



ELEVATION

STEAM FLOW MEASUREMENT IN VERTICAL PIPES

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	3/4" /1"NPS SCH. 80/160/XXS/P91 (AS PER PROCESS REQUIREMENT) NIPPLE OF MATERIAL SAME AS THAT OF MAIN PIPE.
2.	3/4"/1" SW GLOBE VALVE.
3.	3/4"/1" TO 1/2" REDUCING INSERT
4.	1/2" NPS PIPE
5.	1/2" SW EQUAL TEE
6.	1/2" PIPE x 1/2" TUBE UNION
7.	1/2" SW GLOBE VALVE.
8.	1/2"NPS SCH. 80/160 SWx1/2" SW CS/AS COUPLER
9.	1/2" NPT (F) CAP
10.	5 VALVE MANIFOLD
11.	SUITABLE ADAPTER
12.	CONDENSATE POT (RESERVOIR)
13.	1/2" PIPE UNION
14.	SS TUBE
15.	1/2"NPS SCH. 80/160 SWx1/2" NPT (M) CS/AS NIPPLE

NOTES:–

1. SAME NOTES UNDER DRG. NO. 0000–999–POI–A–023.
2. CONDENSATE POTS SHALL BE PROVIDED FOR ALL STEAM SERVICES.
3. FOR WATER SERVICES CONDENSATE POTS SHALL BE PROVIDED ONLY IN THOSE CASES WHERE TEMP. > 120°C

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

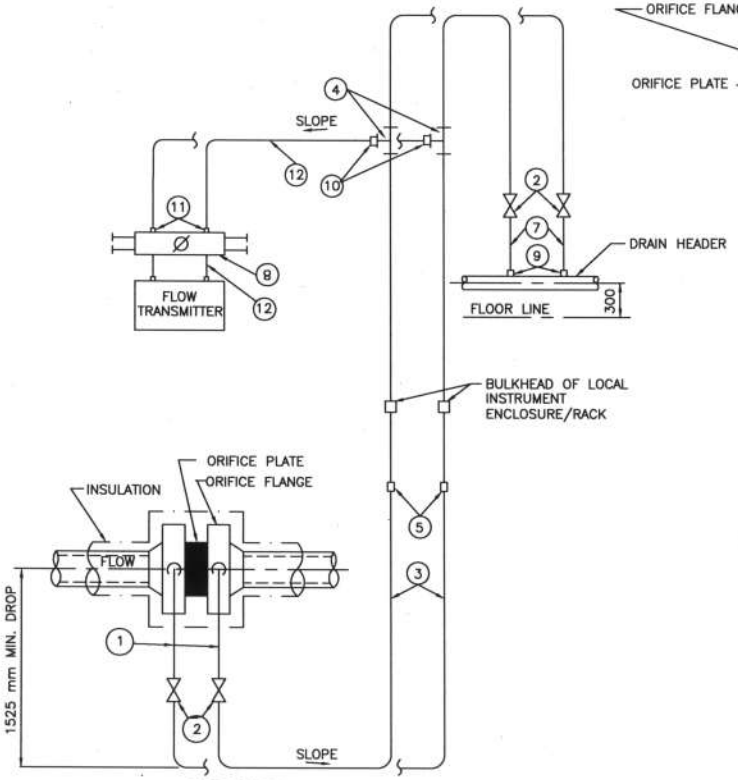
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENT INSTALLATION DIAGRAM
FLOW MEASUREMENT (USING FLOW NOZZLES)
STEAM & FEEDWATER

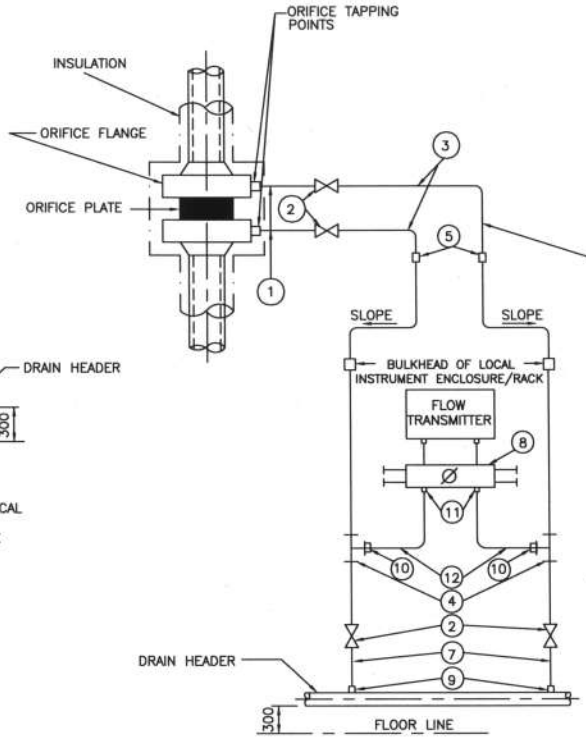
SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-026	A



ELEVATION

HORIZONTAL PIPE RUN

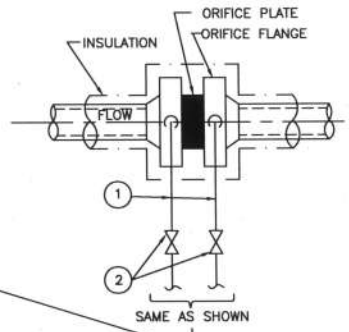
TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT



ELEVATION

VERTICAL PIPE RUN

TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT



ELEVATION

HORIZONTAL PIPE RUN

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	1/2"NPS SCH. 80 NIPPLE OF MATERIAL SAME AS THAT OF MAIN PIPE WITH NECESSARY ATTACHMENT TO FLANGE OF ORIFICE
2.	1/2"SW GLOBE VALVE.
3.	1/2" NPS PIPE
4.	1/2" SW EQUAL TEE
5.	1/2" PIPE UNION
6.	–
7.	1/2"NPS SCH. 80 SWx1/2"NPT (M) S.S. NIPPLE
8.	5 VALVE MANIFOLD FOR DETAIL REFER DRAWING NO.0000-102-POI-A-026.
9.	1/2" T SW HALF COUPLET
10.	1/2" PIPE x 1/2" TUBE UNION
11.	SUITABLE ADAPTER
12.	SS TUBE

NOTES:–

1. SAME NOTES AS UNDER DRG. NO. 0000-999-POI-A-023.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

N T P C LIMITED

(A GOVERNMENT OF INDIA ENTERPRISE)

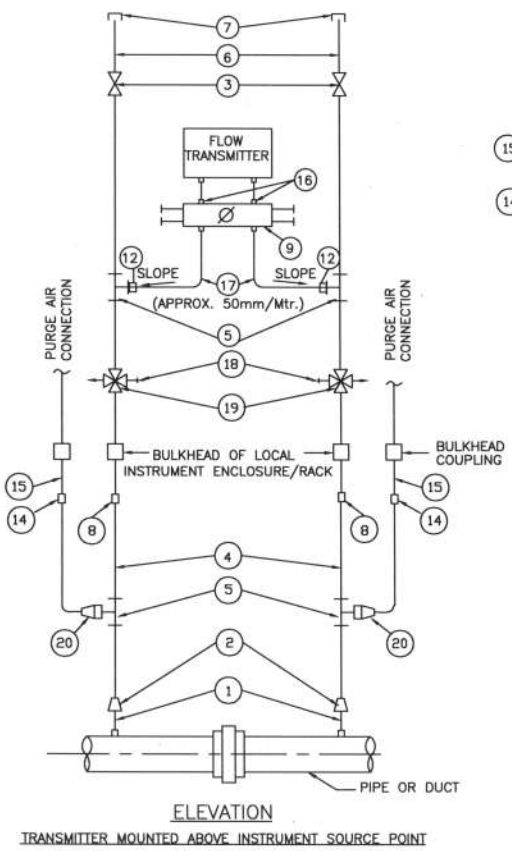
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

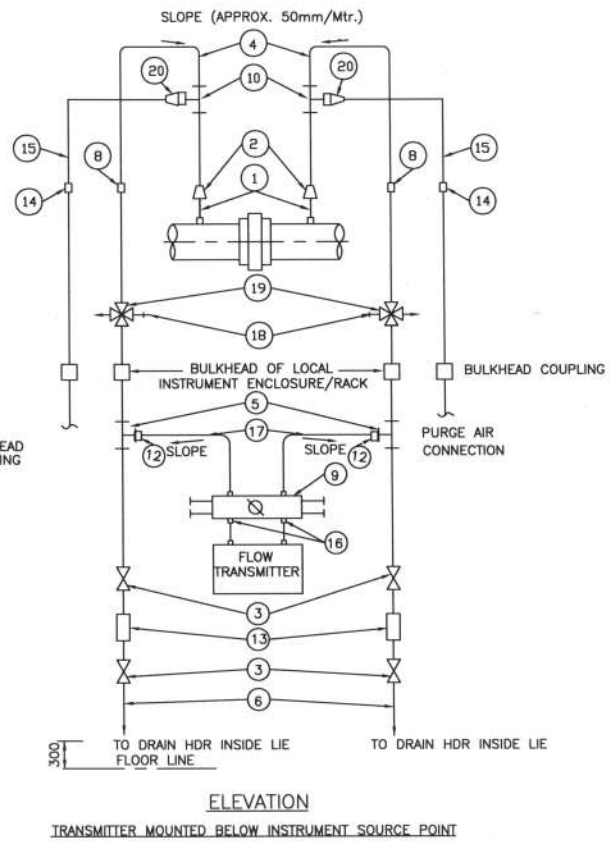
TITLE: INSTRUMENT INSTALLATION DIAGRAM
FLOW MEASUREMENT (USING ORIFICE PLATES)
CONDENSATE & SERVICE WATER

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-027	A



ELEVATION

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT



ELEVATION

TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	42x4.05mm M.S. BLACK PIPE.
2.	M 42x2 TO 3/4"SW REDUCING INSERT.
3.	3/4" SW GLOBE VALVE.
4.	3/4" PIPE.
5.	3/4" SW EQUAL TEE.
6.	3/4" SCH. 80 SWx3/4" NPT (M) CS/AS NIPPLE
7.	3/4" NPT (F) CAP.
8.	3/4" PIPE UNION.
9.	5 VALVE MANIFOLD FOR DETAIL REFER DRAWING NO.0000-102-POI-A-026.
10.	3/4" SW EQUAL TEE.
11.	3/4" SW GATE VALVE.
12.	3/4" PIPE x 1/2" TUBE UNION
13.	DRAIN POT.
14.	1/2" GI FITTING
15.	1/2" NB GI PIPE
16.	SUITABLE ADAPTER
17.	SS TUBE
18.	QUICK DISCONNECT FITTINGS.
19.	3/4" SW 4 WAY VALVE.
20.	3/4" x1/2" REDUCER.

NOTES:-

1. SAME NOTES AS UNDER DRG. NO. 0000-999-POI-A-023.

FOR TENDER PURPOSE ONLY

AIR/GAS FLOW MEASUREMENT USING HEAD TYPE PRIMARY ELEMENT

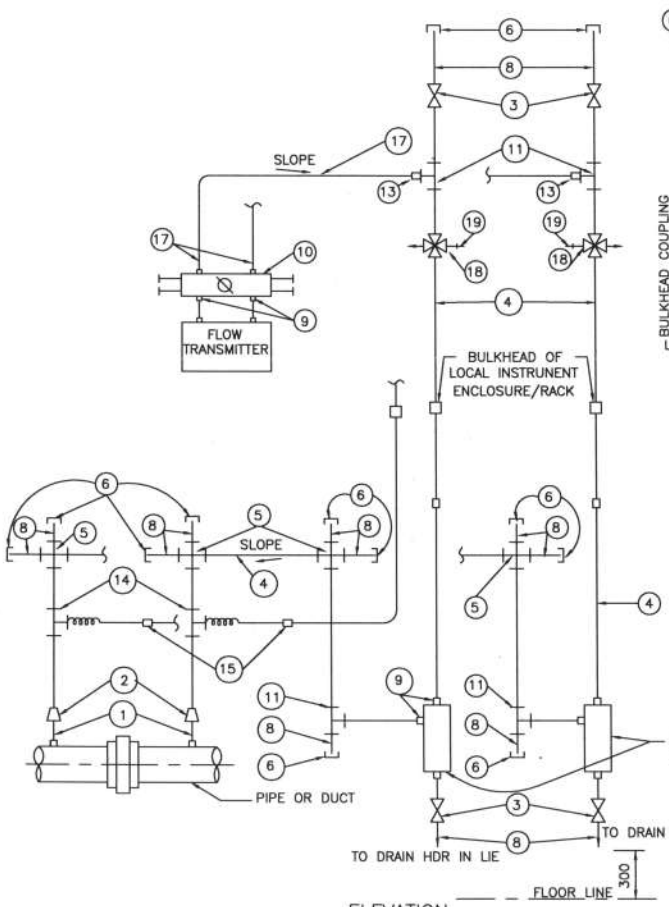
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

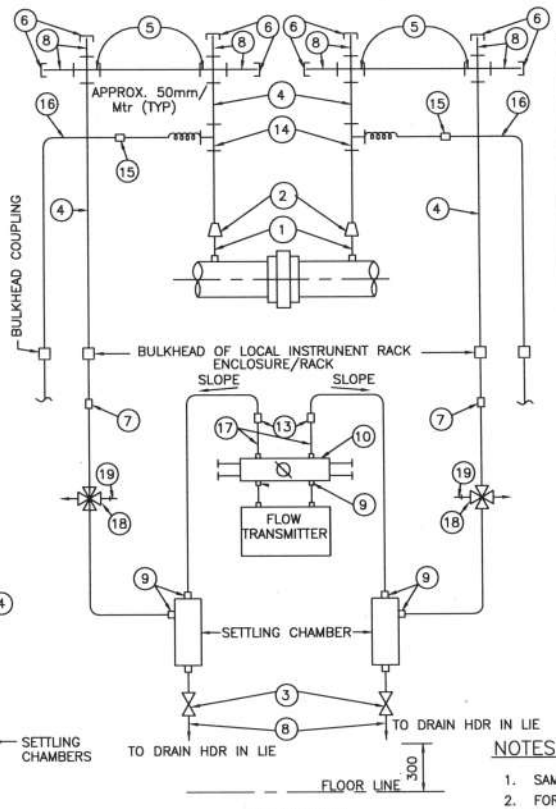
TITLE: INSTRUMENT INSTALLATION DIAGRAM (FLOW MEASUREMENT AIR/GAS)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-028	B



ELEVATION

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT



ELEVATION

TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	42x4.05mm M.S. BLACK PIPE.
2.	M 42x2 TO 3/4"SW REDUCING INSERT.
3.	3/4" SW GLOBE VALVE.
4.	3/4" NPS PIPE.
5.	3/4" SW EQUAL CROSS.
6.	3/4" NPT (F) CS/AS CAP.
7.	3/4" PIPE UNION.
8.	3/4" NPS SWx3/4" NPT (M) CS/AS NIPPLE
9.	SUITABLE ADAPTER
10.	5 VALVE MANIFOLD FOR DETAIL REFER DRAWING NO.0000-999-POI-A-026.
11.	3/4" SW EQUAL TEE.
12.	3/4" SW GATE VALVE.
13.	3/4" PIPE x 1/2" TUBE UNION
14.	3/4" SW x 1/2" SW BRANCH TEE.
15.	1/2" GI FITTING
16.	1/2" NB GI PIPE.
17.	SS TUBE
18.	3/4" SW 4 WAY VALVE.
19.	QUICK DISCONNECT FITTINGS.

