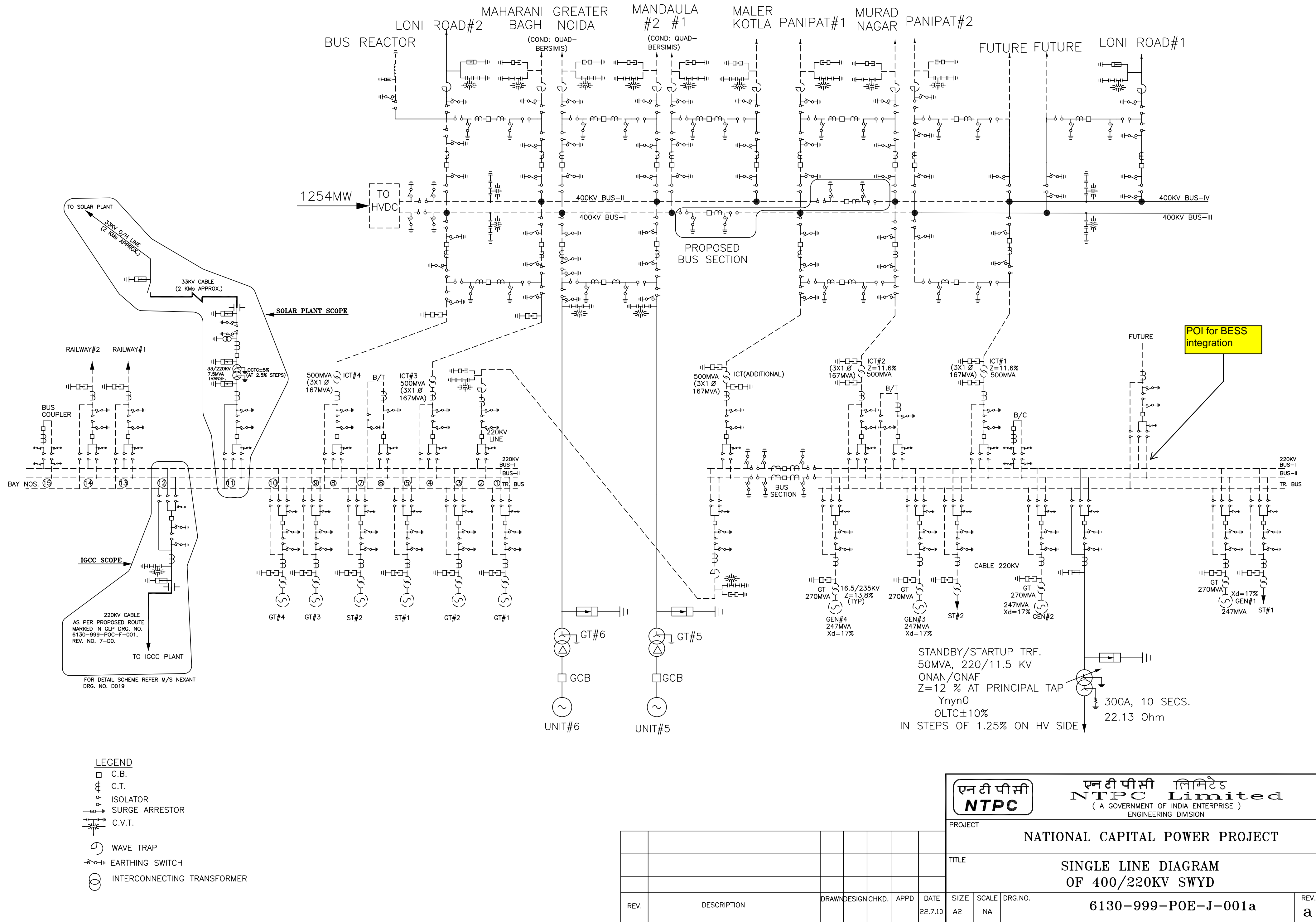


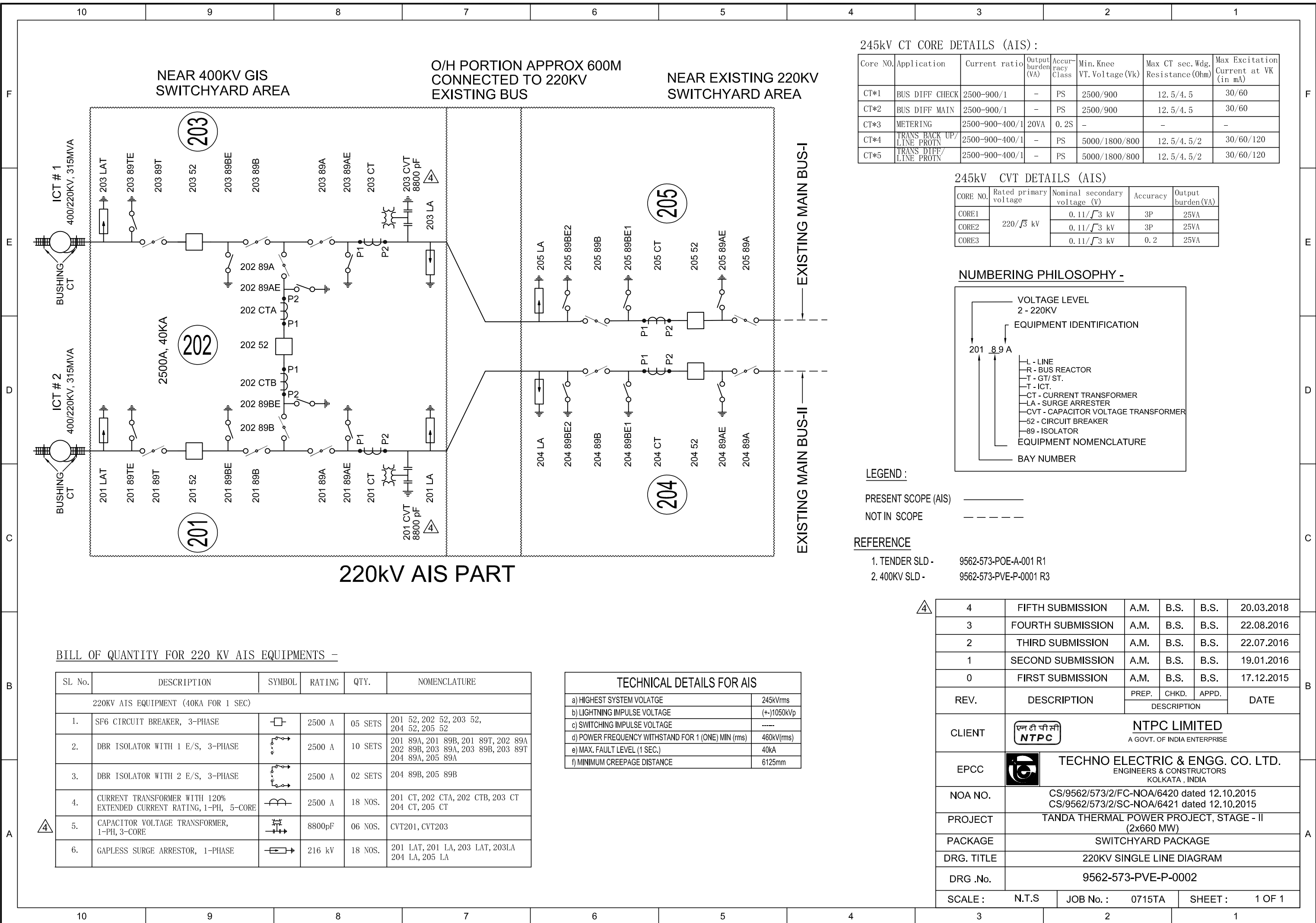
| | |
|--|--|
| | |
| | <p>EXISTING SWITCHYARD DRAWINGS AND LAYOUTS</p> |

