

SECTION -4
TECHNICAL DATA REQUIREMENTS

- 6 Bias setting range
- 7 Operating time at 5x setting current
- 8 Resetting time
- 9 How ratio / phase angle corrections are being done (inter posing transformer / internal feature in the relay)

Restricted Earth Fault Relay

- 1 Name and country of Manufacturer
- 2 Manufacturer type and designation
- 3 Operating time at 2 x setting

Back up Impedance Protection Relay

- 1 Name & country of Manufacture
- 2 Manufacturer type & designation
- 3 Whether characteristics will confirm to IEC255-3
- 4 Directional sensitivity
- 5 Overcurrent unit setting range
 - a) Inverse time
 - b) High set inst. Unit
- 6 Earth fault unit setting range
 - a) Inverse time
 - b) High set inst. Unit

SECTION -4
TECHNICAL DATA REQUIREMENTS

GENERAL PROTECTION / MONITORING EQUIPMENT

Trip circuit supervision relay

- 1 Name & country of Manufacture
- 2 Manufacturer type & designation
- 3 Whether preclosing and post closing supervision provided ?
- 4 Time delay

High Speed Trip Relays

- 1 Name & country of Manufacture
- 2 Manufacturer type & designation
- 3 Contacts ratings
 - a) Make & carry continuously
 - b) Make & carry for 0.5 sec
 - c) Break
 - i. Resistive load
 - ii. Inductive load (With $L/R = 40$ msec)
- 4 Operating time at rated voltage (maximum)
- 5 Resetting time
- 6 Whether supervisory relays included

SECTION -4
TECHNICAL DATA REQUIREMENTS

Local Breaker Back - up protection

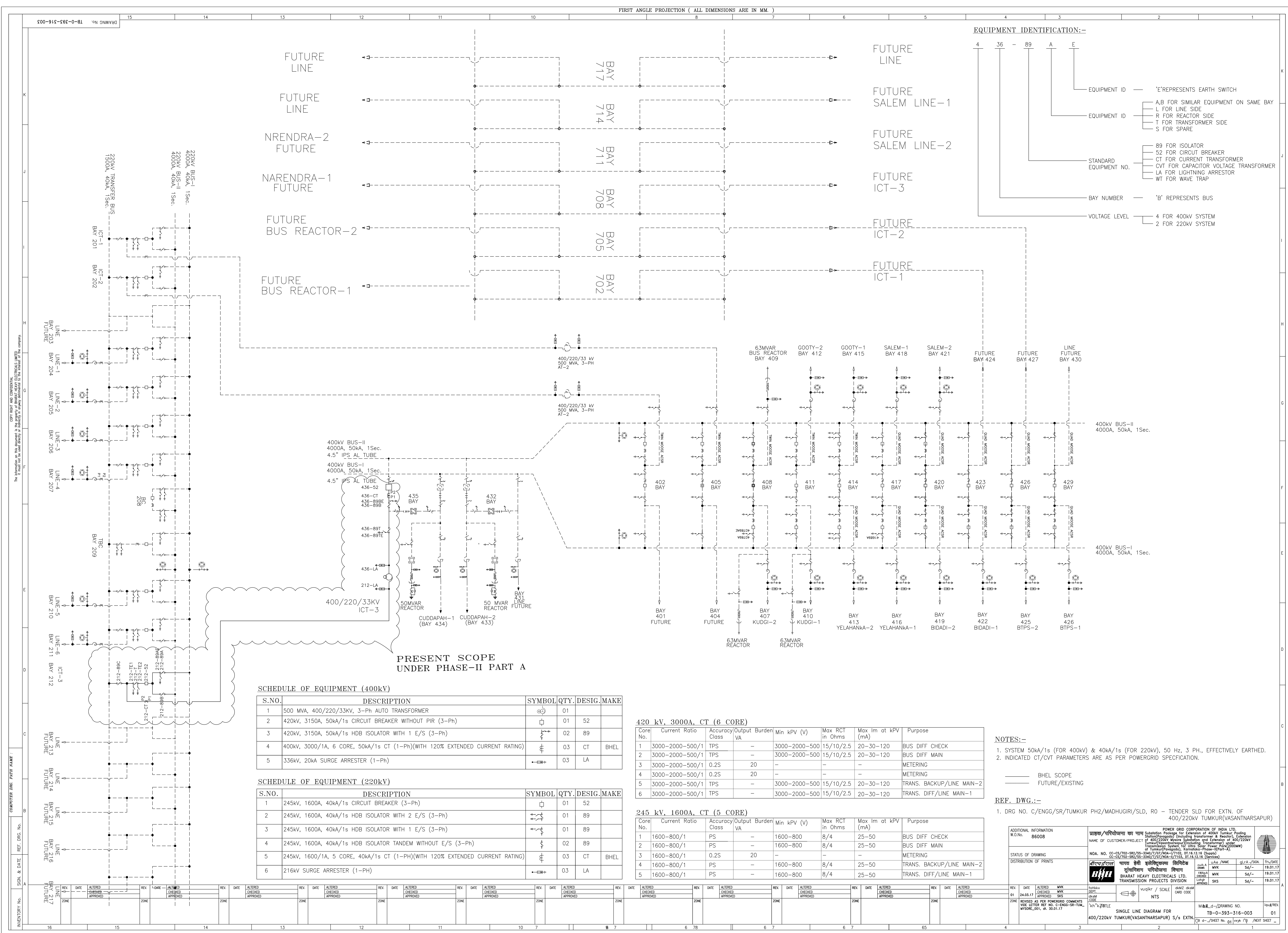
- 1 Name & country of Manufacture
- 2 Manufacturer type & designation
- 3 Operating time
- 4 Resetting time
- 5 Setting range
 - (I) Current
 - (ii) Time