NOTES:-

1. SAME NOTES UNDER DRG. NO. 0000-999-POI-A-023.
2. FOR VACUUM APPLICATION OTHER PORT OF TRANSMITTER SHALL BE KEPT OPEN TO ATMOSPHERE.

FOR TENDER PURPOSE ONLY

DIRTY AIR/FLUE GAS FLOW MEASUREMENT USING HEAD TYPE PRIMARY ELEMENT

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12

CLEARED BY

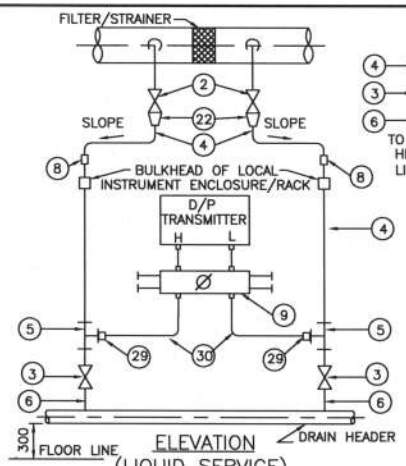
एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

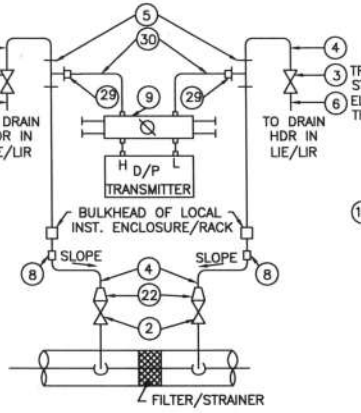
TITLE: INSTRUMENT INSTALLATION DIAGRAM (FLOW MEASUREMENT DIRTY AIR/ FLUE GAS)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-029	A



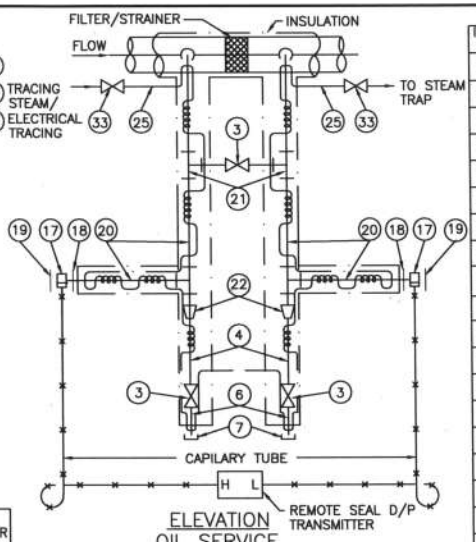
ELEVATION
(LIQUID SERVICE)

TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT

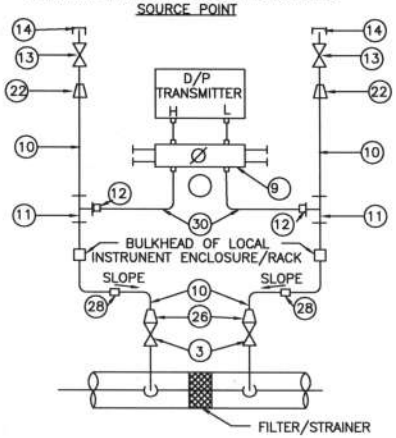


ELEVATION
(LIQUID SERVICE)

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT

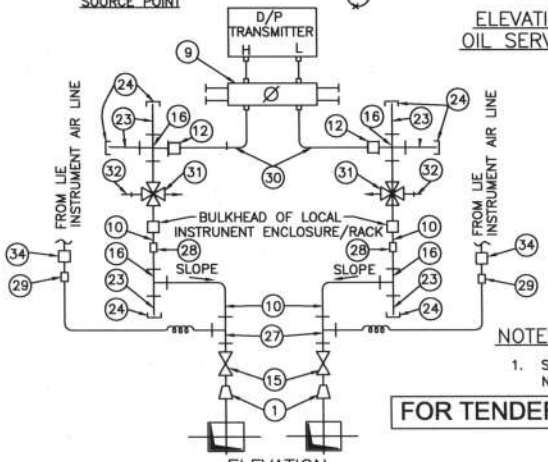


ELEVATION
OIL SERVICE



ELEVATION
CLEAN GAS/AIR SERVICE

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT
DIFFERENTIAL PRESSURE MEASUREMENT



ELEVATION
FUEL GAS SERVICE/DIRTY AIR SERVICE

NOTES:-

1. SAME NOTES AS UNDER DRG. NO. 0000-999-POI-A-023.

FOR TENDER PURPOSE ONLY

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	42x2 TO 3/4" SW REDUCING INSERT.
2.	3/4" SW GLOBE VALVE.
3.	1/2" SW GLOBE VALVE FOR LIQUID APPLICATION & 3/4"/1" IN GAS/AIR APPLICATION
4.	1/2" NPS 40/80/160 (AS PER PROCESS REQUIREMENT) CARBON/ALLOY STEEL PIPE.
5.	1/2" SW EQUAL TEE.
6.	1/2" NPS SW x 1/2" NPT (M) NIPPLE.
7.	1/2" NPT (F) CAP.
8.	1/2" PIPE x 1/2" PIPE UNION.
9.	5 VALVE MANIFOLD (FOR DETAIL REFER DRAWING NO.0000-999-POI-A-026.
10.	3/4" SCH 80 CARBON/ALLOY STEEL PIPE.
11.	3/4"/1/2" SW EQUAL TEE.
12.	3/4"x1/2" TUBE UNION.
13.	1/2" SCREWED GLOBE VALVE.
14.	1/2" NPT (M) PLUG.
15.	3/4" SW GATE VALVE.
16.	3/4" SW EQUAL CROSS.
17.	WAFER ELEMENT FOR USE WITH 3"ANSI R.F. VALVE.
18.	3"BLIND 300lbs R.F. WELD NECK FLANGE DRILLED FOR 1" SCH. 40/80 PIPE.
19.	3" BLIND FLANGE.
20.	1"NPS SCH. 40/80 (AS PER PROCESS REQUIREMENT) CS PIPE.
21.	1" SW EQUAL TEE.
22.	3/4" x 1/2"SW REDUCING INSERT.
23.	3/4" SW x 3/4" NPT (M) CS/AS NIPPLE
24.	3/4" NPT (F) CS/AS CAP.
25.	1/4" NPS ALLOY STEEL PIPE.
26.	1" x 3/4" SW REDUCING INSERT.
27.	3/4" SW x 1/2" PSW BRANCH TEE.
28.	3/4" PIPE UNION
29.	1/2" CLAMP UNION (THREADED) SUITABLE FOR FLEXIBLE CONNECTION OF NYLON REINFORCED PVC TUBE.
30.	SS TUBE
31.	3/4" SW 4 WAY VALVE.
32.	QUICK DISCONNECT FITTINGS.
33.	1/4" SW ISOLATION VALVE 316SS
34.	1/2" x 1/2" SS PIPE UNION.

एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

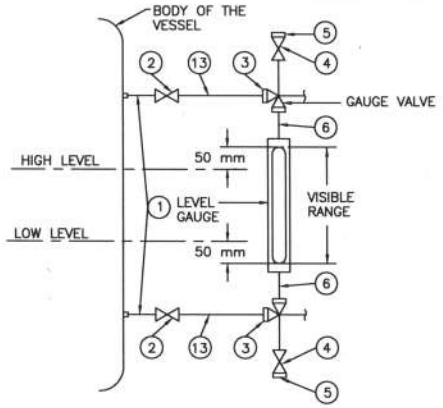
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12

CLEARED BY

PROJECT: TYPICAL THERMAL POWER PROJECT

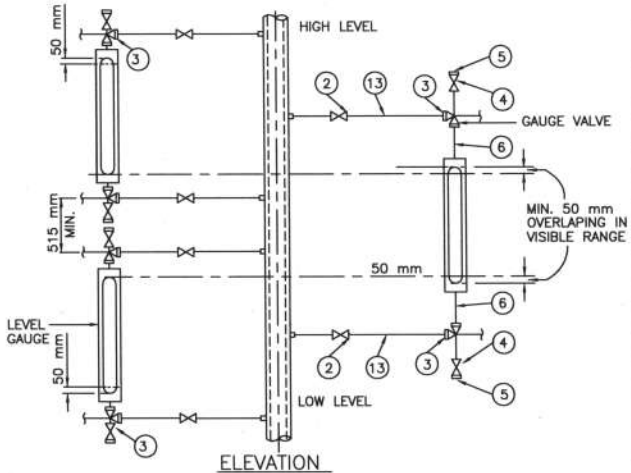
TITLE: INSTRUMENT INSTALLATION DIAGRAM
DIFF. PRESS.MEASUREMENT (LIQUID, OIL, AIR/GAS SERVICE)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-030	A



ELEVATION

LOCAL LEVEL INDICATION USING GAUGE GLASS

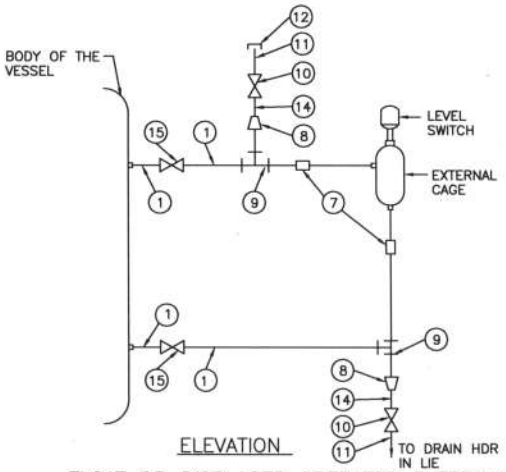


ELEVATION

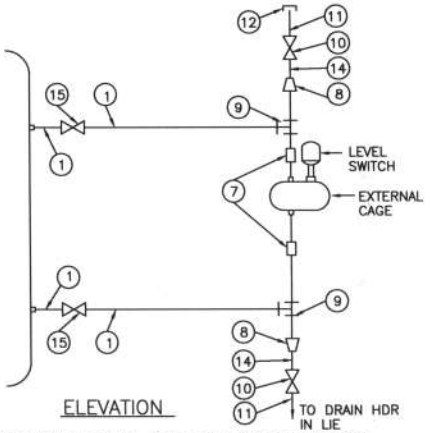
LOCAL LEVEL INDICATION USING MULTIPLE GAUGES
FOR INCREASED RANGE NOT COVERED IN A SINGLE UNIT

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	3/4"/1" NPS SCH.40/80/160/P91 (AS PER PROCESS REQUIREMENT) CARBON /ALLOY STEEL PIPE.
2.	3/4" SW GLOBE VALVE.
3.	3/4" SW UNION.
4.	3/4" NPT GLOBE VALVE.
5.	3/4" NPT (M) CAP.
6.	3/4" NPT (F) UNION CONNECTION.
7.	1" SW EQUAL UNION.
8.	1" x 1/2" SW REDUCING INSERT.
9.	1" SW EQUAL TEE.
10.	1/2" SW GLOBE VALVE.
11.	1/2" NPS SWx1/2" NPT(M) CS/AS NIPPLE.
12.	1/2" NPT (F) CAP
13.	3/4"x1/2" NPS SCH.40/80 CS/AS PIPE.
14.	1/2" NPS SCH.80/160 CS/AS NIPPLE.
15.	1" SW GLOBE VALVE.



ELEVATION



ELEVATION

FLOAT OR DISPLACER OPERATED EXTERNAL CAGE TYPE LEVEL SWITCH INSTALLATION

NOTES:-

1. FOR LEVEL GAUGE 3/4" AND FOR LEVEL SWITCH 1" PROCESS CONNECTION SHALL BE PROVIDED.
2. NOTES UNDER DRG. NO. 0000-999-POI-A-023 (WHICHEVER ARE RELEVENT).