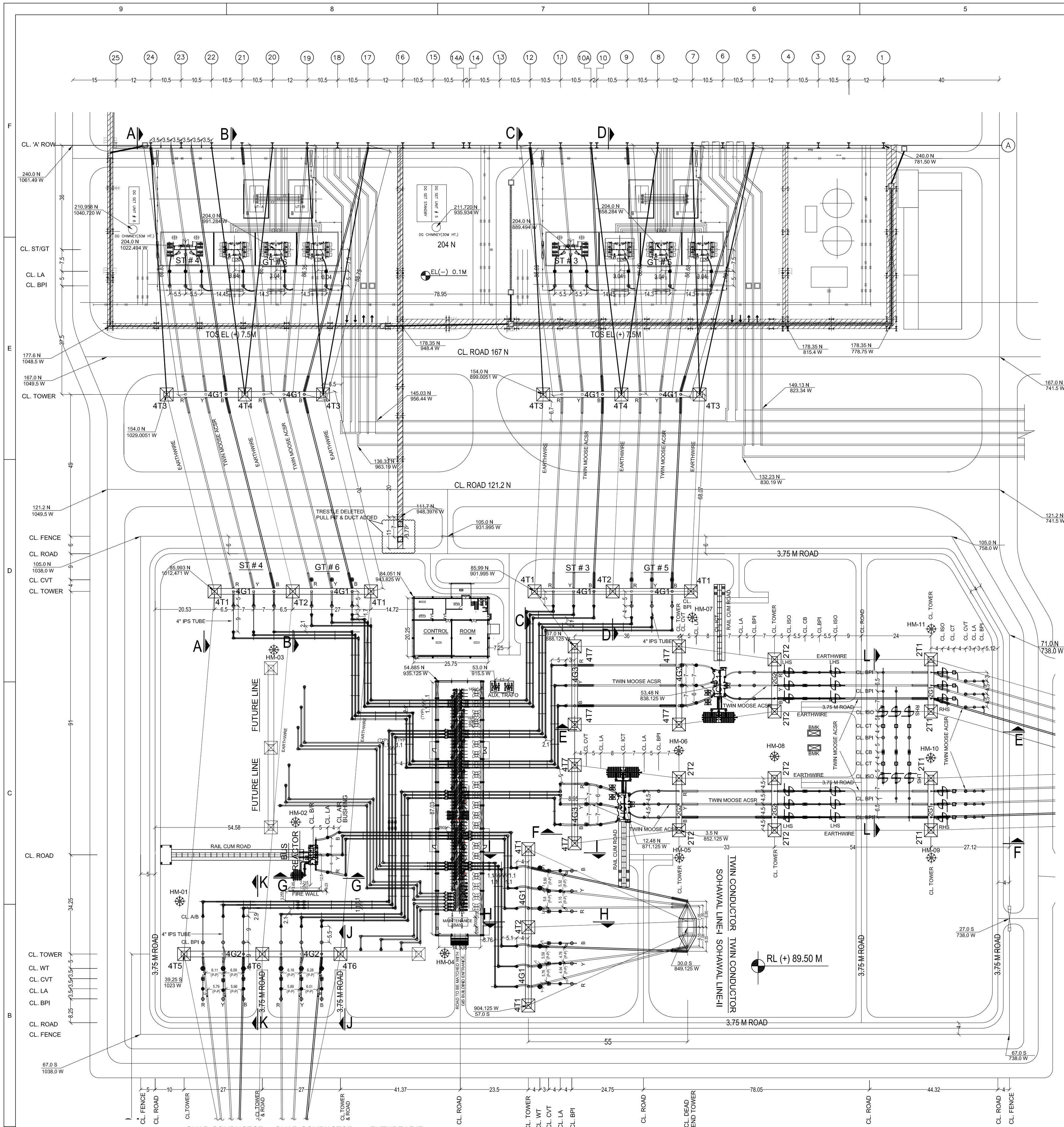
DADRI



| | | | |
|----------------------------|---------------------|--|---------|
| एन टी पी सी NTPC | | एन टी पी सी लिमिटेड NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION | |
| PROJECT | | NATIONAL CAPITAL POWER PROJECT | |
| TITLE | | SINGLE LINE DIAGRAM OF 400/220KV SWYD | |
| REV. | DESCRIPTION | DRAWN | DESIGN |
| | | CHKD. | APPD. |
| | | DATE | 22.7.10 |
| SIZE | A2 | SCALE | NA |
| DRG.NO. | 6130-999-POE-J-001a | | |
| REV. | a | | |

| | |
|--|------------------|
| | |
| | <div>TANDA</div> |





NOTE :

1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. DETAILED DRAWING OF 220KV INTERCONNECTION OVER HEAD LINE TO BE SUBMITTED SEPARATELY.
3. DETAILS OF GIS BUILDING, CONTROL ROOM AND PANEL ROOM SHALL BE SUBMITTED SEPARATELY.
4. DETAILS OF AHU ROOM FOR GIS BUILDING SHALL BE FINALIZED AFTER DETAILED DESIGN.
5. LOCATION OF WAVE TRAP IS INDICATIVE. WT TO BE PROVIDED IN ANY TWO PHASES AS PER SITE REQUIREMENT.

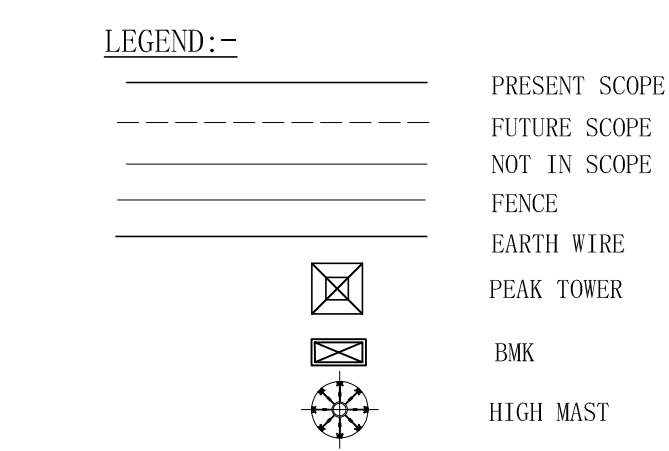
| TECHNICAL DETAILS FOR 400kV GIS | |
|--|--------------|
| a) HIGHEST SYSTEM VOLTAGE | 420kVrms |
| b) SYSTEM FREQUENCY | 50Hz |
| c) LIGHTNING IMPULSE VOLTAGE | (+)1425kVp |
| PHASE TO EARTH & BETWEEN PHASES | 1425kVp |
| ACROSS ISOLATING DISTANCE | 1425(+240)kV |
| d) SWITCHING IMPULSE VOLTAGE | 1050kVp |
| PHASE TO EARTH | 1050kVp |
| ACROSS ISOLATING DISTANCE | 900(+345)kV |
| BETWEEN PHASES | 1575kVp |
| e) POWER FREQUENCY WITHSTAND FOR 1 Min | 650kVrms |
| PHASE TO EARTH & BETWEEN PHASES | 815kVrms |
| ACROSS ISOLATING DISTANCE | 650kVrms |
| f) PD LEVEL OF GIS | <5 PC |
| g) MAX. FAULT LEVEL (1 SEC.) | 50kA |

| TECHNICAL DETAILS FOR 400kV AIS | |
|--|-------------|
| a) HIGHEST SYSTEM VOLTAGE | 420kVrms |
| b) LIGHTNING IMPULSE VOLTAGE | (+)1425kVp |
| c) SWITCHING IMPULSE VOLTAGE | (+)1050kVp |
| d) POWER FREQUENCY WITHSTAND FOR 1 MIN | 630kV (rms) |
| e) MAX. FAULT LEVEL (1 SEC.) | 50kA |
| f) MINIMUM CREEPAGE DISTANCE | 10500mm |

| TECHNICAL DETAILS FOR 220kV AIS | |
|--|-------------|
| a) HIGHEST SYSTEM VOLTAGE | 245kVrms |
| b) LIGHTNING IMPULSE VOLTAGE | (+)1050kVp |
| c) SWITCHING IMPULSE VOLTAGE | ----- |
| d) POWER FREQUENCY WITHSTAND FOR 1 Min | 460kV (rms) |
| e) MAX. FAULT LEVEL (1 SEC.) | 40kA |
| f) MINIMUM CREEPAGE DISTANCE | 6125mm |

| BEAMS (400KV) | | | |
|---------------|--------|--|------|
| SNO. | MARKED | DESCRIPTION | NOS. |
| 1 | 4G1 | 27M SPAN TWIN MOOSE WITH DEVIATION | 10 |
| 2 | 4G2 | 27M SPAN QUAD MOOSE WITH DEVIATION | 02 |
| 3 | 4G3 | 27M SPAN TWIN MOOSE WITH OUT DEVIATION | 03 |
| TOTAL --> | | | 15 |

| BEAMS (220KV) | | | |
|---------------|--------|--|------|
| SL. NO. | MARKED | DESCRIPTION | NOS. |
| 1 | 2G1 | 18M SPAN TWIN MOOSE WITH DEVIATION | 02 |
| 1 | 2G2 | 18M SPAN TWIN MOOSE WITH OUT DEVIATION | 03 |
| TOTAL --> | | | 05 |



NORMAL TENSION FOR CONDUCTORS:-

QUAD MOOSE ACSR - 1.5T/CONDUCTOR
TWIN MOOSE ACSR - 2T/CONDUCTOR
EARTHWIRE - 0.8T

* BMK DETAILS
BMK - 2 nos.

BILL OF QUANTITY FOR 400 KV AIS EQUIPMENTS -

| SL. No. | DESCRIPTION | RATING | SYMBOL | QTY. |
|--------------------------------------|--|----------------|--------|---------|
| 400KV AIS EQUIPMENT (50KA FOR 1 SEC) | | | | |
| 1. | 400KV, 1-PH, CAPACITOR VOLTAGE TRANSFORMER | 8800pF | ⊕ | 12 NOS. |
| 1a. | 400KV, 1-PH, 8800pF, CVT (3 CORE) | | | |
| 1b. | 400KV, 1-PH, 4400pF, CVT (3 CORE) | 4400pF | ⊕ | 12 NOS. |
| PLZ REFER TABLE FOR CORE DETAILS | | | | |
| 2. | 336KV, 1-PH, GAPLESS SURGE ARRESTOR | 336kV | ⊕ | 33 NOS. |
| 3. | 400KV , 1.0/0.5 mH WAVE TRAP | 3150A 1.0mH | ⊕ | 08 NOS. |
| 4. | BPI | 400KV | ⊕ | 39 NOS. |
| 5. | STATION TRANSFORMER | ---- | ---- | 2 NOS. |
| 6. | BUS REACTOR | 125 MVAR | ---- | 1 NO. |
| 7. | INTERCONNECTING TRANSFORMER | 315 MVA | ---- | 2 NOS. |
| 8. | GENERATOR TRANSFORMER | ---- | ---- | 2 NOS. |