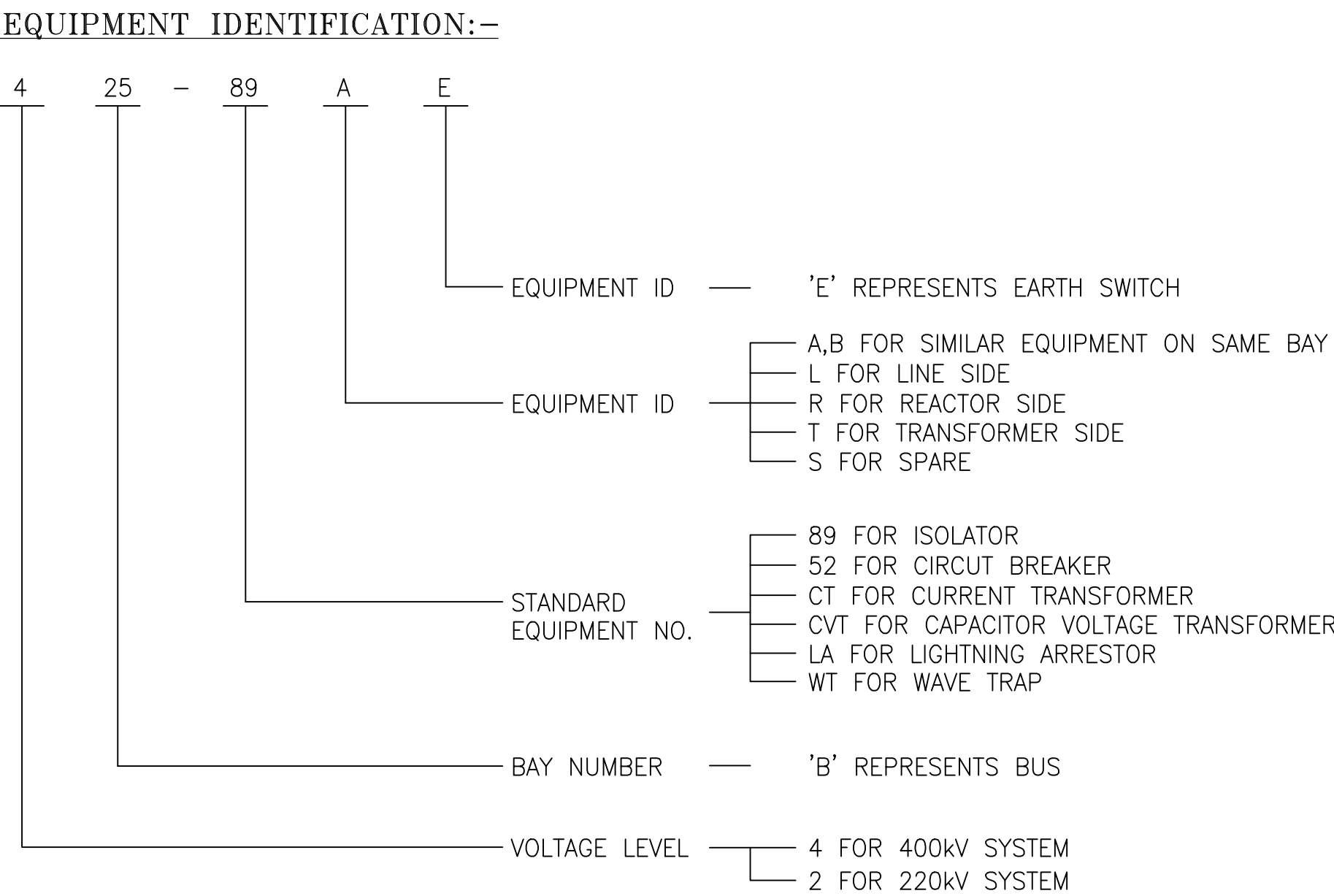
Bus bar Protection (APPLICABLE FOR NEW STATION ONLY)