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

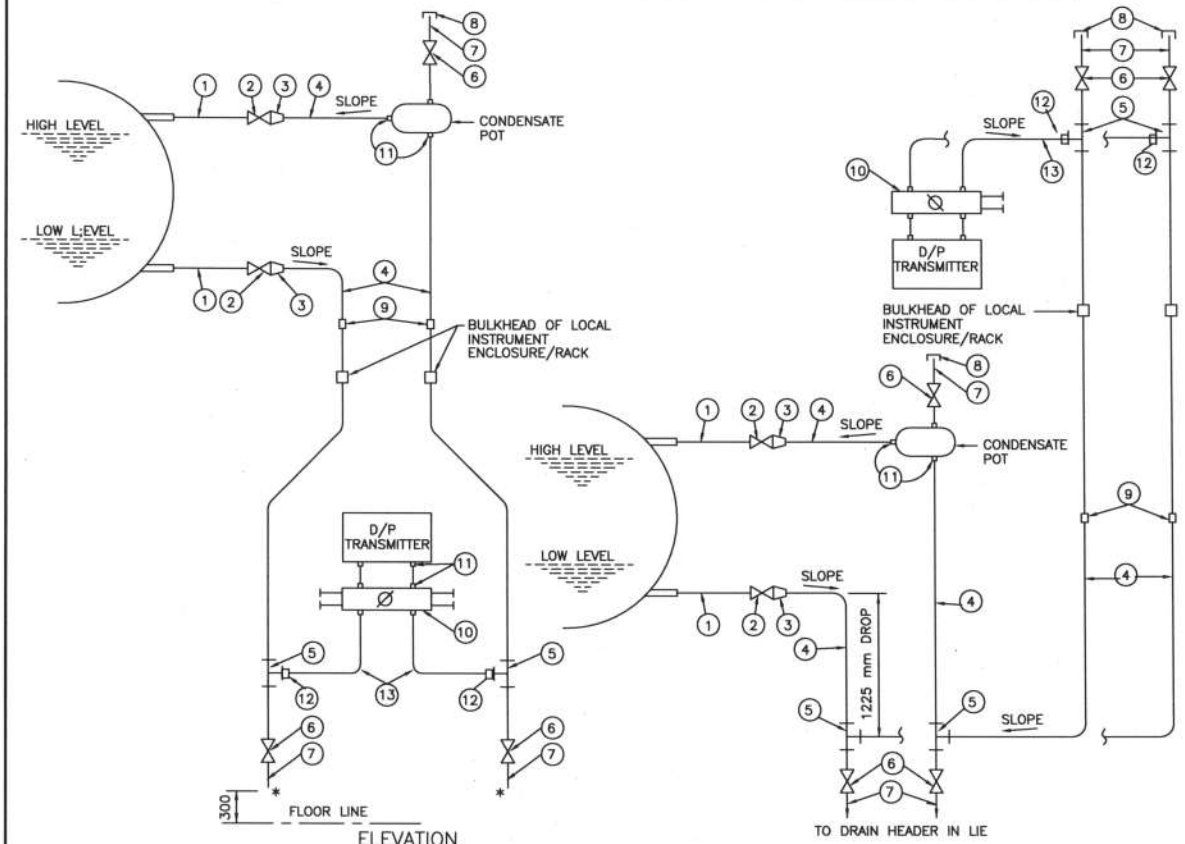
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENT INSTALLATION DIAGRAM (LEVEL GAUGE & SWITCHES)

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-031	A



ELEVATION
TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT

ELEVATION
TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	1" NPS SCH.40/80/160/XXS/P91 (AS PER PROCESS REQUIREMENT) CARBON /ALLOY STEEL PIPE.
2.	1" SW GLOBE VALVE.
3.	3/4"/1" TO 1/2" REDUCING INSERT.
4.	1/2" NPS SCH.80/160/XXS(AS PER PROCESS REQ.)CS/AS PIPE.
5.	1/2" SW EQUAL TEE.
6.	1/2" SW GLOBE VALVE.
7.	1/2" NPS SWx1/2" NPT(M) CS/AS NIPPLE.
8.	1/2 NPT (F) CAP.
9.	1/2" PIPE UNION.
10.	5-VALVE MANIFOLD (FOR DETAILS REF. DRG. NO.0000-999-POI-A-026.
11.	SUITABLE ADAPTER.
12.	1/2" PIPE x 1/2" TUBE UNION.
13.	S.S. TUBE.

NOTES:-

1. SAME NOTES AS UNDER DRG. NO.0000-999-POI-A-023. (WHICHEVER ARE RELEVENT).

* TO DRAIN HEADER IN LIE/LIR.

FOR TENDER PURPOSE ONLY

LEVEL MEASUREMENT OF CLEAR NON-VISCOUS OR NON-CORROSIVE LIQUID IN CLOSED VESSEL WITH CONDENSABLE ATMOSPHERE USING D/P TRANSMITTER

एन टी पी सी NTPC

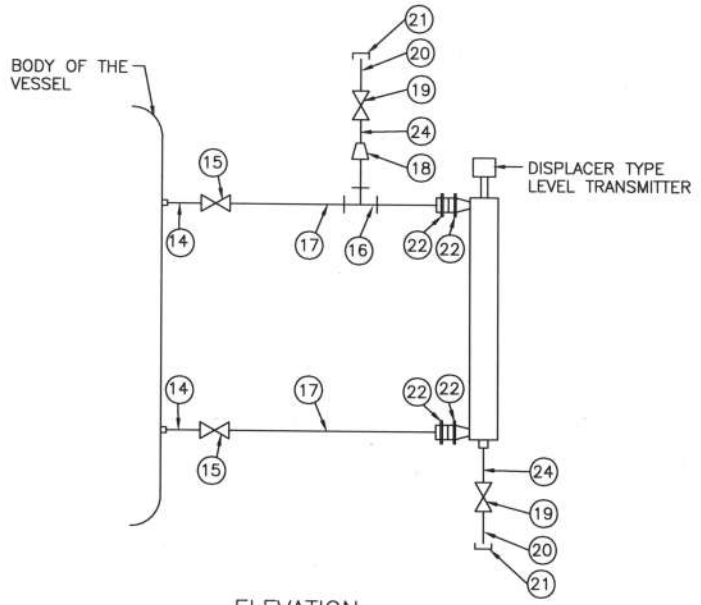
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENT INSTALLATION DIAGRAM
(LEVEL MEASUREMENT USING D/P TRANSMITTERS)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-032 SH 1 OF 2	A



ELEVATION

DISPLACER TYPE LEVEL TRANSMITTER WITH SIDE CONNECTION

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	2" NPS SCH. 40/80 (AS PER PROCESS REQUIREMENT) VESSEL NOZZLE.
15.	2" SW GLOBE VALVE.
16.	2" SW EQUAL TEE.
17.	2" NPS SCH. 40/80 CS/AS PIPE
18.	2" x 3/4" SW REDUCING INSERT.
19.	3/4" SW GLOBE VALVE
20.	3/4" NPS SW x 3/4" NPT (M) CS/AS NIPPLE.
21.	3/4" NPT (F) CAP.
22.	2" ANSI 300 lbs RAISED PHASE WELD NECK FLANGE.
23.	2" ANSI FLANGE OF LEVEL TRANSMITTER.
24.	3/4" NPS SCH. 40/80 PIPE.

NOTES:-

1. SAME NOTES AS UNDER DRG. NO.0000-999-POI-A-023 (WHICHEVER ARE RELEVENT).

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.		29/8/12	21.08.12
					CLEARED BY						

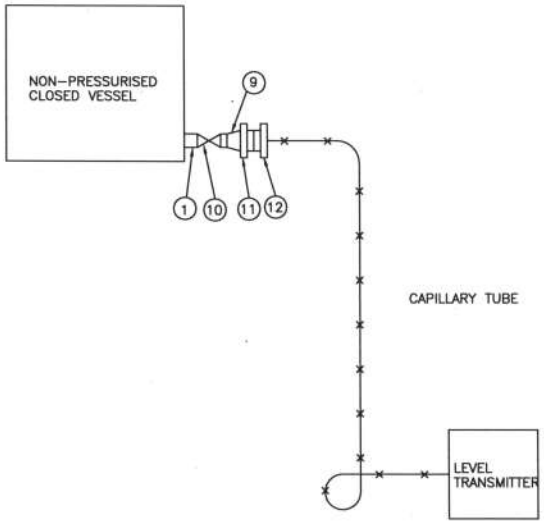
एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

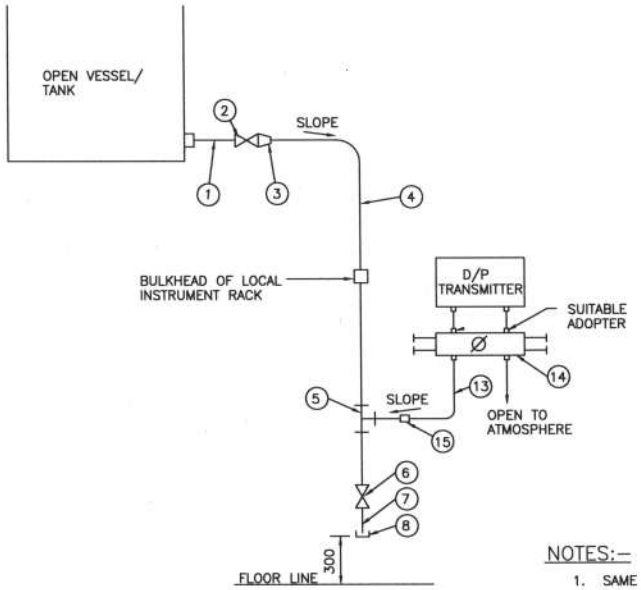
TITLE: INSTRUMENT INSTALLATION DIAGRAM (LEVEL MEASUREMENT USING DISPLACER TYPE TRANSMITTERS)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-032 SH 2 OF 2	A



ELEVATION

LEVEL MEASUREMENT OF VISCOUS OR CORROSIVE LIQUID IN CLOSED VESSEL USING FLUSH DIAPHRAGM/WAFER TYPE LEVEL TRANSMITTER WITH REMOTE SEAL



ELEVATION

LEVEL MEASUREMENT OF CLEAN LIQUID IN AN OPEN VESSEL USING D/P TRANSMITTER

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	3/4"/ 1" NPS 40/80 PIPE.
2.	3/4" SW GLOBE VALVE.
3.	3/4"/ 1/2" SW REDUCING INSERT.
4.	1/2" NPS SCH. 40/80 PIPE.
5.	1/2" SW EQUAL TEE.
6.	1/2" SW GLOBE VALVE.
7.	1/2" NPS SWx1/2" NPT(M) NIPPLE.
8.	1/2" NPT (F) CAP.
9.	3/4" TO 4" EXPANDER.
10.	3/4" BUTT WELDED GATE VALVE.
11.	4" ANSI 300 lbs R.F. WELD NECK FLANGE.
12.	4"ANSI MATCHING FLANGE WITH FLUSH DIAPHRAGM OF LEVEL TRANSMITTER
13.	SS TUBE.
14.	3–VALVE MANIFOLD (FOR DETAIL REF. DRG. NO. 0000–999–POI–A–023.
15.	1/2" PIPE x 1/2" TUBE UNION.

NOTES:–

1. SAME NOTES UNDER DRG. NO. 0000–999–POI–A–023.
2. FOR VACUUM APPLICATION OTHER PORT OF TRANSMITTER SHALL BE KEPT OPEN TO ATMOSPHERE.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

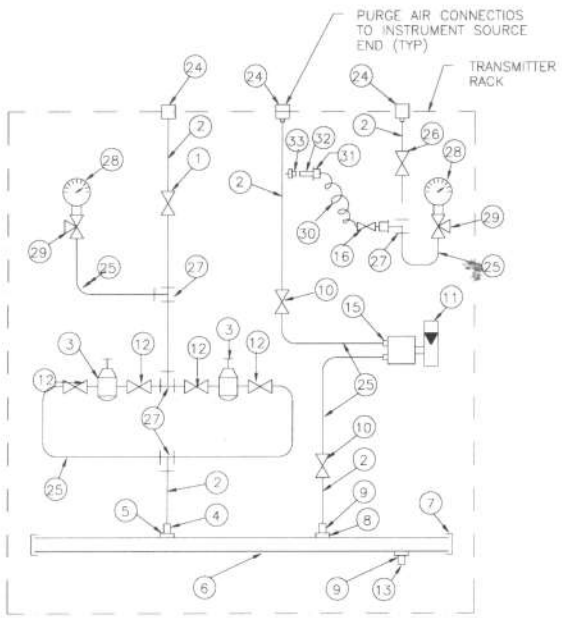
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

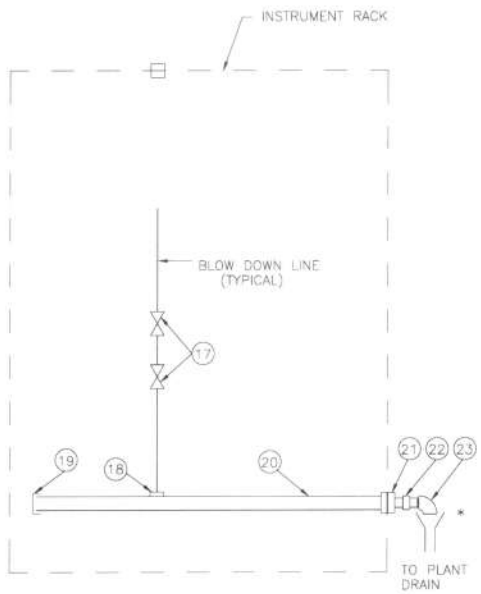
TITLE: INSTRUMENT INSTALLATION DIAGRAM (LEVEL MEASUREMENT-OPEN VESSEL)

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-033	A



TYPICAL PURGE AIR CONNECTION INSIDE THE INST. ENCLOSURE

(APPLICABLE FOR AIR & FLUE GAS SERVICE INSTRUMENTS REQUIRING PURGE AIR)



TYPICAL BLOW DOWN HEADER CONNECTION INSIDE THE INSTRUMENT RACK/ENCLOSURE

**

NOTE:-

*1. DRAIN SHALL BE CONNECTED BY THE BIDDER TO THE NEAREST PLANT DRAIN THROUGH OPEN FUNNEL USING 2" CS PIPE FROM FUNNEL TO PLANT DRAIN.

**2. FOR AIR/FLUE GAS LIEs FOR DRAINING THE IMPULSE LINE BETWEEN ITEM 17 DRAIN POT TO BE PROVIDED ALONGWITH DRAIN HEADER, 3/4" SW HALF COUPLET, ITEM 19,20,22,23 & FUNNEL ALONGWITH 1/2" PIPING TO PLANT DRAIN HEADER SHALL BE PROVIDED FOR STM/WATER. ALL ITEMS EXCEPT DRAIN POT TO BE PROVIDED.