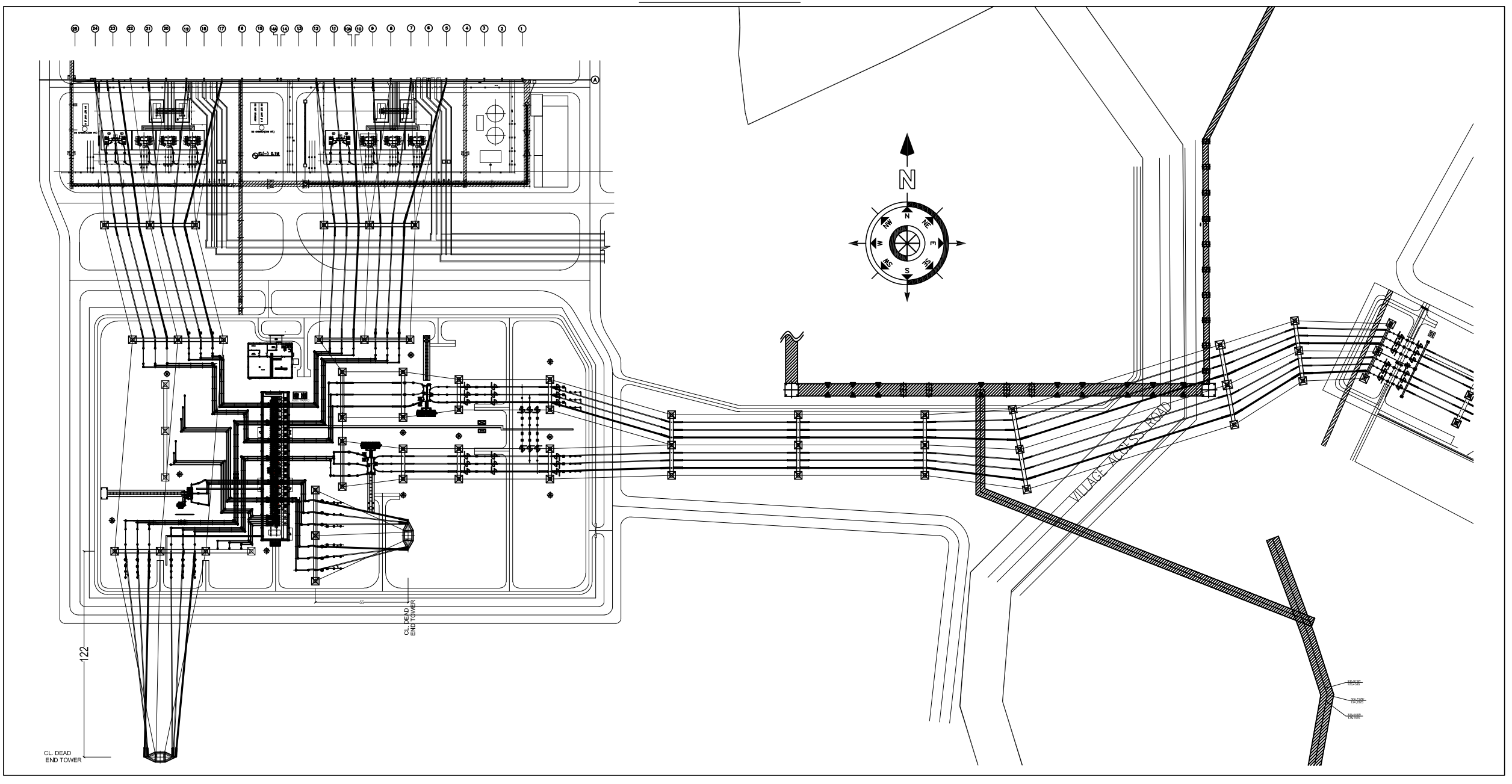
TOWERS (400KV)

| SL. NO. | MKD NO. | DESCRIPTION | | | | NOS. |
|---------|---------|-------------|------|-------------------------------|-------------------------------|--------------|
| | | TOTAL HT. | PEAK | BEAM @ 16.0M | BEAM @ 25.0M | |
| 1 | 4T1 | 16.0M +8.5M | YES | 1NO 4G1 IN LONGITUDINAL FACE | | 06 |
| 2 | 4T2 | 16.0M +8.5M | YES | 2NOS 4G1 IN LONGITUDINAL FACE | | 03 |
| 3 | 4T3 | 25.0M +8.5M | YES | | 1NO 4G1 IN LONGITUDINAL FACE | 04 |
| 4 | 4T4 | 25.0M +8.5M | YES | | 2NOS 4G1 IN LONGITUDINAL FACE | 02 |
| 5 | 4T5 | 16.0M +8.5M | YES | 1NO 4G2 IN LONGITUDINAL FACE | | 01 |
| 6 | 4T6 | 16.0M +8.5M | YES | 2NOS 4G2 IN LONGITUDINAL FACE | | 02 |
| 7 | 4T7 | 16.0M +8.5M | YES | 1NOS 4G3 IN LONGITUDINAL FACE | | 06 |
| | | | | | | TOTAL --> 24 |

TOWERS (220KV)

| SL. NO. | MKD NO. | DESCRIPTION | | | | | NOS. |
|---------|---------|----------------|-----|------------------------------|--|--------------|------|
| | | TOTAL HT. PEAK | | BEAM @ 12.0M | | BEAM @ 25.0M | |
| 1 | 2T1 | 12.0M +5.0M | YES | 1NO 2G1 IN LONGITUDINAL FACE | | | 04 |
| 2 | 2T2 | 12.0M +5.0M | YES | 1NO 2G2 IN LONGITUDINAL FACE | | | 06 |
| | | | | | | | |
| | | | | | | TOTAL --> | 10 |

KEY PLAN



| CONDUCTOR DETAILS OF 220kV SIDE:- | |
|-----------------------------------|-----------------------------|
| a) MAIN BUS | TWIN MOOSE ACSR (AT 12-25M) |
| b) ICT BAY JACK BUS | TWIN MOOSE ACSR (AT 12M) |
| c) ICT BAY EQPT BUS | 4" IPS AL. TUBE (AT 6M) |
| d) BUS SECTION EQPT BUS | 4" IPS AL. TUBE (AT 6M) |
| e) DROPPER / JUMPER | TWIN MOOSE ACSR |
| NO. OF STRINGS/PHASE:- | |
| a) FOR TENSION | 2 |
| b) FOR SUSPENSION | 1 |
| SUB CONDUCTOR SPACING:- | |
| EARTHWIRE. | |
| 10.98 MM DIA GI WIRE | |

| CONDUCTOR DETAILS OF 400kV SIDE:- | |
|-----------------------------------|------------------------------|
| a) ICT BAY JACK BUS | TWIN MOOSE ACSR (AT 16M) |
| b) GT BAY JACK BUS | TWIN MOOSE ACSR (AT 16-27 M) |
| c) ST BAY JACK BUS | TWIN MOOSE ACSR (AT 16-27 M) |
| d) ICT BAY EQPT BUS | TWIN MOOSE ACSR |
| e) GT BAY EQPT BUS | TWIN MOOSE ACSR |
| f) ST BAY EQPT BUS | TWIN MOOSE ACSR |
| g) FEEDER BAY EQPT BUS | 4" IPS AL. TUBE (AT 8M) |
| h) REACTOR BAY EQPT BUS | TWIN MOOSE ACSR |
| i) DROPPER / JUMPER | QUAD/TWIN MOOSE ACSR |
| NO. OF STRINGS/PHASE:- | |
| a) FOR TENSION | 2 |
| b) FOR SUSPENSION | 1 |
| SUB CONDUCTOR SPACING:- | |
| EARTHWIRE. | |
| 10.98 MM DIA GI WIRE | |