- 1 Name & country of Manufacture
- 2 Manufacturer type & designation
- 3 Type of relay
- 4 Principle of operation
- 5 Operating time
- 6 Resetting time
- 7 Setting ranges
 - (I) Current
 - (ii) Time
- 8 Whether it will cause tripping for the differential current below the load current of heavily loaded feeder (Bidder shall submit application check for the same)

SECTION –V (ATTACHMENTS)

- A) SLD TUMKUR(VASANTNARSAPUR)**
- B) SLD TUMKUR POOLING STATION(PAVAGADA)**
- C) SLD MYSORE S/S EXTENTION**
- D) LAYOUT OF TUMKUR (VASANTNARSAPUR)**
- E) LAYOUT OF TUMKUR POOLING STATION (PAVAGADA)**
- F) LAYOUT OF MYSORE S/S EXTENSION**
- G) CLARIFICATIONS BY POWERGRID (ANNUXURE-B)**



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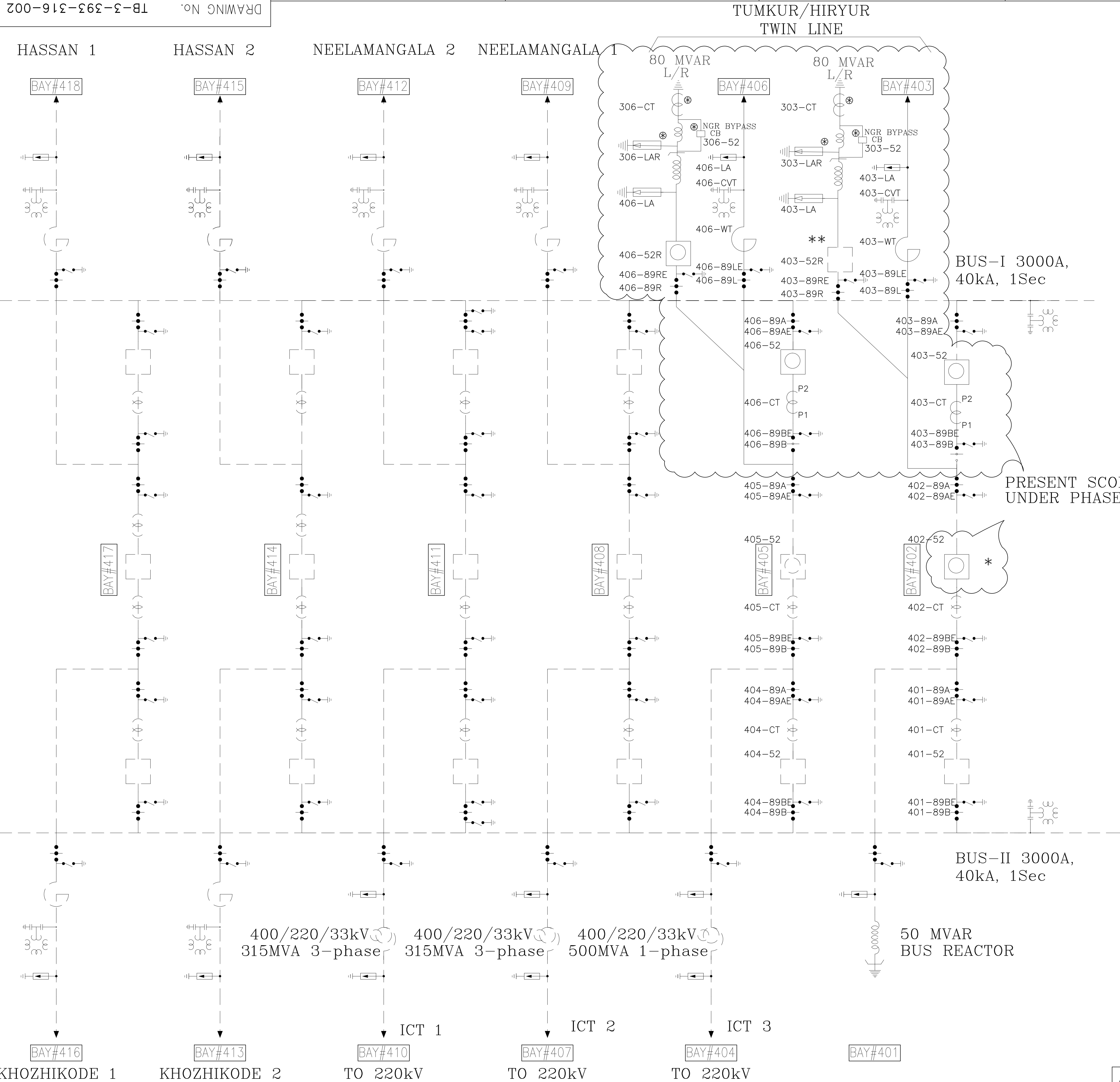
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COMPUTER DRG. PATH NAME :

REF. DRG. No.

SIGN. & DATE

INVENTORY No.



NOTES:-

- SYSTEM 40kA/1s (FOR 400kV), 50 Hz, 3 PH., EFFECTIVELY EARTHED.