3. GI PIPES SHALL BE PROVIDED FOR PURGE AIR CONNECTION OUTSIDE LIE/LIR.

LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	ISOLATION VALVE(gate/globe). SS.
2.	1/2" O.D. SEAMLESS SS PIPE.
3.	1/2" NPT (F) AIR FILTER REGULATOR.
4.	1/2" NPT x 1/2" O.D. (M) CONNECTOR SS.
5.	1/2" NPT (F) COUPLET SS.
6.	1" NB INST. AIR HEADER SS.
7.	1" PSB END CAP SS.
8.	1/2" NPT (F) COUPLET SS.
9.	1/2" NPT x 1/2" O.D. (M) CONNECTOR SS.
10.	1/2" COMP. NEEDLE VALVE SS.
11.	1/2" NPT (F) AIR PURGE SET.
12.	1/2" NPT (M) x 1/2" COMP VALVE SS.
13.	1/2" NPT PLUG SS.
14.	
15.	1/2" TUBE SS CONNECTOR.
16.	1/2" TUBE COMP. EQUAL TEE UNION.
17.	DRAIN VALVE 1/2" SW FOR WTR/STM/COND & 3/4" FOR AIR/FLUE GAS.
18.	1/2" SW HALF COUPLET
19.	2" SW CAP SS.
20.	2" NB ASTMA 105 GR. B SCH.80 BLOWDOWN HEADER
21.	2" PSW x 1" NPT (F) COUPLING.
22.	1" NPT x 1" BSP HEX NIPPLE.
23.	1" BSP ELBOW.
24.	BULKHEAD-SS 1/2" SWx1/2"NB THREADED, SUITABLE FOR GI PIPE CONNECTION
25.	1/2" O.D. SEAMLESS TUBE SS.
26.	1/2" SW PRESS. GAUGE ISOLATION VALVE SS.
27.	1/2" TUBE x 1/2" NPT (F) BRANCH TEE SS.
28.	4" DIAL x 1/2" NPT PR. GAUGE.
29.	1/2" SW x 1/2" NPT (F) PR. GAUGE VALVE SS.
30.	1/2" I.D. NYLON FLEX. HOSE BRAIDED WITH SS WIRE.
31.	1/2" NPT (M) x 1/2" HOSE BARBED CONN. SS.
32.	1/2" NPT (F) QUICK DISCONNECT SS.
33.	1/2" NPT (M) QUICKDISCONNECT SS.

FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

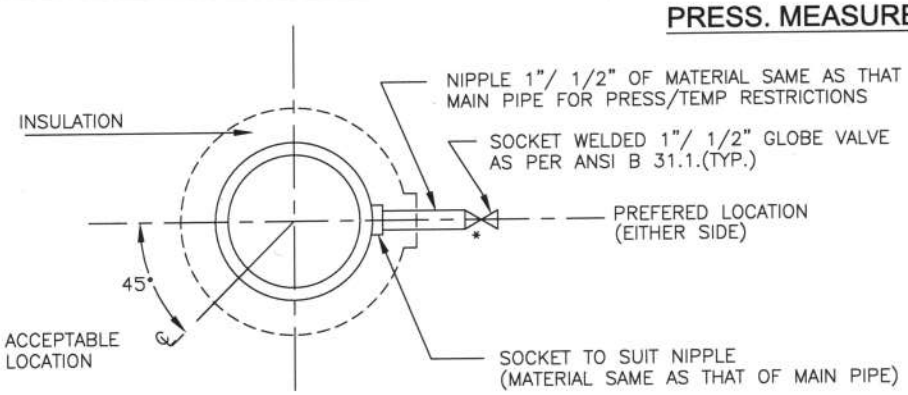
REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.		P.S.C	02.05.14
					CLEARED BY						

PROJECT: TYPICAL THERMAL POWER PROJECT

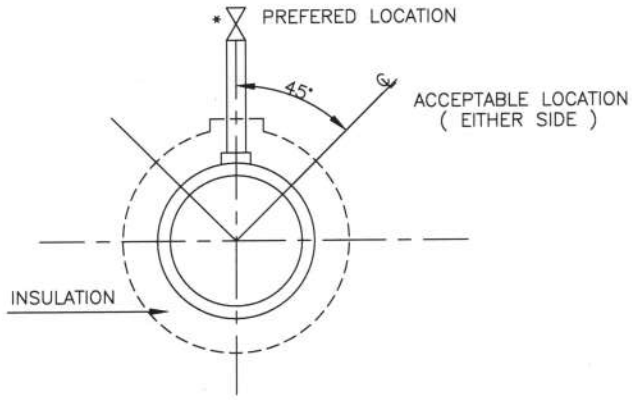
TITLE: INSTRUMENT INSTALLATION DIAGRAM
TYPICAL PURGE AIR CONNECTION & BLOWDOWN HEADER CONNECTION INSIDE INSTRUMENT RACK

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-034	B

PRESS. MEASUREMENT

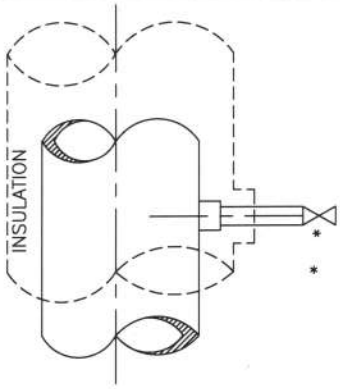


ELEVATION
LIQUID SERVICE



ELEVATION
STEAM SERVICE

PRESSURE CONNECTION ON HORIZONTAL PIPE



* USE DOUBLE ISOLATION VALVES FOR PRESSURE EQUAL TO OR EXCEEDING 40 Kg/Cm2.

ELEVATION
LIQUID OR STEAM SERVICE

PRESSURE CONNECTIONS ON VERTICAL PIPES

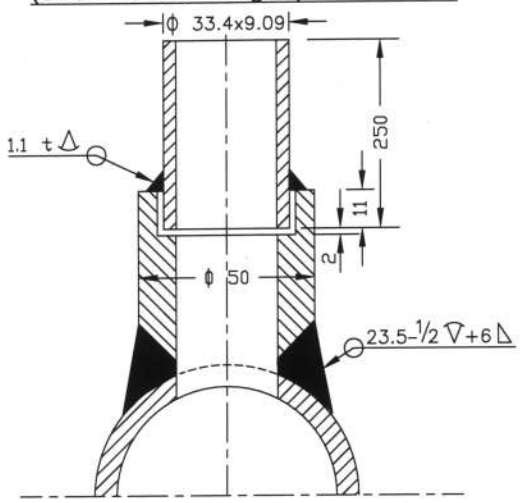
FOR TENDER PURPOSE ONLY

								T.G.		21.08.13			
A	FIRST ISSUE												
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD.	DATE		
					CLEARED BY								

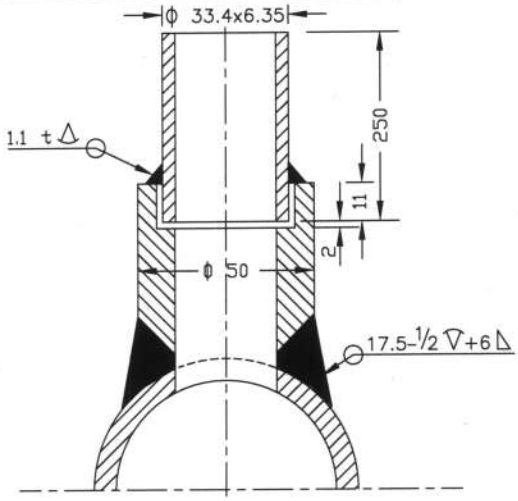
	NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION			
PROJECT	TYPICALTHERMAL POWER PROJECT			
TITLE	INSTRUMENT SOURCE CONNECTION DETAILS			
SIZE A4	SCALE N.T.S.	DRG. NO. 0000-999-POI-A-035 Sh-1 Of 14		REV. NO. A

PRESSURE MEASUREMENT

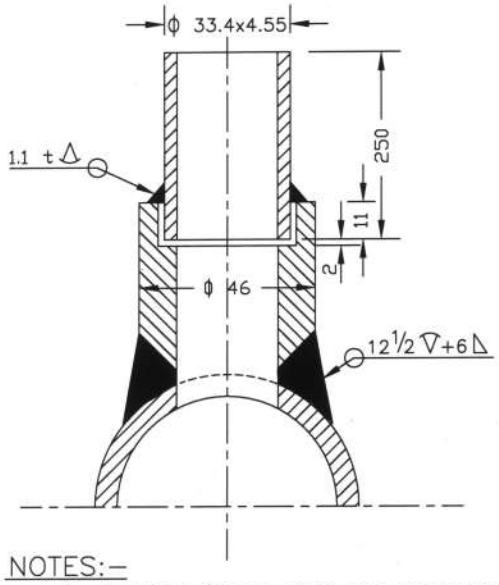
(SYSTEM PR.>40Kg/Sq Cm CL 9000)



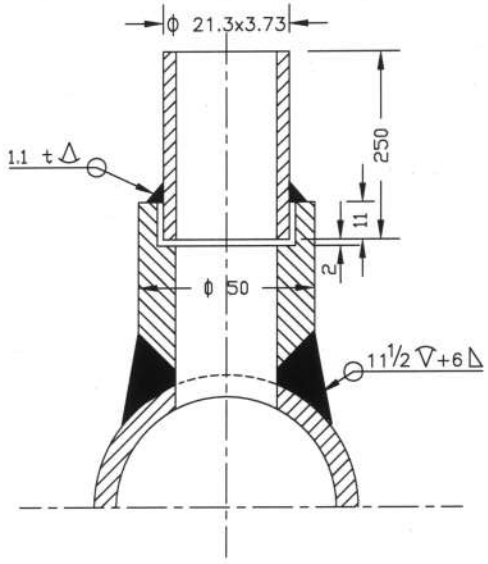
(SYSTEM PR.>40Kg/Sq Cm CL 6000)



(SYSTEM PR. <40Kg/Sq cm Nb 25 CL 3000)



(SYSTEM PR. <40Kg/Sq cm Nb 15 CL 3000)



NOTES:–

1. MATERIAL OF THE BOSS AND NIPPLE SHALL BE THE SAME AS THE PIPE INTO WHICH IT IS WELDED AND CONFIRM TO ANSI B 16.11.
2. THE LENGTH OF THE NIPPLE SHOULD BE 250mm.
3. THE OTHER END OF THE NIPPLE SHALL BE SOCKET WELDED WITH 1" GLOBE VALVE OF MATERIAL AS PER ANSI B 16.1.
4. TWO ISOLATED VALVES ARE TO BE USED FOR PRESSURE = >40 Kg/Cm2.
5. EDGE HOLE MUST BE CLEAN AND SQUARE OR ROUNDED SLIGHTLY (1/64" RADIUS) FREE FROM BURRS, WIRE EDGES OR OTHER IRREGULARITIES.
6. ORIENTATION OF TAP WILL BE VARY WITH TYPE OF PROCESS FLUID AND NATURE OF RUN OF THE PIPE.
7. ACTIVITIES TO BE COMPLETED AT THE SHOP, WELD THE COUPLING (OR BOSS) ON THE PIPE AND DRILL PRESSURE CONNECTION HOLE (SAME AS I D OF NIPPLE) IN THE PIPE IN ALLIGNMENT WITH HOLE IN THE COUPLING.
8. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE							T.G.			21.06.18

CLEARED BY

एन टी पी सी NTPC

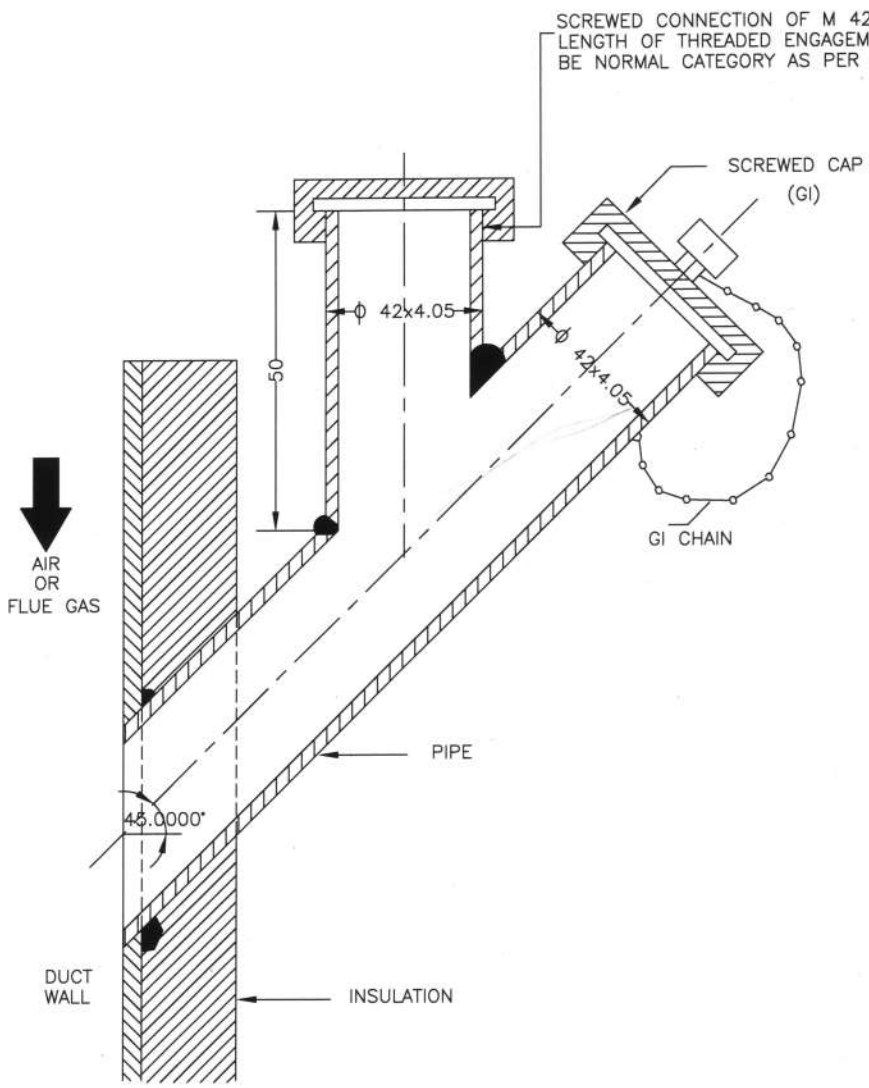
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh-2 Of 14	A

PRESS. MEASUREMENT



NOTES:–

1. THIS TYPE OF PRESSURE CONNECTON SHALL BE PROVIDED FOR PRESSURE MEASUREMENTS IN AIR AND FLUE GAS DUCT/FURNACE.
2. DIMENSIONS ARE INDICATIVE ONLY.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	T.G.	ARCH.	APPD.	DATE
A	FIRST ISSUE											21.06.13
					CLEARED BY							