BILL OF QUANTITY FOR 220 KV AIS EQUIPMENTS -

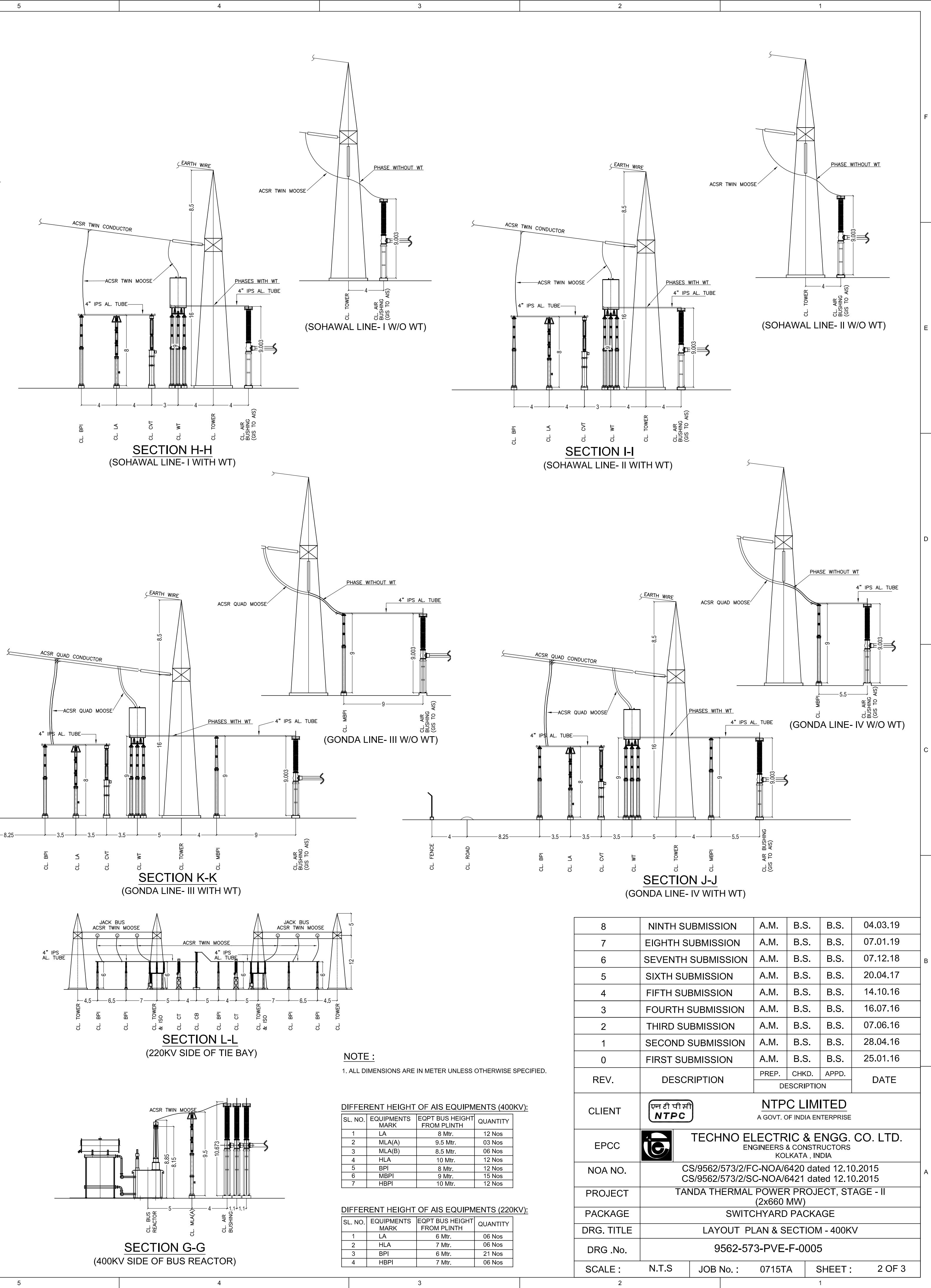
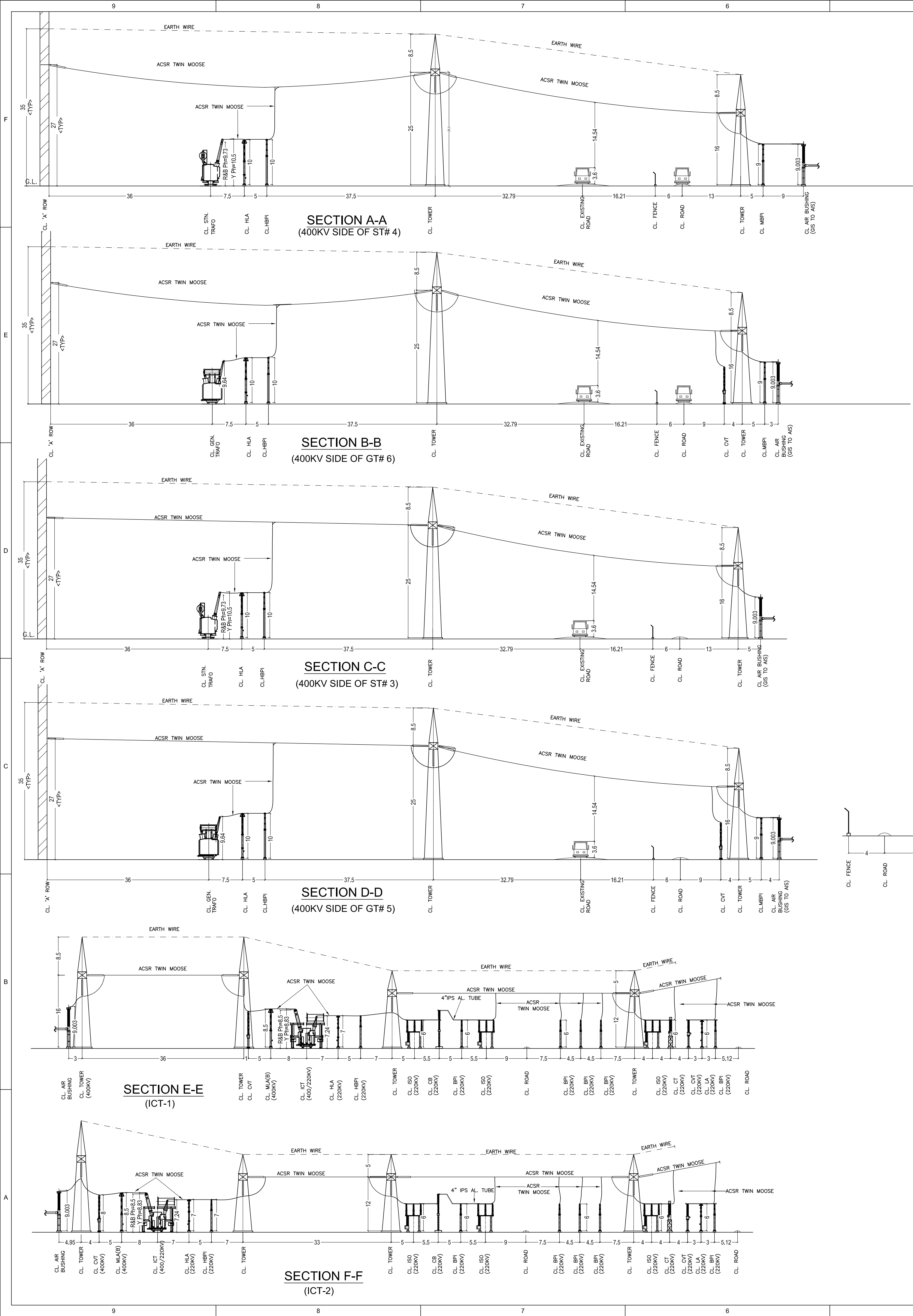
| SL. No. | DESCRIPTION | RATING | SYMBOL | QTY. |
|--------------------------------------|--|--------|--------|---------|
| 220KV AIS EQUIPMENT (40KA FOR 1 SEC) | | | | |
| 1. | SP6 CIRCUIT BREAKER, 3-PHASE | 2500 A | ⊕ | 03 SETS |
| 2. | DBR ISOLATOR WITH 1 E/S, 3-PHASE | 2500 A | ⊕ | 08 SETS |
| 3. | DBR ISOLATOR WITH 2 E/S, 3-PHASE | 2500 A | ⊕ | 00 SETS |
| 4. | CURRENT TRANSFORMER WITH 120% EXTENDED CURRENT RATING, 1-PHASE, 5-CORE | 2500 A | ⊕ | 12 NOS. |
| 5. | CAPACITOR VOLTAGE TRANSFORMER, 1-PH, 3-CORE | 8800pF | ⊕ | 06 NOS. |
| 6. | GAPLESS SURGE ARRESTOR, 1-PHASE | 216 kV | ⊕ | 12 NOS. |
| 7. | BPI | 220 kV | ⊕ | 27 NOS. |

8. LINE SIDE EQUIPMENTS RELEASED FOR ERECTION.

| REV. | DESCRIPTION | PREP. | CHKD. | APPD. | DATE |
|------|--------------------|-------|-------|-------|------------|
| 8 | NINTH SUBMISSION | A.M. | B.S. | B.S. | 04.03.2019 |
| 7 | EIGHTH SUBMISSION | A.M. | B.S. | B.S. | 07.01.2019 |
| 6 | SEVENTH SUBMISSION | A.M. | B.S. | B.S. | 07.12.2018 |
| 5 | SIXTH SUBMISSION | A.M. | B.S. | B.S. | 20.04.2017 |
| 4 | FIFTH SUBMISSION | A.M. | B.S. | B.S. | 14.10.2016 |
| 3 | FOURTH SUBMISSION | A.M. | B.S. | B.S. | 16.07.2016 |
| 2 | THIRD SUBMISSION | A.M. | B.S. | B.S. | 07.06.2016 |
| 1 | SECOND SUBMISSION | A.M. | B.S. | B.S. | 28.04.2016 |
| 0 | FIRST SUBMISSION | A.M. | B.S. | B.S. | 25.01.2016 |

| REV. | DESCRIPTION | PREP. | CHKD. | APPD. | DATE |
|------|--------------------|-------|-------|-------|------------|
| 8 | NINTH SUBMISSION | A.M. | B.S. | B.S. | 04.03.2019 |
| 7 | EIGHTH SUBMISSION | A.M. | B.S. | B.S. | 07.01.2019 |
| 6 | SEVENTH SUBMISSION | A.M. | B.S. | B.S. | 07.12.2018 |
| 5 | SIXTH SUBMISSION | A.M. | B.S. | B.S. | 20.04.2017 |
| 4 | FIFTH SUBMISSION | A.M. | B.S. | B.S. | 14.10.2016 |
| 3 | FOURTH SUBMISSION | A.M. | B.S. | B.S. | 16.07.2016 |
| 2 | THIRD SUBMISSION | A.M. | B.S. | B.S. | 07.06.2016 |
| 1 | SECOND SUBMISSION | A.M. | B.S. | B.S. | 28.04.2016 |
| 0 | FIRST SUBMISSION | A.M. | B.S. | B.S. | 25.01.2016 |

| | |
|------------|---|
| CLIENT |  NTPC LIMITED A GOVT. OF INDIA ENTERPRISE |
| EPCC |  TECHNO ELECTRIC & ENGG. CO. LTD. ENGINEERS & CONSTRUCTORS KOLKATA, INDIA |
| NOA NO. | CS/9562/573/2/FC-NOA/6420 dated 12.10.2015 CS/9562/573/2/SC-NOA/6421 dated 12.10.2015 |
| PROJECT | TANDA THERMAL POWER PROJECT, STAGE - II (2x660 MW) |
| PACKAGE | SWITCHYARD PACKAGE |
| DRG. TITLE | LAYOUT PLAN & SECTION - 400KV |
| DRG. No. | 9562-573-PVE-F-0005 |
| SCALE : | N.T.S |
| JOB No. : | 0715TA |
| SHEET : | 1 OF 3 |

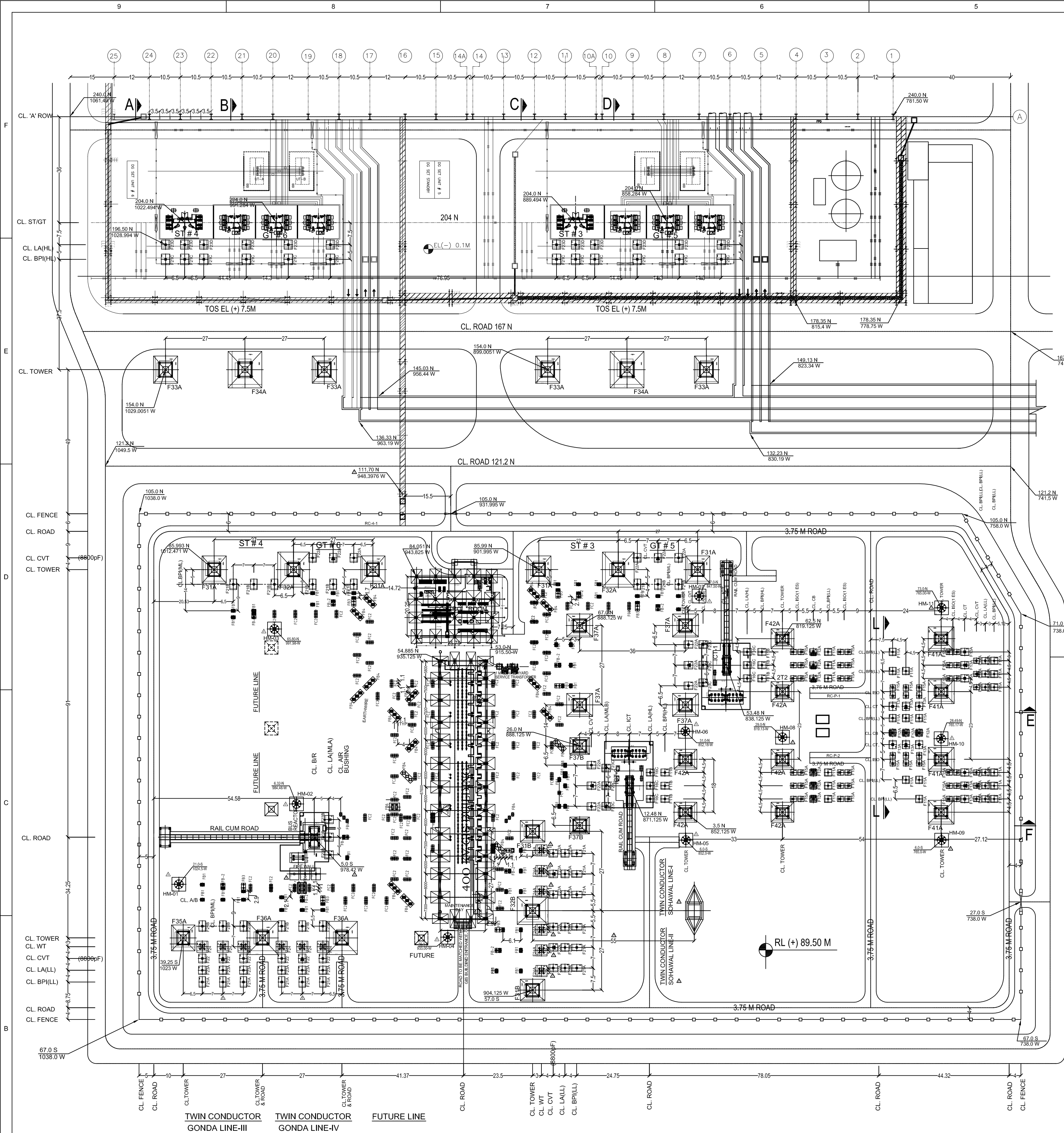


NOTE :
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.