- INDICATED CVT PARAMETERS ARE AS PER POWERGRID SPECIFICATION.
- (*) EXISTING TIE CB SHALL BE REPLACED BY CB WITH PIR.
- (**) EXISTING TIE CB SHALL BE INSTALLED FOR SWITCHABLE LINE REACTOR.

———— BHEL SCOPE
----- FUTURE/EXISTING

SCHEDULE OF EQUIPMENT (400kV)

S.NO.	DESCRIPTION	SYMBOL	QTY.	DESIG.	MAKE
1	420kV, 80MVAR LINE REACTOR ALONG WITH SURGE ARRESTER & NGR(3-Ph)		02		BHEL
2	420kV, 2000A, 40kA/1s CIRCUIT BREAKER WITH PIR (3-Ph)		04	52	
3	420kV, 2000A, 40kA/1s HDB ISOLATOR WITH 1 E/S (3-Ph)		06	89	
4	400kV, 2000/1A, 6 CORE, 40kA/1s CT (1-Ph) (WITH 120% EXTENDED CURRENT RATING)		06	CT	
5	400kV, 4400PF, 40kA/1s CVT (1-Ph)		06	CVT	
6	400kV, 2000A, 40kA/1s, 1.0mH WAVE TRAP (1-Ph)		04	WT	
7	336kV, 20kA SURGE ARRESTER (1-Ph)		12	LA	
8	145kV, 1250A, 31.5kA/1s CIRCUIT BREAKER (1-Ph)		02	52	
9	132kV SURGE ARRESTER (1-Ph)		02	LA	
10	33kV NCT (1-Ph)		02	CT	
11	420kV, 2000A, 40kA/1s CIRCUIT BREAKER WITHOUT PIR (3-Ph)		-	52	
12	CONTROLLED SWITCHING DEVICE		02		