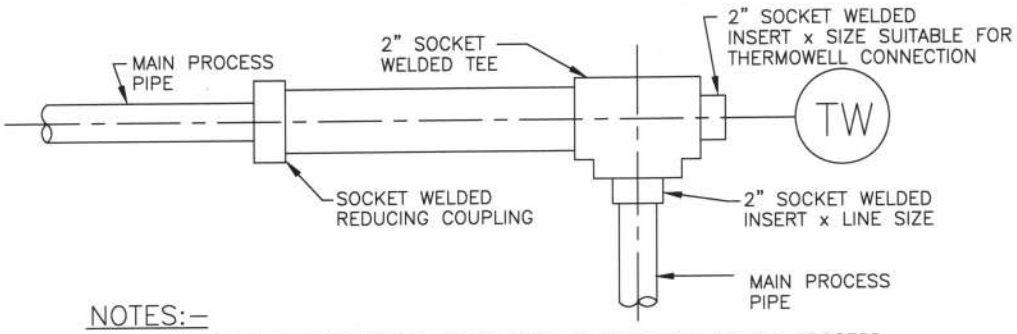
एन टी पी सी NTPC — **N T P C LIMITED** (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

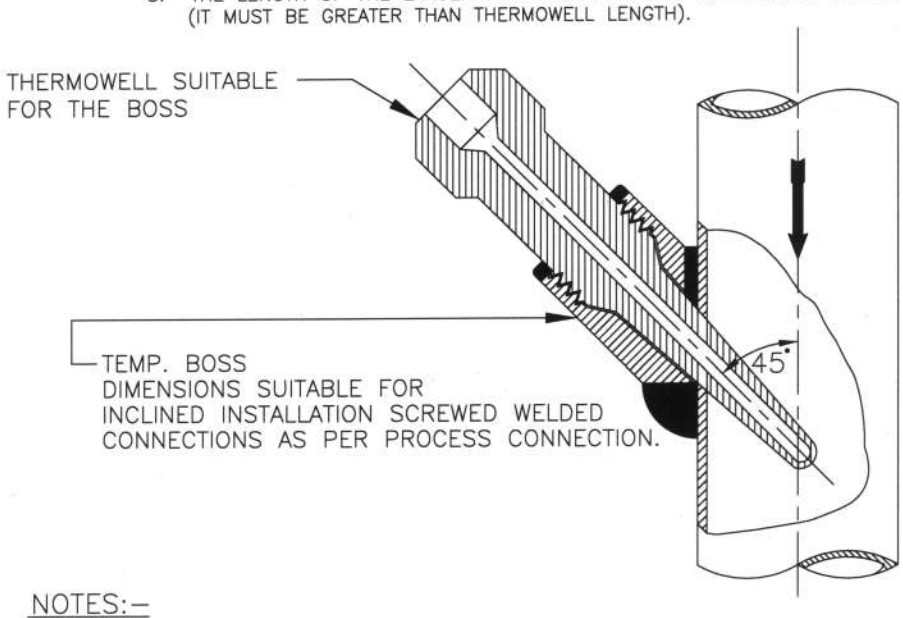
SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh-3 Of 14	A

TEMP. MEASUREMENT



NOTES:–

1. THIS TYPE OF THERMOWELL INSTALLATION IS SUITABLE FOR THE PROCESS PIPE OF 2" NPS AND SMALLER.
2. FOR STEAM SERVICE THIS TYPE OF THERMOWELL INSTALLATION 90° BEND MAY BE USED ONLY IN VERTICAL PLANE.
3. THE LENGTH OF THE LARGER PIPE SECTION SHALL BE MINIMUM 150mm (IT MUST BE GREATER THAN THERMOWELL LENGTH).



NOTES:–

1. INCLINED INSTALLATION OF THERMOWELL SHALL BE APPLICABLE FOR 4" AND SMALLER LINE SIZE BUT LIMITED TO MIN. 3" LINE SIZE.
2. FOR 2" AND SMALLER LINE SIZE NECESSARY EXPANDER OF MIN. 3" SIZE OF MAIN PIPING SPECIFICATION SHALL BE USED.
3. THIS TYPE OF INSTALLATION IS APPLICABLE FOR HORIZONTAL AND VERTICAL PIPE SECTION.
4. FOR STEAM SERVICES EXPANDER SECTION MAY BE USED ONLY IN VERTICAL RUN.
5. THE EXPANDER SECTION SHALL BE OF ADEQUATE LENGTH (ATLEAST 3–4 TIMES DIA OF THE MAIN PROCESS PIPE AT BOTH SIDE OF THE INSTALLED THERMOWELL).

FOR TENDER PURPOSE ONLY

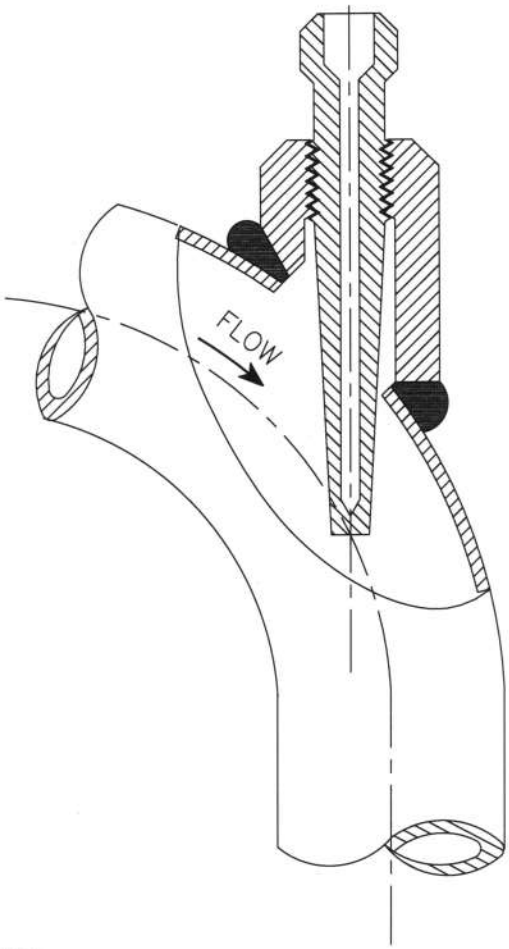
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE							T.G.			31.08.15
		CLEARED BY									

NTPC — NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT	TYPICALTHERMAL POWER PROJECT (SG PACKAGE)
TITLE	INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999/102-POI-A-035 Sh–4 Of 14	A

TEMP. MEASUREMENT



NOTES:–

1. FLOW INSTALLATION OF THERMOWELL SHALL BE APPLICABLE FOR 4" AND SMALLER LINE SIZE BUT LIMITED TO MINIMUM 3" LINE SIZE.
2. FOR 2" AND SMALLER LINE SIZE NECESSARY EXPANDER OF ELBOW FORM (AS SHOWN) OF MINIMUM 3" SIZE SHALL BE USED.
3. ELBOW EXPANDER SECTION IN HORIZONTAL PLANE MAY BE USED FOR LIQUID SERVICES. ONLY STEAM SERVICES EXPANDER SECTION MAY BE USED IN VERTICAL PLAN.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	T.G. C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE										21.06.12
					CLEARED BY						

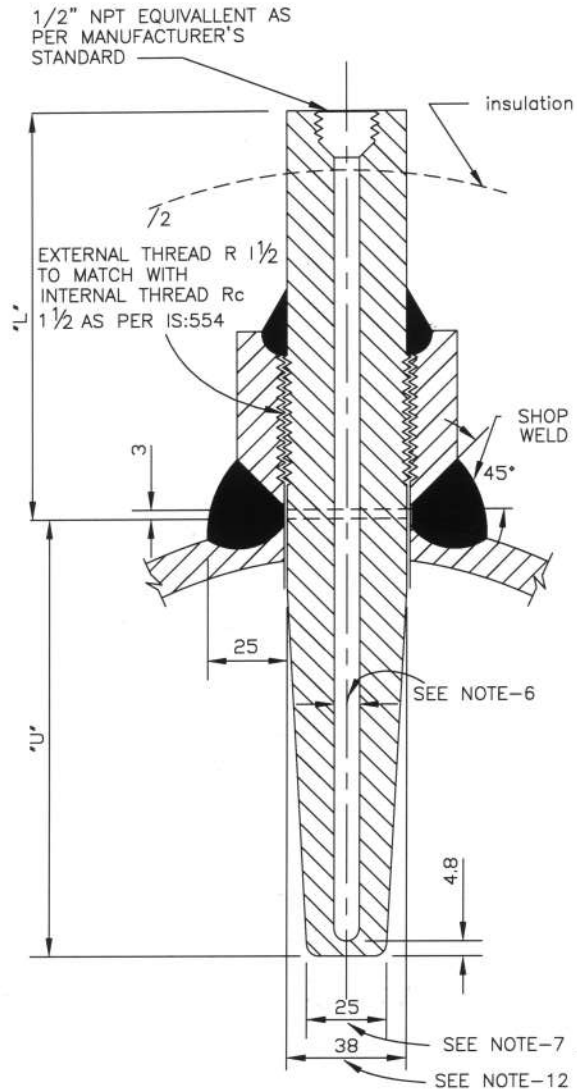
एन टी पी सी NTPC — **N T P C LIMITED** (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh–5 Of 14	A

TEMP. MEASUREMENT



NOTES:-

1. THIS TYPE OF TEMPERATURE BOSS SHALL BE USED FOR THE PROCESS PRESS EQUAL/ABOVE 40 Kg/Cm2(g).
2. THE MATERIAL OF THE BOSS SHOULD BE SIMILAR TO THAT OF PIPING MATERIAL OF SPECIFICATION.
3. ALL WELD TO BE TESTED IN ACCORDANCE WITH APPLICABLE CODES BY MANUFACTURER.
4. MATERIAL OF THE THERMOWELL SHALL BE OF 316SS.
5. THERMOWELL SHALL BE DRILLED BARSTOCK TYPE.
6. INTERNAL BORE OF THE THERMOWELL SHOULD BE SELECTED BASED ON THE NORMAL SIZE OF THE SENSING ELEMENT AS PER ASME,PTC-19.3.
7. THE BOTTOM DIAMETER OF THE THERMOWELL TYPICALLY SHOWN HERE SHALL BE SUBJECT TO VARIATION BASED ON THE INTERNAL BORE OF THERMOWELL AND THICKNESS OF THERMOWELL MATERIAL TO WITHSTAND THE PROCESS PRESS.AND TEMP.,AS PER ASME,PTC-19.3.
8. THE TYPE OF TAPERED THERMOWELL SHALL BE USED FOR LIQUID VELO-CITIES UP TO 92M.P.S.(300F.T.P.S.).
9. THERMOWELL WITH THE INSULATION LAG EXTENSIONS SHALL BE USED WHEREVER APPLICABLE.
10. ACTIVITIES TO BE COMPLETED AT THE SHOP. WELD THE BOSS ON THE PIPE AND DRILL THE HOLE IN THE PIPE IN ALLIGNMENT WITH HOLE IN THE BOSS. PROVIDE INTERNAL THREAD AS PER IS:554 TO MATCH WITH THE THERMO-WELL EXTERNAL THREAD.
11. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
12. WIILL BE SUITABLE TO MATCH THE STUB DIMENSIONS AS PER RC 1½
13. THE "U" & "L" DIMENSIONS SHALL BE BE SELECTED BASED ON PARTICULAR APPLICATION AND THE SAME SHALL BE SUBJECT TO OWNER'S APPROVAL DURING DETAILED ENGINEERING.
14. ALL DIMENSIONS ARE INDICATIVE ONLY.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	T.G. C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE										21.06.12
					CLEARED BY						

एन टी पी सी NTPC

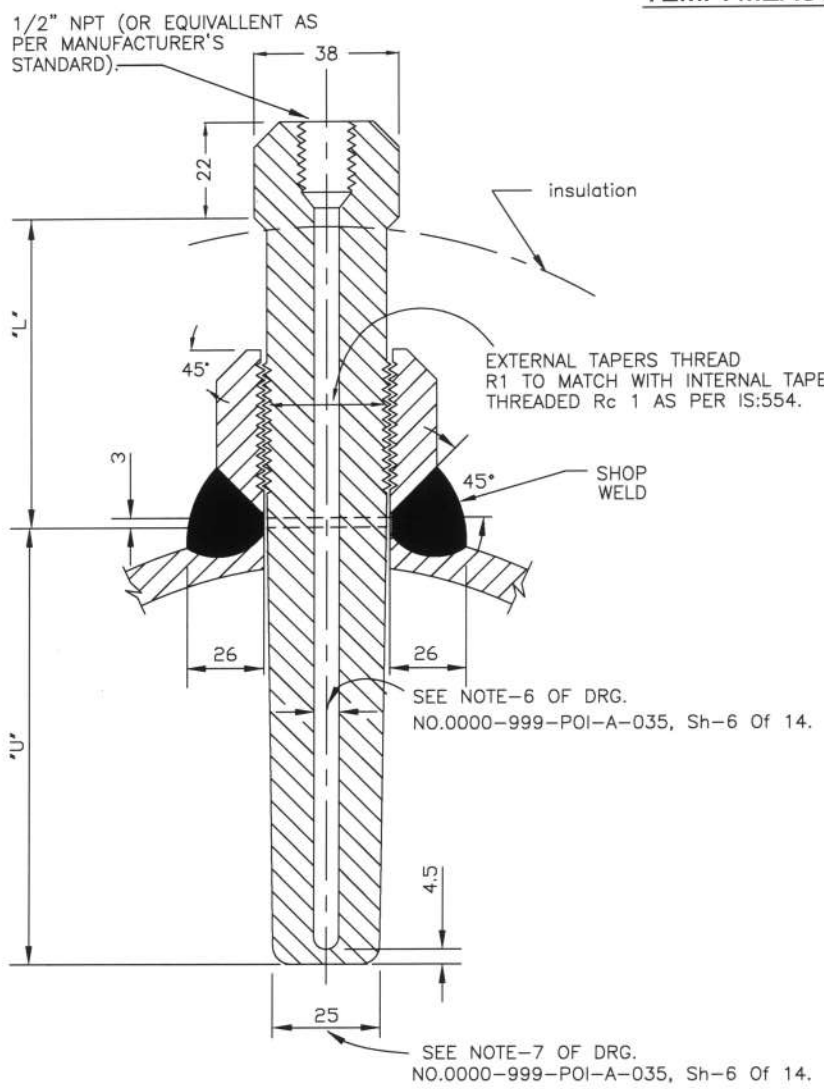
N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh-6 Of 14	A