| DIFFERENT HEIGHT OF AIS EQUIPMENTS (400KV): | | | |
|---|-----------------|------------------------------|----------|
| SL. NO. | EQUIPMENTS MARK | EOP'T BUS HEIGHT FROM PLINTH | QUANTITY |
| 1 | LA | 8 Mtr. | 12 Nos. |
| 2 | MLA(A) | 9.5 Mtr. | 03 Nos. |
| 3 | MLA(B) | 8.5 Mtr. | 06 Nos. |
| 4 | HLA | 10 Mtr. | 12 Nos. |
| 5 | BPI | 8 Mtr. | 12 Nos. |
| 6 | MBPI | 9 Mtr. | 15 Nos. |
| 7 | HBPI | 10 Mtr. | 12 Nos. |

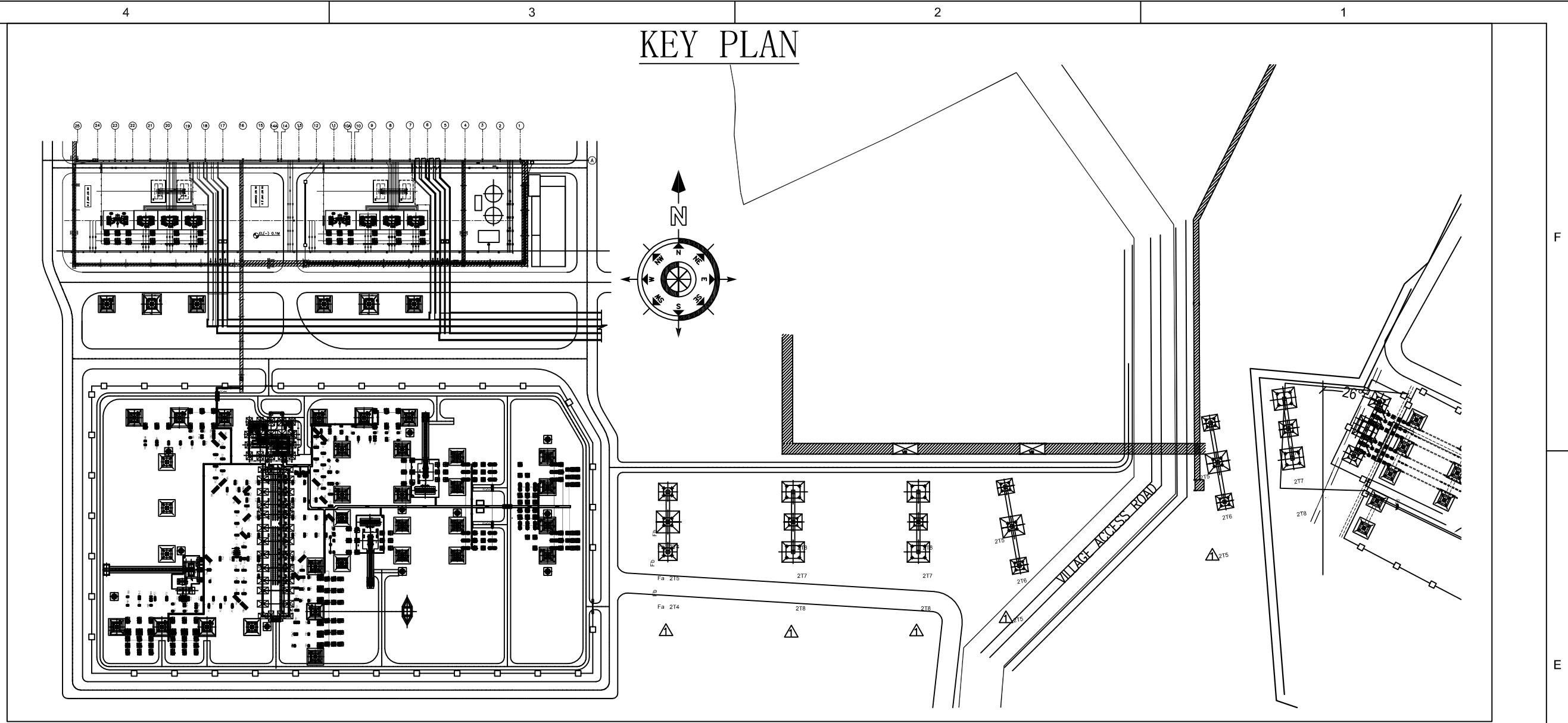
| DIFFERENT HEIGHT OF AIS EQUIPMENTS (220KV): | | | |
|---|-----------------|------------------------------|----------|
| SL. NO. | EQUIPMENTS MARK | EOP'T BUS HEIGHT FROM PLINTH | QUANTITY |
| 1 | LA | 6 Mtr. | 06 Nos. |
| 2 | HLA | 7 Mtr. | 06 Nos. |
| 3 | BPI | 6 Mtr. | 21 Nos. |
| 4 | HBPI | 7 Mtr. | 06 Nos. |

| | | | | | |
|------------|--|-----------|--------|---------|----------|
| 8 | NINTH SUBMISSION | A.M. | B.S. | B.S. | 04.03.19 |
| 7 | EIGHTH SUBMISSION | A.M. | B.S. | B.S. | 07.01.19 |
| 6 | SEVENTH SUBMISSION | A.M. | B.S. | B.S. | 07.12.18 |
| 5 | SIXTH SUBMISSION | A.M. | B.S. | B.S. | 20.04.17 |
| 4 | FIFTH SUBMISSION | A.M. | B.S. | B.S. | 14.10.16 |
| 3 | FOURTH SUBMISSION | A.M. | B.S. | B.S. | 16.07.16 |
| 2 | THIRD SUBMISSION | A.M. | B.S. | B.S. | 07.06.16 |
| 1 | SECOND SUBMISSION | A.M. | B.S. | B.S. | 28.04.16 |
| 0 | FIRST SUBMISSION | A.M. | B.S. | B.S. | 25.01.16 |
| REV. | DESCRIPTION | PREP. | CHKD. | APPD. | DATE |
| CLIENT | NTPC LIMITED A GOVT. OF INDIA ENTERPRISE | | | | |
| EPCC | TECHNO ELECTRIC & ENGG. CO. LTD. ENGINEERS & CONSTRUCTORS KOLKATA, INDIA | | | | |
| NOA NO. | CS/9562/573/2/FC-NOA/6420 dated 12.10.2015 CS/9562/573/2/SC-NOA/6421 dated 12.10.2015 | | | | |
| PROJECT | TANDA THERMAL POWER PROJECT, STAGE - II (2x660 MW) | | | | |
| PACKAGE | SWITCHYARD PACKAGE | | | | |
| DRG. TITLE | LAYOUT PLAN & SECTION - 400KV | | | | |
| DRG. No. | 9562-573-PVE-F-0005 | | | | |
| SCALE : | N.T.S | JOB No. : | 0715TA | SHEET : | 2 OF 3 |



| SIZE OF FOOTING FOR 400kV BUS DUCT | | | | | | |
|------------------------------------|------------|-------------|-----------------------------------|--------------------------------|----------------|---------|
| ITEM | FOUND. MKD | QTY.OF FDN. | FOOTING SIZE "L" x "B" (mm) | DEPTH OF FOUNDATION FROM F.G.L | BOTTOM OF RAFT | REMARKS |
| FC1 | 1 | 1000 x 1000 | 2000 | RL.87.50 (M) | | |
| FC2 | 168 | 1200 x 1000 | 2000 | RL.87.50 (M) | | |
| FB1 | 43 | 1400 x 1050 | 2000 | RL.87.50 (M) | | |
| FB-2 | 10 | 2125 x 1400 | 2000 | RL.87.50 (M) | | |
| FB3 | 8 | 3225 x 1400 | 2000 | RL.87.50 (M) | | |
| FB4 | 18 | 4900 x 1800 | 2000 | RL.87.50 (M) | | |
| FB5 | 2 | 3250 x 1410 | 2000 | RL.87.50 (M) | | |
| FB6 | 2 | 2250 x 2050 | 2000 | RL.87.50 (M) | | |