420 kV, 2000A, CT (6 CORE)

Core No.	Current Ratio	Accuracy Class	Output Burden VA	Min kPV (V)	Max RCT in Ohms	Max Im at kPV (mA)	Purpose
1	2000-1000/1	TPS	-	2000-1000	10/5	30-60	BUS DIFF CHECK
2	2000-1000/1	TPS	-	2000-1000	10/5	30-60	BUS DIFF MAIN
3	2000-1000-500/1	0.2S	20	-	-	-	METERING
4	2000-1000-500/1	0.2S	20	-	-	-	METERING
5	2000-1000-500/1	TPS	-	4000-2000-1000	10/5/2.5	30-60-120	PROTECTION
6	2000-1000-500/1	TPS	-	4000-2000-1000	10/5/2.5	30-60-120	PROTECTION

REQUIRMENTS OF 420kV CAPACITIVE VOLTAGE TRANSFORMERS

S.NO.	PARTICULAR	
1.	RATED PRIMARY VOLTAGE (kV RMS)	420
2.	TYPE	SINGLE PHASE CAPACITOR VT
3.	NO. OF SECONDARIES	3
4.	RATED VOLTAGE FACTOR	1.2 CONTINUOUS 1.5-30 SECONDS
5.	PHASE ANGLE ERROR	±10 MINUTES (FOR METERING CORE)
6.	CAPACITANCE (PF)	4400/8800* +10% (AS APPLICABLE) -5%
7.	VOLTAGE RATIO	SECON-DARY-I 400/0.11 SECON-DARY-II 400/0.11 SECON-DARY-III 400/0.11
8.	APPLICATION	PROTEC-TION PROTEC-TION METER-ING
9.	ACCURACY	0.5/3P 0.5/3P 0.2
10.	OUTPUT BURDEN (VA) (MINIMUM)	50 50 50

REF. DWG.:-

- DRG NO. C/ENGG/SS/SR/SR-II/MYSORE-EXT/SLD/001, RO - TENDER SLD FOR EXTN. OF 400/220kV MYSORE S/S.

ADDITIONAL INFORMATION W.O.No. 86008			POWER GRID CORPORATION OF INDIA LTD. Substation Package for Extension of 400kV Tumkur Pooling Station(Pavagada) (Including transformer & Reactor), Extension of 400/220kV Mysore Substation and Extension of 400/220kV Tumkur(Vasantnarsapur)(Including Transformer) under Transmission System for Ultra Solar Power Park(2000MW) at Tumkur(Pavagada), Karnataka-Phase-II(Part-A).		
STATUS OF DRAWING			NOA. NO. CC-CS/702-SR2/SS-3340/7/G7/NOA-I/7102, DT.16.12.16 (Supply) CC-CS/702-SR2/SS-3340/7/G7/NOA-II/7103, DT.16.12.16 (Services)		
DISTRIBUTION OF PRINTS			 भारत हेवी इलेक्ट्रिकल्स लिमिटेड ट्रान्समिशन परियोजना विभाग BHARAT HEAVY ELECTRICALS LTD. TRANSMISSION PROJECTS DIVISION		
REV.	DATE	ALTERED	मित्रा DEPT. कोड	अनुपात / SCALE	कार्ड कोड
01	24.03.17	CHECKED MVK APPROVED SKS	कोड	NTS	
REVISED AS PER POWERGRID COMMENTS VIDE LETTER REF NO. C-ENGG-SR-TUM_MYSORE_001, dt. 30.01.17			शीर्षक/TITLE SINGLE LINE DIAGRAM FOR 400/220kV MYSORE S/s EXTN.		
			डाईग.क./DRAWING NO. TB-3-393-316-002		
			पृष्ठ क./SHEET No. 01 अगला पृष्ठ/NEXT SHEET -		
			पुनः/REV. 01		