TEMP. MEASUREMENT



NOTES:-

1. THIS TYPE OF TEMPERATURE BOSS IS APPLICABLE FOR THE PROCESS PRESSURE/TEMPERATURE BELOW 40 Kg/Cm2(g)/400°C
2. FOR PRESSURE TIGHT JOINTS THE BOSS SHOULD HAVE INTERNAL TAPERED PIPE THREAD Rc 1 AS PER IS:554. THE LENGTH OF THREAD ENGAGEMENT SHOULD BE AS PER ABOVE STANDARD.
3. PIPES HAVING PROBABILITY OF PROLONGED VIBRATION SEAL WELDING MAY BE DONE ALL AROUND AFTER TIGHTENING THERMOWELL WITHIN THE BOSS.
4. SEE NOTES-2 TO 14 OF DRG. NO. 0000-999-POI-A-035, Sh-6 Of 14.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	T.G. C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE										

CLEARED BY

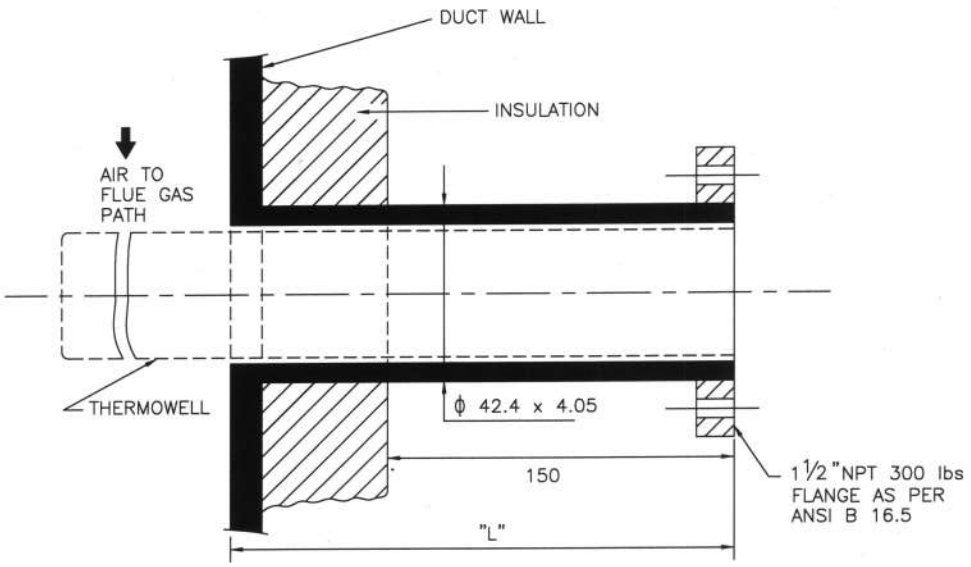
NTPC — N T P C LIMITED (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh-7 Of 14	A

TEMP. MEASUREMENT



NOTES:–

1. THIS TYPE OF TEMPERATURE CONNECTIONS SHALL BE PROVIDED FOR TEMPERATURE MEASUREMENT IN AIR AND FLUE GAS DUCT.
2. MATERIAL OF THERMOWELL SHALL BE OF 316SS.
3. EXTERNAL CONNECTION SHALL BE OF SLIP ON FLANGED TYPE AND THERMOWELL DESIGN SHALL BE AS PER ASME.PTC–19.3 (REFER NOTES 9&10 OF DRG.NO. 0000–999–POI–A–035, Sh–6 Of 14).
4. BIDDER TO SUPPLY AND INSTALL THE COUNTER FLANGED AND THERMOWELL (ALONG WITH TEMP. ELEMENT).
5. ALL DIMENSIONS ARE INDICATIVE ONLY.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE						T.G.				21.06.12
					CLEARED BY						

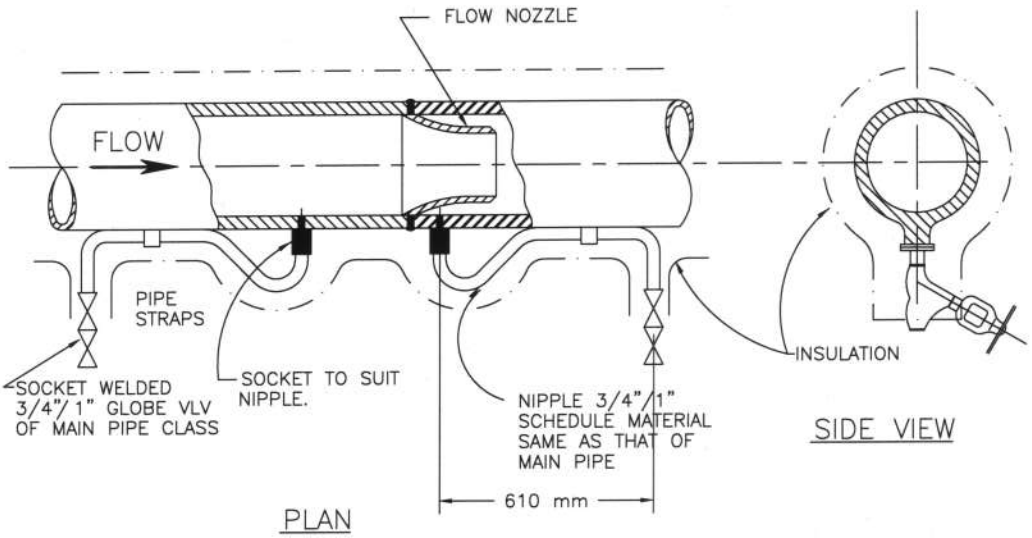
एन टी पी सी NTPC **N T P C LIMITED**
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh–8 Of 14	A

FLOW MEASUREMENT



NOTES:–

1. THIS METHOD OF CONNECTING NIPPLES AND VALVES ON THE HORIZONTAL PIPE IS APPLICABLE FOR MEASUREMENT OF STEAM AT TEMP. ABOVE 455°C .
2. FOR STEAM SERVICE IN HORIZONTAL PIPE THE PRESSURE HOLES AND CONNECTING NIPPLES SHOULD BE IN THE HORIZONTAL PLANE OF THE PIPE CENTRE LINE.
3. THE ENTIRE LENGTH OF THESE NIPPLES AS WELL AS SHUT OFF VALVES SHOULD BE LAGGED IN WITH STEAM LINE AS SHOWN IN THE DRAWING.
4. FLOW ELEMENTS SHALL BE PROVIDED WITH 3 PAIRS OF TAPPING POINTS.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	T.G. C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE										21.06.13
					CLEARED BY						

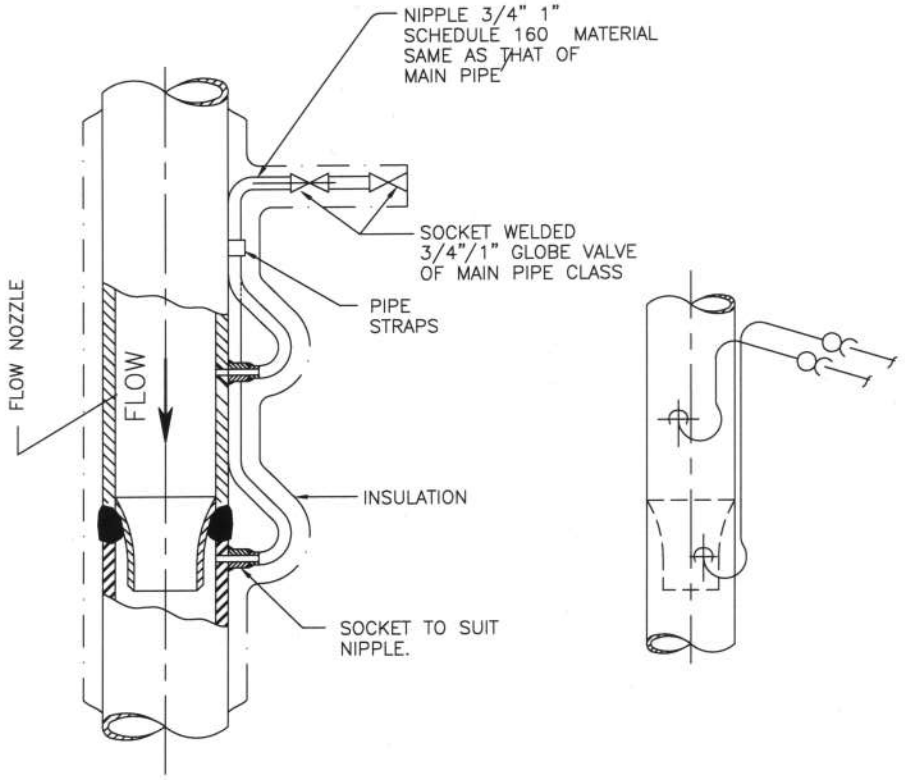
NTPC — NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh–9 Of 14	A

FLOW MEASUREMENT



ELEVATION

NOTES:–

1. THIS METHOD OF CONNECTING NIPPLES AND VALVES ON THE VERTICAL STEAM PIPE IS APPLICABLE FOR MEASUREMENT OF STEAM AT TEMP. ABOVE 455°C
2. THE ENTIRE LENGTH OF THESE NIPPLES AS WELL AS SHUT OFF VALVES SHOULD BE LAGGED IN WITH STEAM LINE AS SHOWN IN THE DRAWING.
3. ON VERTICAL STEAM PIPE BOTH HIGH TEMPERATURE (SPECIAL VENTS) NIPPLES WILL BE LONG ENOUGH SO THAT HIGH AND LOW PRESSURE CONNECTION NIPPLES WILL BE AT SAME LEVEL.
4. UP STREAM AND DOWN STREAM PRESSURE CONNECTIONS MUST BE INSTALLED IN DIFFERENT PLANES PASSING THROUGH THE CENTRE OF THE PIPE.
5. FLOW ELEMENTS SHALL BE PROVIDED WITH 3 PAIRS OF TAPPING POINTS.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE							T.G.			31.08.12
		CLEARED BY									

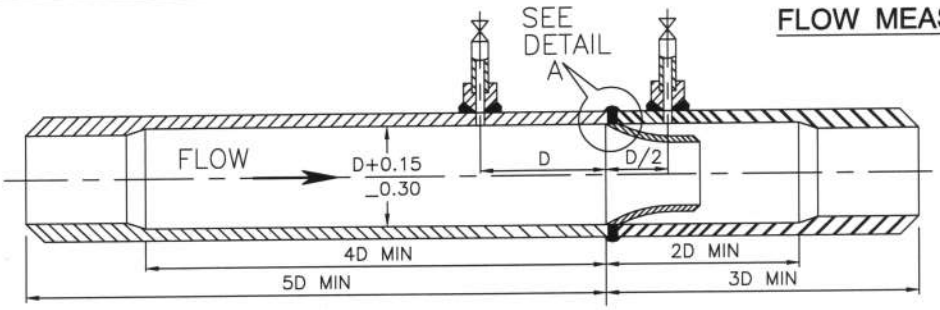
NTPC — NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

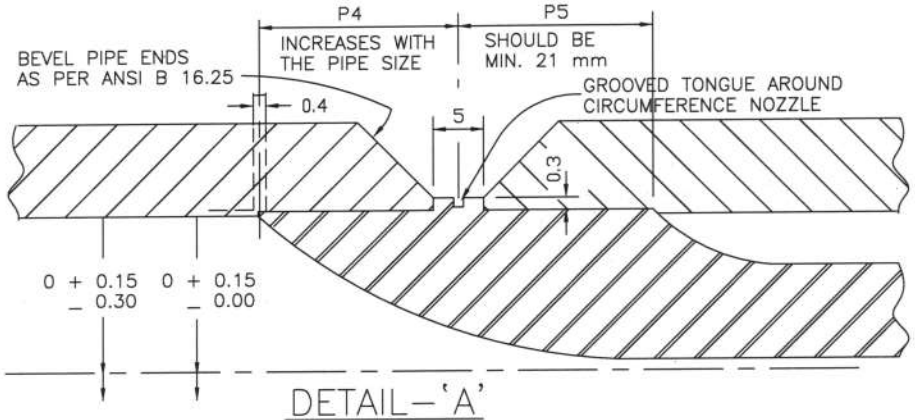
PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh–10 Of 14	A

FLOW MEASUREMENT





DETAIL – 'A'