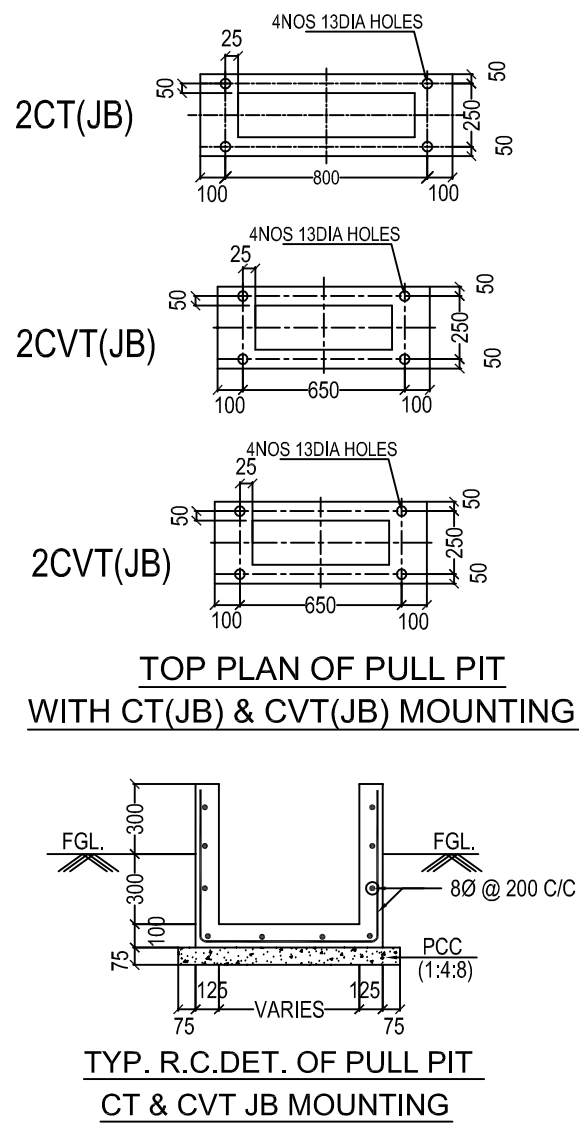
| OTHER FOUNDATIONS | | |
|--|---------------------------------|---------|
| ITEM DESCRIPTION | NTPC DRG. No. | REMARKS |
| BUS REACTOR | 9562-573-PVC-C-0190 (Sh- 1 & 2) | |
| ICT-1 | 9562-573-PVC-C-0188 (Sh- 1 & 3) | |
| ICT-2 | 9562-573-PVC-C-0188 (Sh- 2 & 3) | |
| CONTROL ROOM | 9562-573-PVC-C-0199 (Sh- 1) | |
| 400kV GIS BUILDING- LAYOUT & DETAILS OF FDN & COLUMN PEDESTALS | 9562-573-PVC-C-0118 | |
| 1 MVA SWITCHYARD SERVICE TRANSFORMER | 9562-573-PVC-C-0186 | |



| SIZE OF FOOTING FOR 220kV EQUIPMENT | | | | | | |
|-------------------------------------|------------|-------------|-----------------------------------|--------------------------------|----------------|---------------------------------|
| ITEM | FOUND. MKD | QTY.OF FDN. | FOOTING SIZE "L" x "B" (mm) | DEPTH OF FOUNDATION FROM F.G.L | BOTTOM OF RAFT | REMARKS |
| BPI (LOW LEVEL) | F21A | 12 | 3600 x 2250 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0083 (Sh 1 of 2) |
| BPI (MID LEVEL) | F21B | 15 | 3600 x 2350 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0081 |
| BPI (HIGH LEVEL) | F21C | 12 | 3600 x 2950 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0081 |
| CVT (8800pF/4400pF) | F22A | 24 | 3000 x 2550 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0071 |
| LA (LOW LEVEL) | F23A | 12 | 2830 x 2600 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0077 |
| LA (MID LEVEL 'A') | F23B | 3 | 3050 x 2800 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0077 |
| LA (MID LEVEL 'B') | F23C | 6 | 2950 x 2650 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0077 |
| LA (HIGH LEVEL) | F23D | 12 | 3100 x 2850 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0077 |
| WT (1.0mH) | F24A | 12 | 3800 x 3800 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0085 |

| SIZE OF FOOTING FOR 400kV TOWER | | | | | | |
|---------------------------------|------------|-------------|-----------------------------------|--------------------------------|----------------|--------------------------------|
| ITEM | FOUND. MKD | QTY.OF FDN. | FOOTING SIZE "L" x "B" (mm) | DEPTH OF FOUNDATION FROM F.G.L | BOTTOM OF RAFT | REMARKS |
| 4T1 | F31A | 4 | 9300 x 8250 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-0162 |
| 4T1 s/s | F31B | 2 | 8400 x 7400 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-0162 SLACK SPAN |
| 4T2 | F32A | 2 | 11900 x 10800 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-0164 SLACK SPAN |
| 4T2 s/s | F32B | 1 | 10500 x 9400 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-0164 SLACK SPAN |
| 4T3 | F33A | 4 | 9300 x 8200 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-0166 |
| 4T4 | F34A | 2 | 12400 x 11500 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-0168 |
| 4T5 | F35A | 1 | 8800 x 8000 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-0170 |
| 4T6 | F36A | 2 | 11300 x 10500 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-162A |
| 4T7A | F37A | 4 | 8800 x 7800 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-162B Type - A |
| 4T7B | F37B | 2 | 6700 x 5700 | 3500 | RL.86.00 (M) | 9562-573-PVC-C-162B Type - B |

| SIZE OF FOOTING FOR 220kV TOWER | | | | | | |
|---------------------------------|--|-------------|--------------------------------|-----------------------------------|----------------|---------------------|
| ITEM | INSERT ONE COL. WITH HEADING FOUNDATION MKD. | QTY.OF FDN. | DEPTH OF FOUNDATION FROM F.G.L | FOOTING SIZE "L" x "B" (mm) | BOTTOM OF RAFT | REMARKS |
| 2T1 | F41A | 4 | 3500 | 8800 x 8100 | RL.86.00 (M) | 9562-573-PVC-C-0172 |
| 2T2 | F42A | 6 | 3500 | 7800 x 6800 | RL.86.00 (M) | 9562-573-PVC-C-0174 |

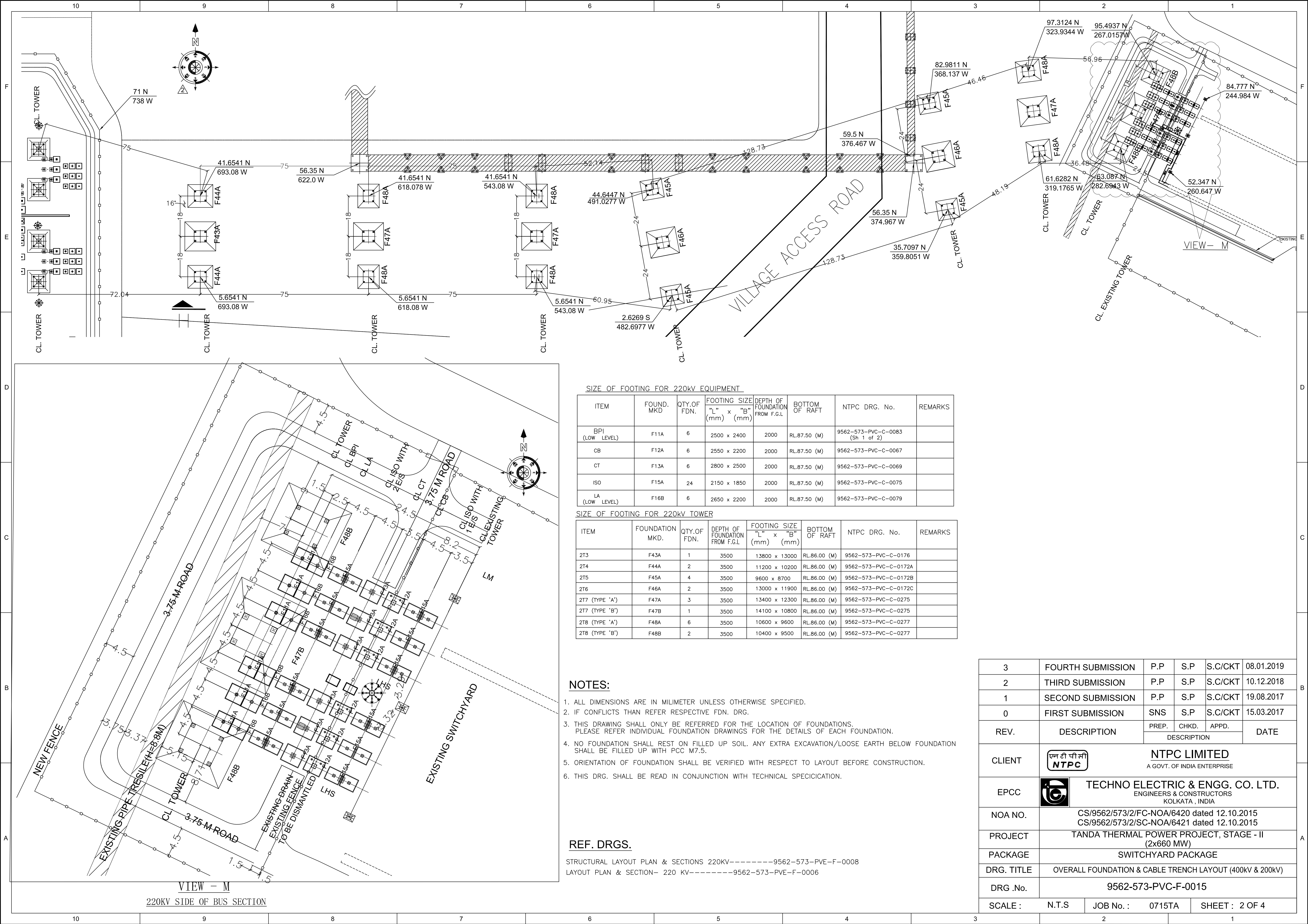


| SIZE OF FOOTING FOR 400kV EQUIPMENT | | | | | | |
|-------------------------------------|------------|-------------|-----------------------------------|--------------------------------|----------------|---------------------|
| ITEM | FOUND. MKD | QTY.OF FDN. | FOOTING SIZE "L" x "B" (mm) | DEPTH OF FOUNDATION FROM F.G.L | BOTTOM OF RAFT | REMARKS |
| BPI (LOW LEVEL) | F21A | 12 | 3600 x 2250 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0081 |
| BPI (MID LEVEL) | F21B | 15 | 3600 x 2350 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0081 |
| BPI (HIGH LEVEL) | F21C | 12 | 3600 x 2950 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0081 |
| CVT (8800pF/4400pF) | F22A | 24 | 3000 x 2550 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0071 |
| LA (LOW LEVEL) | F23A | 12 | 2830 x 2600 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0077 |
| LA (MID LEVEL 'A') | F23B | 3 | 3050 x 2800 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0077 |
| LA (MID LEVEL 'B') | F23C | 6 | 2950 x 2650 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0077 |
| LA (HIGH LEVEL) | F23D | 12 | 3100 x 2850 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0077 |
| WT (1.0mH) | F24A | 12 | 3800 x 3800 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0085 |