NOTES:–

1. COMPLETE FLOW NOZZLE BRANCH ASSEMBLY ALONG WITH NIPPLES AND SOURCE ISOLATION VALVES SHALL BE SUPPLIED BY THE BIDDER. THE BIDDER ALSO TO INSTALL FLOW NOZZLE WITHIN THE MACHINED BRANCH, PRESSURE STUBS ON THE BRANCH PIPE (FOR ORIENTATION OF PRESSURE TAP REF. NOTE–3) ALONG WITH NIPPLE AND SOURCE ISOLATION VALVES.
2. THE MACHINING OF BRANCH PIPE SHOULD BE DONE AFTER PRESSURE CONNECTIONS HAVE BEEN WELDED TO PIPE AND ALSO EXTEND FOR ATLEAST 4D IN THE INLET SECTION, 2D IN THE OUTLET SECTION, MEASURED FROM THE INLET FACE OF FLOW NOZZLE. TOTAL BRANCH PIPE ASSEMBLY SHOULD BE ATLEAST A LENGTH OF 8D/5D IN THE INLET SECTION AND 3D IN THE OUTLET SECTION, MEASURED FROM THE INLET FACE OF THE FLOW NOZZLE AS SHOWN ABOVE.
3. ON HORIZONTAL PIPE RUN PRESSURE CONNECTIONS ARE TO BE LOCATED ON SIDES OF THE PIPE FOR LIQUID AND STEAM SERVICE AND ON THE TOP FOR DRY GAS SERVICE FOR PROCESS LIQUIDS, INSTALLATION OF PRESS. TAPS MAY BE ALLOWED WITHIN AN ANGLE OF 45° ELBOW HORIZONTAL FOR SPECIAL CASES BUT NO BOTTOM CONNECTIONS ARE ALLOWED.
4. THE LOCATION OF PRESSURE TAPS MUST BE WITHIN 1.5 mm(1/16") OF DISTANCE SPECIFIED AND NUMBER OF PAIRS OF PRESSURE TAPS TO BE PROVIDED WILL BE AS PER FLOW MEASUREMENT DATA SHEET.
5. PRESSURE TAPS SHOULD BE DRILLED RADIALLY WITH RESPECT TO PIPE AND THIS DRILLING SHOULD BE DONE AFTER ANY COUPLING FOR ATTACHING THE PRESSURE TUBING HAS BEEN WELDED TO THE PIPE. THE HOLE WHERE IT BREAKS THROUGH THE INNER SURFACE OF THE PIPE MUST BE FREE OF BURRS OR WIRE EDGE AND CORNER OF EDGE HOLE LEFT ROUNDED VERY SLIGHTLY (1/64" RADIOUS).
6. RECOMMENDED MAXIMUM DIAMETERS OF PRESSURE TAP HOLES IN THE BRANCH PIPES WILL BE AS PER EN ISO 5167:2003. THE DIAMETER FOR HOLE SHOULD REMAIN SAME FOR DISTANCE NOT LESS THAN 2.5 TIME OF DIA FROM THE INNER SURFACE OF THE PIPE.
7. FLOW NOZZLE SHALL BE CENTRED IN THE PIPE WITHIN 0.8 mm (1/32") OF THE PIPE AXIS. INSIDE DIAMETER MEASURED AT FOUR POINTS AT ANY CROSS SECTION SHALL NOT DIFFER BY MORE THAN 1%.
8. BRANCH PIPE SHALL BE AS PER MAIN PIPING MATERIAL SPECIFICATION. INTERNAL SURFACE OF BORED SECTIONS MUST BE SMOOTH AND STRAIGHT, FREE FROM SCALES, PITS, BURRS OR ANY IRREGULARTIES.
9. FLOW NOZZLE MATERIAL SHALL BE 316 SS AND THE DESIGN AS PER ASME.
10. MAXIMUM UPSTREAM AND DOWN STREAM STRAIGHT LENGTH REQUIRED FROM INLET FACE OF FLOW NOZZLE SHALL BE AS PER EN ISO 5167:2003.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	T.G. C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE										21.06.12

CLEARED BY

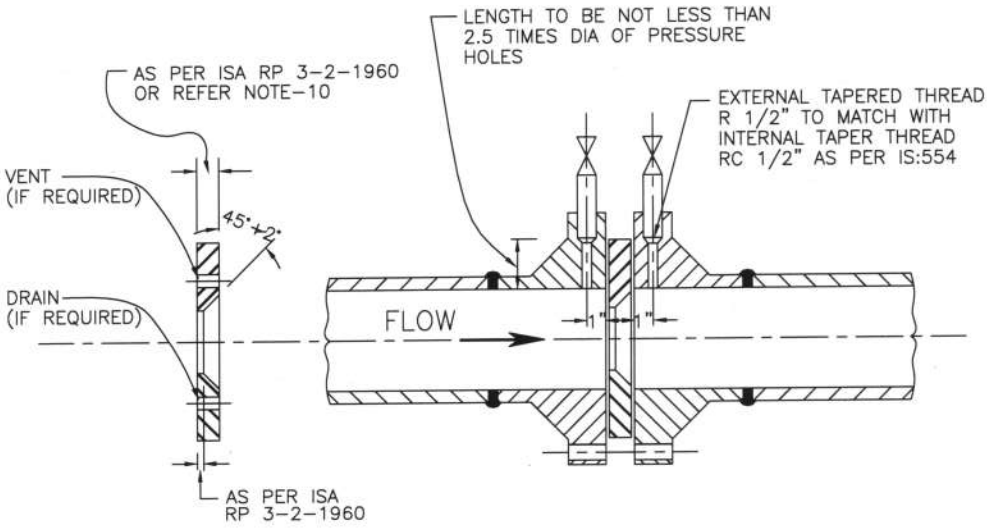
NTPC — **NTPC LIMITED** (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh–11 Of 14	A

FLOW MEASUREMENT



NOTES:-

1. ORIFICE PLATE MOUNTED BETWEEN FLANGES WITH FLANGE TAPPING (AS SHOWN ABOVE) SHOULD BE LIMITED TO PIPE SIZES OF 2" OR LARGER.
2. ORIFICE PLATE SHALL BE MOUNTED BETWEEN PIPING FLANGES WITH THE SHARP EDGE FACING UPSTREAM SUCH THAT CENTRE OF THE CONCENTRIC ORIFICE SHOULD BE WITHIN 0.79 mm (1/32") OF THE AXIS OF THE PIPE.
3. TWO GASKETS SHALL BE INSERTED BETWEEN THE PLATE AND THE FLANGES AND INSIDE DIAMETER OF THE GASKETS SHOULD BE ATLEAST 1.5 mm (1/16") GREATER THAN THE INSIDE DIAMETER OF THE PIPE SO THAT THEY DO NOT PROTRUDE INTO THE PIPE.
4. PIPING FLANGES SHALL BE ANSI WELD NECK, RAISED FACE TYPE. THE FLANGE IS TO BE ALIGNED WITH THE FACE PERPENDICULAR TO THE FLOW AXIS.
5. BIDDER TO SUPPLY ORIFICE PLATE SPECIAL TYPE (HAVING PRESS. CONNECTIONS) OF FLANGES ALONG WITH GASKETS, NIPPLES AND SOURCE VALVES.
6. ON HORIZONTAL PIPE RUN PRESSURE CONNECTIONS ARE TO BE TAKEN FROM SIDES FOR LIQUID AND STEAM SERVICE AND FROM TOP FOR DRY GAS SERVICE. FOR PROCESS LIQUIDS INSTALLATION OF PRESSURE TAPS MAY BE ALLOWED WITHIN AN ANGLE OF 45° ELBOW THE HORIZONTAL IN SPECIAL CASES BUT NO BOTTOM CONNECTIONS ARE ALLOWED.
7. THE LOCATION OF PRESSURE TAPS MUST BE WITHIN 1.5 mm (1/16") OF THE DISTANCE SPECIFIED.
8. MAXIMUM DIAMETER OF PRESS. CONNECTION HOLES SHALL BE AS PER RECOMMENDATIONS OF ASME PTC 19.5. THE DIAMETER OF THE HOLE SHOULD REMAIN THE SAME FOR A DISTANCE NOT LESS THAN 2.5 TIMES OF THE DIAMETER BEFORE EXPANDING INTO THE PRESSURE PIPE.
9. THERE MUST BE NO BURRS WIRE EDGES OR OTHER IRREGULARTIES ALONG THE EDGE OF THE HOLE AND IT MUST BE SQUARE AND ROUNDED SLIGHTLY (1/64" RADIUS).
10. ORIFICE PLATE SHOULD BE FLAT WITHIN 0.02 mm (0.001") AND THE SURFACE ROUGHNESS SHOULD NOT EXCEED 20 MICRO INCH. THE THICKNESS OF THE ORIFICE PLATE SHOULD BE AS PER EN ISO 5167:2003.
11. FOR HORIZONTAL PIPE RUN DRAIN HOLES IN ORIFICE PLATES ARE AT THE BOTTOM (APPROX. TANGENT TO INSIDE DIA OF PIPE) FOR STEAM OR GAS SERVICE. VENT HOLES SHOULD BE LOCATED ON UPPER SIDE FOR INCOMPRESSIBLE FLUID.
12. ORIFICE PLATE SHOULD BE OF 316 SS (ASTM A167-54 GRADE-II).
13. RECOMMENDED MINIMUM LENGTHS OF STRAIGHT PIPE PRECEDING AND FOLLOWING ORIFICES SHALL BE AS PER EN ISO 5167:2003.
14. THREE PAIRS OF PRESSURE TAPS SHALL BE PROVIDED WITH NIPPLES OF REQUIRED LENGTH AND SOURCE VALVES AND THE UN-USED TAPS ARE PLUGGED.
15. THE INTERNAL TAPERED CONNECTION WITHIN THE FLANGE FOR PRESSURE TAPS SHOULD BE RC 1/2" AND THE NIPPLE SHOULD ALSO OF EXTERNAL THREADED R 1/2" AS PER IS:554. THE LENGTH OF THREADED ENGAGEMENT SHALL BE AS PER ABOVE STANDARD.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD.	DATE
					CLEARED BY						
A	FIRST ISSUE							T.G.			31.08.12

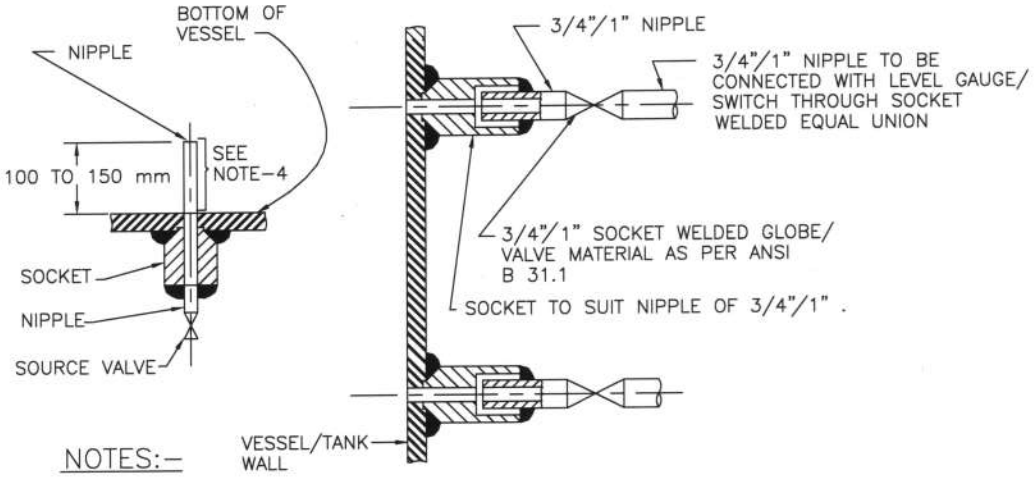
एन टी पी सी NTPC **NTPC LIMITED** (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

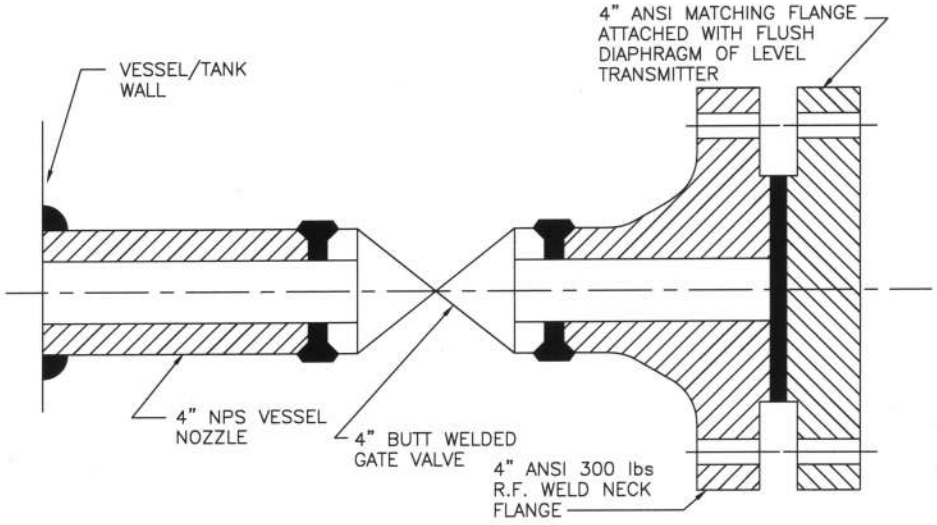
SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh-12 Of 14	A

LEVEL MEASUREMENT



NOTES:-

1. THIS TYPE OF PROCESS CONNECTION SHALL BE USED FOR LEVEL GAUGE AND EXTERNAL CAGE TYPE FLOAT OR DISPLACER OPERATED LEVEL SWITCH.
2. FOR GAUGES 3/4" NIPPLE ALONG WITH 3/4" SW SOURCE VALVE AND FOR SWITCHES 1" NIPPLE ALONG WITH 1" SW SOURCE VALVE SHALL BE PROVIDED AS PROCESS CONNECTION.
3. SOURCE CONNECTION ON VESSEL SHOULD NOT BE LOCATED AT PLACES SUBJECTED TO INTERFACE AND TURBULENCE FROM INLETS AND OUTLETS.
4. IF LOWER CONNECTION IS TAKEN FROM BOTTOM OF THE VESSEL THEN THE NIPPLE MUST BE 100 mm TO 150 mm ABOVE THE BOTTOM OF THE VESSEL.



NOTES:-

1. THIS TYPE OF PROCESS CONNECTION SHALL BE PROVIDED FOR TANK LEVEL MEASUREMENT OF VISCOUS OR CORROSIVE LIQUID USING FLUSH DIAPHRAGM/WAFER TYPE LEVEL TRANSMITTER.
2. WELDING OF MATCHING FLANGE TO GATE VALVE SHALL BE DONE BY BIDDER.

FOR TENDER PURPOSE ONLY

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE							T.G.			01.06.12
					CLEARED BY						

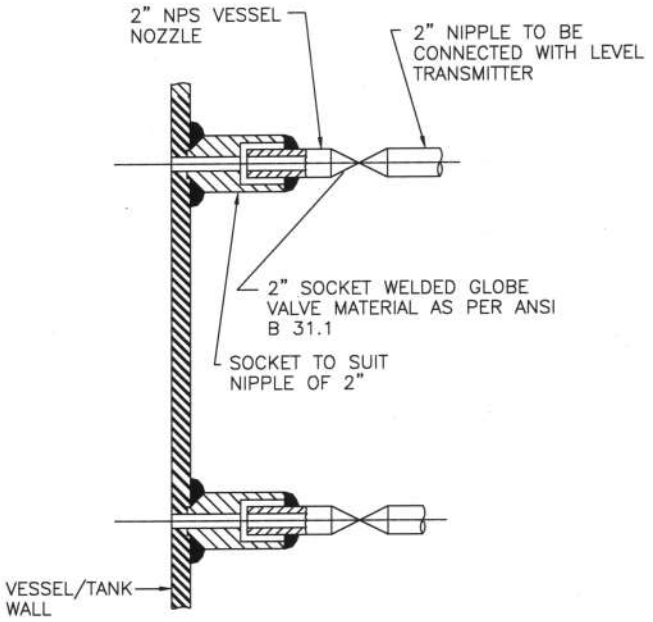
एन टी पी सी NTPC **NTPC LIMITED** (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh-13 Of 14	A

LEVEL MEASUREMENT



NOTES:–

1. THIS TYPE OF PROCESS CONNECTION SHALL BE USED FOR DISPLACER TYPE LEVEL TRANSMITTER.
2. SOURCE CONNECTION ON VESSEL SHOULD NOT BE LOCATED AT PLACES SUBJECTED TO INTERFACE AND TURBULENCE FROM INLETS AND OUTLETS.
3. IF LOWER CONNECTION IS TAKEN FROM BOTTOM OF THE VESSEL THEN THE NIPPLE MUST BE 100 mm TO 150 mm ABOVE THE BOTTOM OF THE VESSEL.