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
 - IF CONFLICTS THAN REFER RESPECTIVE FDN. DRG.
 - THIS DRAWING SHALL ONLY BE REFERRED FOR THE LOCATION OF FOUNDATIONS. PLEASE REFER INDIVIDUAL FOUNDATION DRAWINGS FOR THE DETAILS OF EACH FOUNDATION.
 - NO FOUNDATION SHALL REST ON FILLED UP SOIL. ANY EXTRA EXCAVATION/LOOSE EARTH BELOW FOUNDATION SHALL BE FILLED UP WITH PCC M7.5.
 - ORIENTATION OF FOUNDATION SHALL BE VERIFIED WITH RESPECT TO LAYOUT BEFORE CONSTRUCTION.
 - WAVE TRAP FOUNDATION SHALL BE IN ALL THREE PHASES. HOWEVER WAVE TRAP SHALL BE ERRECTED IN TWO PHASES ONLY. BPI SHALL BE ERRECTED IN THIRD PHASE COMPLIANCE.
 - THIS DRG. SHALL BE READ IN CONJUNCTION WITH TECHNICAL SPECIFICATION.
 - THE LOWER FOUNDATIONS 4T3 & 4T4 IN TRANSFORMER YARD IS VERY CLOSE TO CW DUCT. PROPER PLANNING SHALL BE MADE AT SITE FOR EXECUTION SEQUENCE AS BOTTOM OF CW DUCTS ARE BELOW AT LOWER LEVEL THAN TOWER FOUNDATION. PORTION OF FOUNDATION, IF COMING IN CW DUCTS EXCAVATION PROFILE SHALL BE FILLED WITH P.C.C.

- REF. DRGS.**
- STRUCTURAL LAYOUT PLAN & SECTIONS-----9562-573-PVE-F-0007
 - LAYOUT PLAN & SECTION- 400 KV-----9562-573-PVE-F-0005
 - EXISTING CW DUCT LAYOUT-----9562-315-POC-C-2001
 - 400kV GIS BUILDING - DETAILS OF FOUNDATION FOR BUS DUCT ----- 9562-373-PVC-C-0112

| | | | | | |
|------------|--|-----------|--------|---------|------------|
| 4 | FIFTH SUBMISSION | P.P | S.P | S.C/CKT | 08.01.2019 |
| 3 | FOURTH SUBMISSION | P.P | S.P | S.C/CKT | 10.12.2018 |
| 2 | THIRD SUBMISSION | P.P | S.P | S.C/CKT | 19.08.2017 |
| 1 | SECOND SUBMISSION | SNS | S.P | S.C/CKT | 16.02.2017 |
| 0 | FIRST SUBMISSION | P.P | S.P | S.C | 13.09.2016 |
| REV. | DESCRIPTION | PREP. | CHKD. | APPD. | DATE |
| CLIENT | NTPC LIMITED A GOVT. OF INDIA ENTERPRISE | | | | |
| EPCC | TECHNO ELECTRIC & ENGG. CO. LTD. ENGINEERS & CONSTRUCTORS KOLKATA , INDIA | | | | |
| NOA NO. | CS/9562/573/2/FC-NOA/6420 dated 12.10.2015 CS/9562/573/2/SC-NOA/6421 dated 12.10.2015 | | | | |
| PROJECT | TANDA THERMAL POWER PROJECT, STAGE - II (2x660 MW) | | | | |
| PACKAGE | SWITCHYARD PACKAGE | | | | |
| DRG. TITLE | OVERALL FOUNDATION & CABLE TRENCH LAYOUT (400kV & 200kV) | | | | |
| DRG. No. | 9562-573-PVC-F-0015 | | | | |
| SCALE : | N.T.S | JOB No. : | 0715TA | SHEET : | 1 OF 4 |



SIZE OF FOOTING FOR 220kV EQUIPMENT

| ITEM | FOUND. MKD | QTY.OF FDN. | FOOTING SIZE "L" x "B" (mm) | DEPTH OF FOUNDATION FROM F.G.L | BOTTOM OF RAFT | NTPC DRG. No. | REMARKS |
|-----------------|------------|-------------|-----------------------------|--------------------------------|----------------|---------------------------------|---------|
| BPI (LOW LEVEL) | F11A | 6 | 2500 x 2400 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0083 (Sh 1 of 2) | |
| CB | F12A | 6 | 2550 x 2200 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0067 | |
| CT | F13A | 6 | 2800 x 2500 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0069 | |
| ISO | F15A | 24 | 2150 x 1850 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0075 | |
| LA (LOW LEVEL) | F16B | 6 | 2650 x 2200 | 2000 | RL.87.50 (M) | 9562-573-PVC-C-0079 | |

SIZE OF FOOTING FOR 220kV TOWER

| ITEM | FOUNDATION MKD. | QTY.OF FDN. | DEPTH OF FOUNDATION FROM F.G.L | FOOTING SIZE "L" x "B" (mm) | BOTTOM OF RAFT | NTPC DRG. No. | REMARKS |
|----------------|-----------------|-------------|--------------------------------|-----------------------------|----------------|----------------------|---------|
| 2T3 | F43A | 1 | 3500 | 13800 x 13000 | RL.86.00 (M) | 9562-573-PVC-C-0176 | |
| 2T4 | F44A | 2 | 3500 | 11200 x 10200 | RL.86.00 (M) | 9562-573-PVC-C-0172A | |
| 2T5 | F45A | 4 | 3500 | 9600 x 8700 | RL.86.00 (M) | 9562-573-PVC-C-0172B | |
| 2T6 | F46A | 2 | 3500 | 13000 x 11900 | RL.86.00 (M) | 9562-573-PVC-C-0172C | |
| 2T7 (TYPE 'A') | F47A | 3 | 3500 | 13400 x 12300 | RL.86.00 (M) | 9562-573-PVC-C-0275 | |
| 2T7 (TYPE 'B') | F47B | 1 | 3500 | 14100 x 10800 | RL.86.00 (M) | 9562-573-PVC-C-0275 | |
| 2T8 (TYPE 'A') | F48A | 6 | 3500 | 10600 x 9600 | RL.86.00 (M) | 9562-573-PVC-C-0277 | |
| 2T8 (TYPE 'B') | F48B | 2 | 3500 | 10400 x 9500 | RL.86.00 (M) | 9562-573-PVC-C-0277 | |

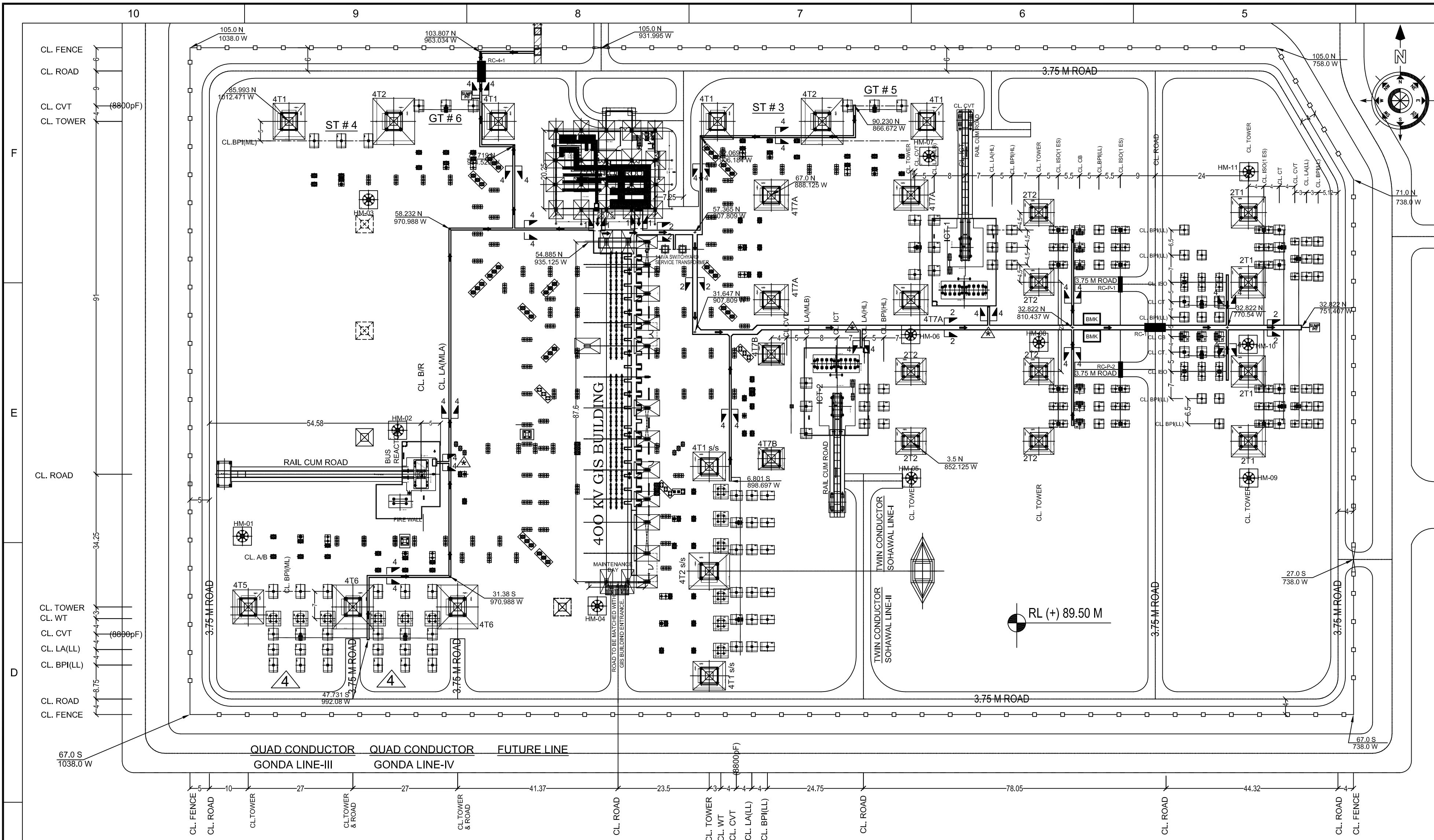
NOTES:

- ALL DIMENSIONS ARE IN MILIMETER UNLESS OTHERWISE SPECIFIED.
- IF CONFLICTS THAN REFER RESPECTIVE FDN. DRG.
- THIS DRAWING SHALL ONLY BE REFERRED FOR THE LOCATION OF FOUNDATIONS. PLEASE REFER INDIVIDUAL FOUNDATION DRAWINGS FOR THE DETAILS OF EACH FOUNDATION.
- NO FOUNDATION SHALL REST ON FILLED UP SOIL. ANY EXTRA EXCAVATION/LOOSE EARTH BELOW FOUNDATION SHALL BE FILLED UP WITH PCC M7.5.
- ORIENTATION OF FOUNDATION SHALL BE VERIFIED WITH RESPECT TO LAYOUT BEFORE CONSTRUCTION.
- THIS DRG. SHALL BE READ IN CONJUNCTION WITH TECHNICAL SPECIFICATION.