FOR TENDER PURPOSE ONLY

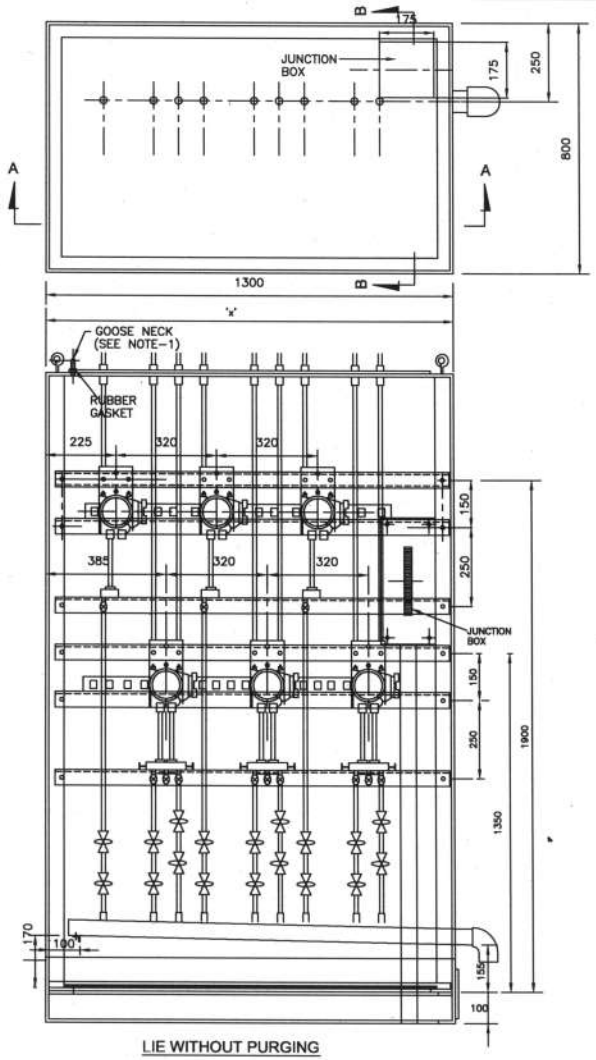
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD.	DATE
A	FIRST ISSUE							T.G.			21.06.12
					CLEARED BY						

एन टी पी सी NTPC **NTPC LIMITED** (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION

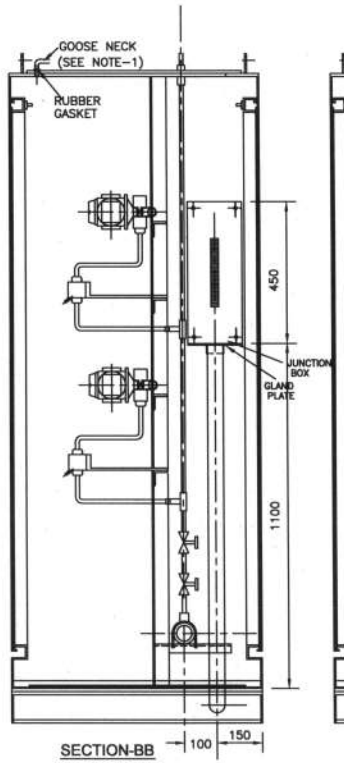
PROJECT: TYPICALTHERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

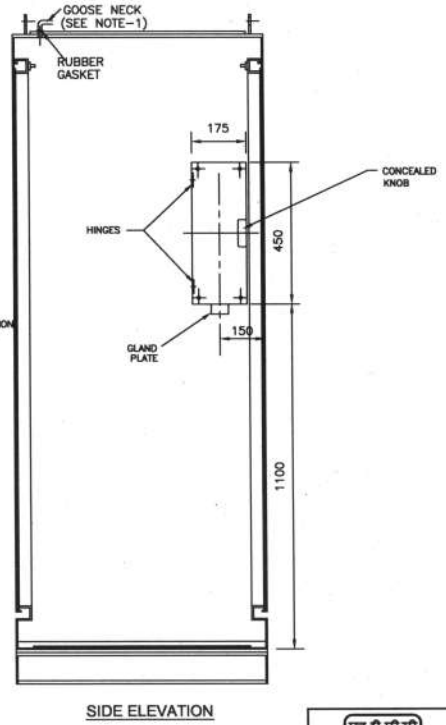
SIZE	SCALE	DRG. NO.	REV. NO.
A4	N.T.S.	0000-999-POI-A-035 Sh-14 Of 14	A



LIE WITHOUT PURGING



SECTION-BB



SIDE ELEVATION

LIE TYPE	MAX. NO. OF TRANSMITTERS	DIMENSION 'X' (mm)
A	6	1250
B	4	930
C	2	630

NOTES:–

1. TO BE PROVIDED FOR LIEs USED IN STEAM & WATER APPLICATION.
2. MATERIAL OF JBs FOR LIEs SHALL BE SAME AS THAT OF LIE.

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			21.08.12
					CLEARED BY						

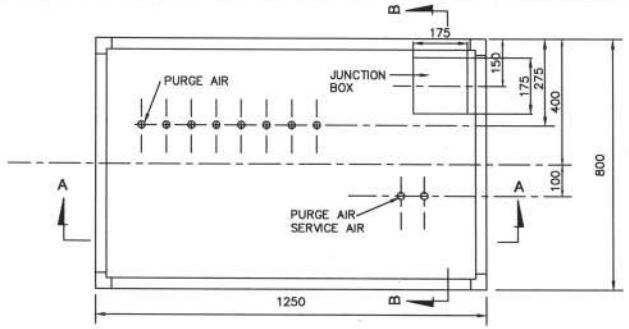
NTPC LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

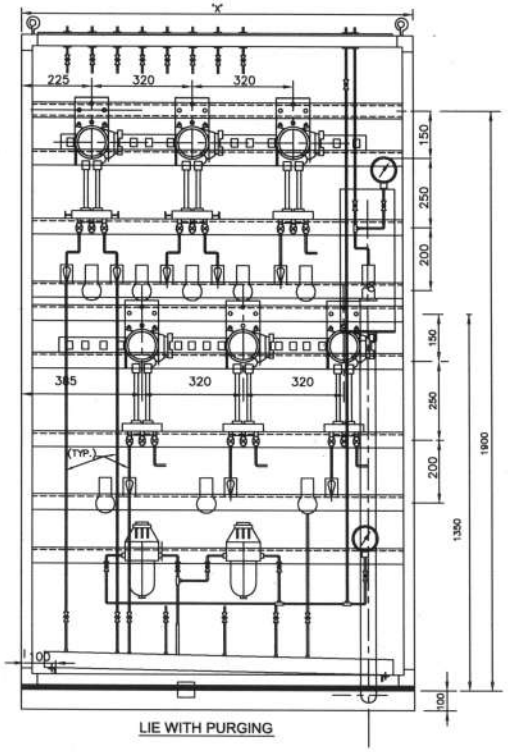
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK

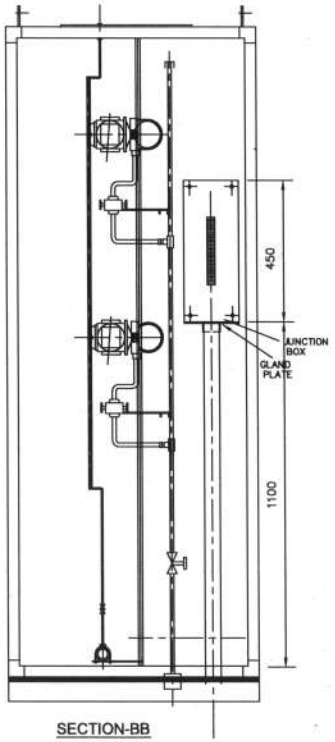
SIZE	SCALE	DRG. NO.	REV. NO.
A2	N.T.S.	0000-999-POI-A-064	B

SHEET 01 OF 03





LIE WITH PURGING



SECTION-BB

LIE TYPE	MAX. NO. OF TRANSMITTERS	DIMENSION 'X' (mm)
A	6	1300
B	4	980
C	2	680

NOTES:-

1. MATERIAL OF JBs FOR LIEs SHALL BE SAME AS THAT OF LIE.

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE							T.G.			19.04.12

CLEARED BY

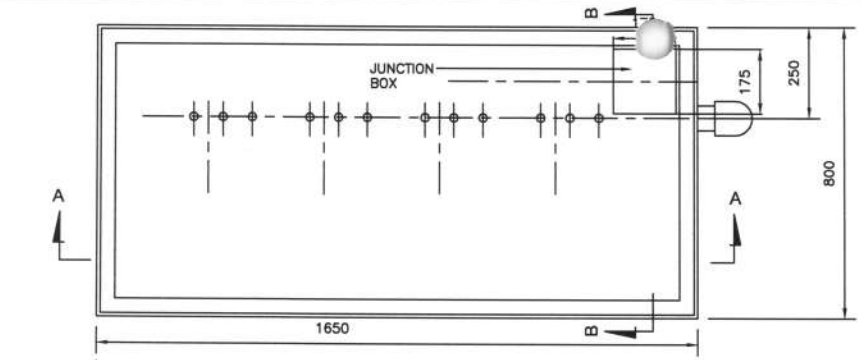
एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

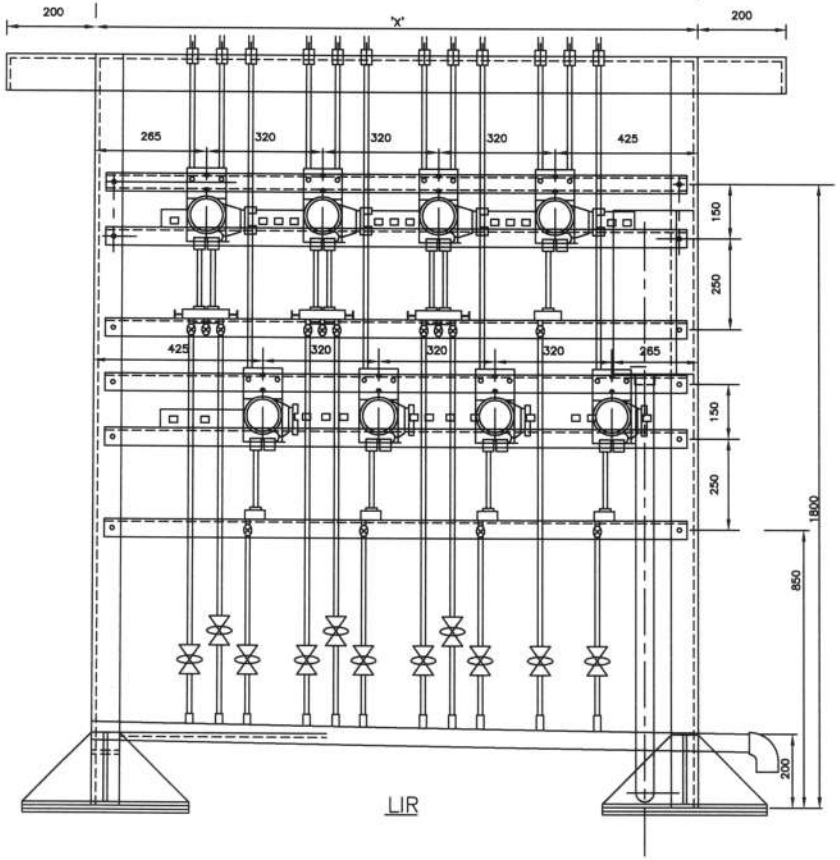
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK

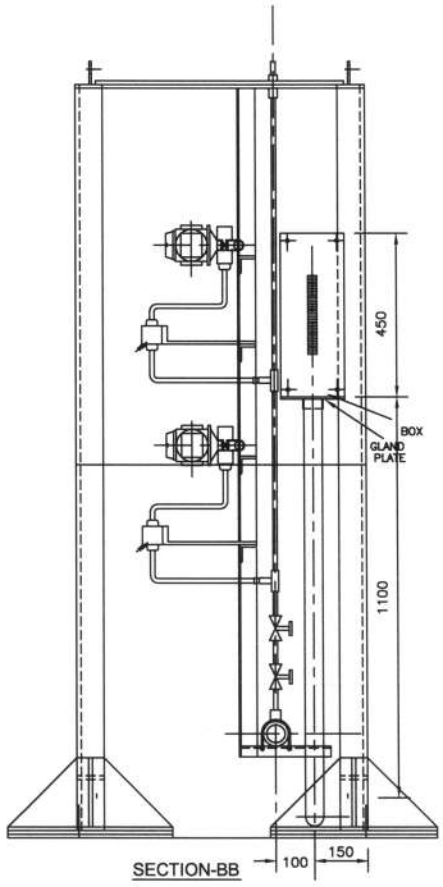
SIZE	SCALE	DRG. NO.	REV. NO.
A2	N.T.S.	0000-999-POI-A-064 SH- 02 OF 03	B



LIR TYPE	MAX. NO. OF TRANSMITTERS	DIMENSION 'X' (mm)
A	8	1650
B	6	1330
C	4	1010



LIR



SECTION-BB

NOTE:–

1. MATERIAL OF JBs FOR LIRs SHALL BE SAME AS THAT OF LIR.

SECTION-AA
LIR WITHOUT PURGING

FOR TENDER PURPOSE ONLY

REV.NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	C&I	ARCH.	APPD	DATE
A	FIRST ISSUE						T.G.				21.08.12

CLEARED BY

एन टी पी सी NTPC

N T P C LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK

SIZE	SCALE	DRG. NO.	REV. NO.
A3	N.T.S.	0000-999-POI-A-064 SH– 03 OF 03	A