REF. DRGS.

STRUCTURAL LAYOUT PLAN & SECTIONS 220KV-----9562-573-PVE-F-0008
LAYOUT PLAN & SECTION- 220 KV-----9562-573-PVE-F-0006

| | | | | | |
|------------|---|-----------|--------|----------------|------------|
| 3 | FOURTH SUBMISSION | P.P | S.P | S.C/CKT | 08.01.2019 |
| 2 | THIRD SUBMISSION | P.P | S.P | S.C/CKT | 10.12.2018 |
| 1 | SECOND SUBMISSION | P.P | S.P | S.C/CKT | 19.08.2017 |
| 0 | FIRST SUBMISSION | SNS | S.P | S.C/CKT | 15.03.2017 |
| REV. | DESCRIPTION | PREP. | CHKD. | APPD. | DATE |
| CLIENT | <div><div>एन टी पी सी</div><div>NTPC</div><div>NTPC LIMITED</div><div>A GOVT. OF INDIA ENTERPRISE</div></div> | | | | |
| EPCC | <div><div>TECHNO ELECTRIC & ENGG. CO. LTD.</div><div>ENGINEERS & CONSTRUCTORS</div><div>KOLKATA , INDIA</div></div> | | | | |
| NOA NO. | CS/9562/573/2/FC-NOA/6420 dated 12.10.2015 CS/9562/573/2/SC-NOA/6421 dated 12.10.2015 | | | | |
| PROJECT | TANDA THERMAL POWER PROJECT, STAGE - II (2x660 MW) | | | | |
| PACKAGE | SWITCHYARD PACKAGE | | | | |
| DRG. TITLE | OVERALL FOUNDATION & CABLE TRENCH LAYOUT (400kV & 200kV) | | | | |
| DRG .No. | 9562-573-PVC-F-0015 | | | | |
| SCALE : | N.T.S | JOB No. : | 0715TA | SHEET : 2 OF 4 | |



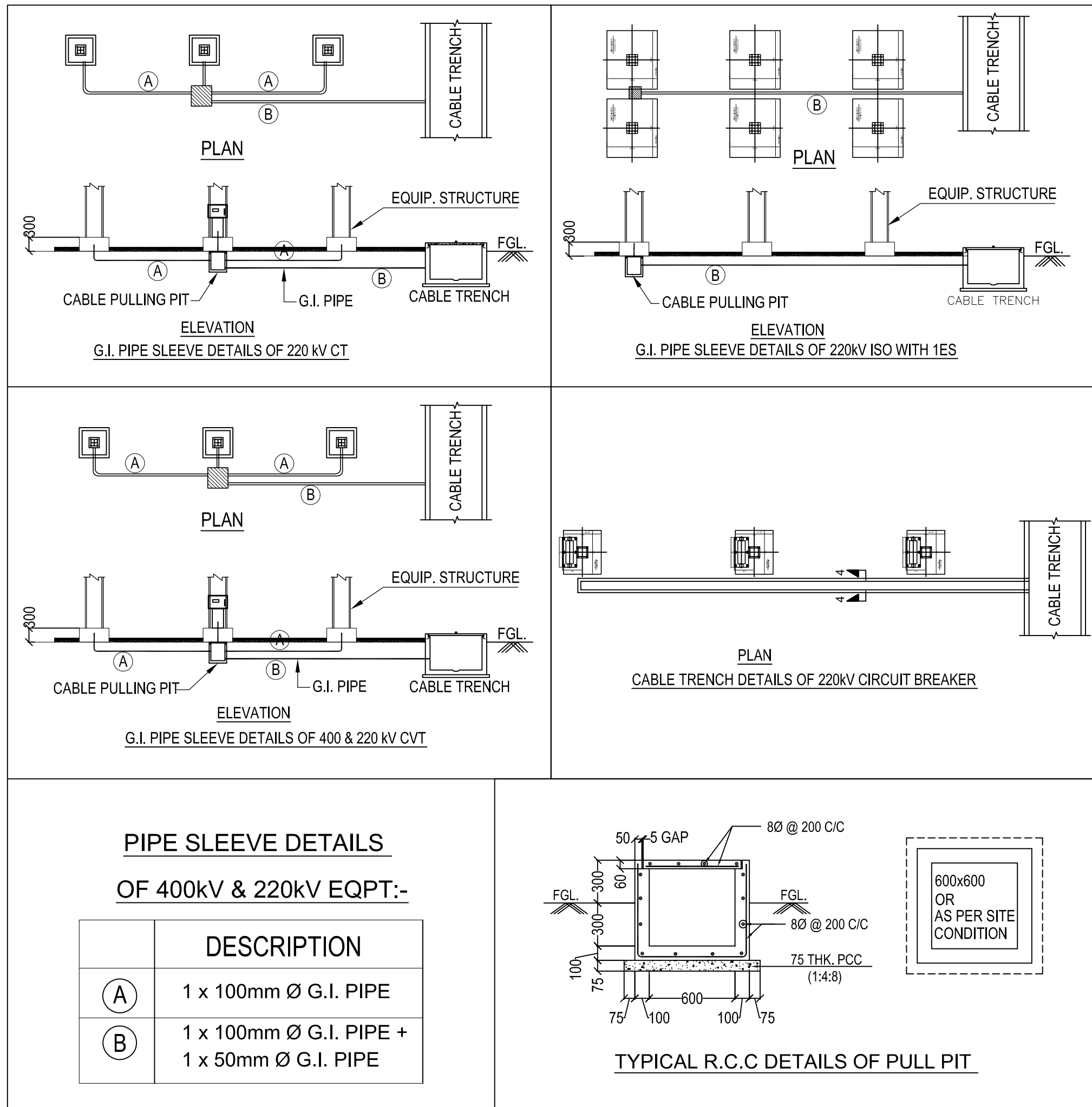
NOTES:-

1. ALL DIMENSIONS ARE IN METER. UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING SHALL BE REFERRED FOR CABLE TRENCH ONLY. ALL REFERRED SECTION DETAILS & OTHER DETAILS PERTAINING TO CIVIL WORK SHALL BE AS PER RESPECTIVE CIVIL DESIGN/DRAWING.
3. TRENCH SHALL BE AS CLOSE AS POSSIBLE TO EQUIPMENT FOUNDATION BUT A MINIMUM 100mm GAP TO BE MAINTAINED.
4. MINOR MODIFICATION CAN BE MADE AT SITE TO SUIT ACTUAL SITE CONDITION IN CONSULTATION WITH SITE ENGINEER.
5. DETAILS OF CONCRETE ENCASED PVC CONDUIT FOR CABLE TRENCH CROSSING ROAD REFER DRG. NO. 9562-573-PVC-F-0022
6. THE TRENCHES LOCATED WITHIN SWITCHYARD SHALL PROJECT AT LEAST 300mm ABOVE THE FINISHED FORMATION LEVEL. SO THAT NO STORM WATER SHALL ENTER INTO THE TRENCH
7. A SLOPE OF 1:500 IS TO BE PROVIDED ALONG THE RUN OF THE CABLE TRENCH & SLOPE OF 1:250 PERPENDICULAR TO RUN OF TRENCH FOR DRAINAGE AS PER SPECIFICATION.
8. NECESSARY OPENINGS (USING GI/PVC PIPE SLEEVES) SHALL BE PROVIDED IN TRENCHES TO TAKE OUT CABLES AT APPROPRIATE LOCATION. OPENING SHALL BE SEALED PROPERLY TO AVOID INGRESS OF SUBSOIL WATER INTO THE TRENCH.
9. LOCATION OF ENTRY POINT OF MAIN TRENCH FROM OUTDOOR YARD TO CONTROL ROOM BUILDING SHALL BE AS PER DETAILS OF CONTROL ROOM BUILDINGS.
10. OPENING FOR FUTURE CABLE TRENCHES TO BE BLOCKED WITH BRICK WORK OF 230mm THICK & PLASTER AS PER TECHNICAL SPECIFICATION.
11. CABLES INSIDE THE SWITCHYARD SHALL BE LAID ON G.I. ANGLES SUPPORT AT 600mm SPACING WITH SEPARATE TIERS FOR CONTROL & POWER CABLE.
12. FOR DETAILS OF SUMP PIT FOR CABLE TRENCHES REFER DRAWING NO. 9562-573-PVC-F-0021.
13. G.I. PIPE TO BE PROVIDED FROM TRENCH TO EQPT. FOR EQPT. LOCATED AWAY FROM TRENCH. HOWEVER FOR EQPT. LOCATED NEARER TO THE TRENCH NOTCH/OPENING SHALL BE PROVIDED.
14. G.I. PIPES FOR EQUIPMENT SHALL BE BURIED IN THE GROUND AT A DEPTH OF 300mm.
15. G.I. PIPES FOR CT & CVT EQUIPMENT SHALL BE EXTENDED TILL RESPECTIVE EQPT. JUNCTION BOXES.
16. OUTDOOR CABLE TRENCH SECTION DETAILS REFER DRAWING NO. 9562-573-PVC-F-0020.
17. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH TECHNICAL SPECIFICATION.
18. CABLE TRENCH FOR ICT & REACTOR MB HAS BEEN SHOWN IN TENTATIVE POSITION. TRENCH SHALL BE FINALIZE AS PER ACTUAL LOCATION OF MB'S WITH CONSULTANT OF SITE INCHARGE OF NTPC.

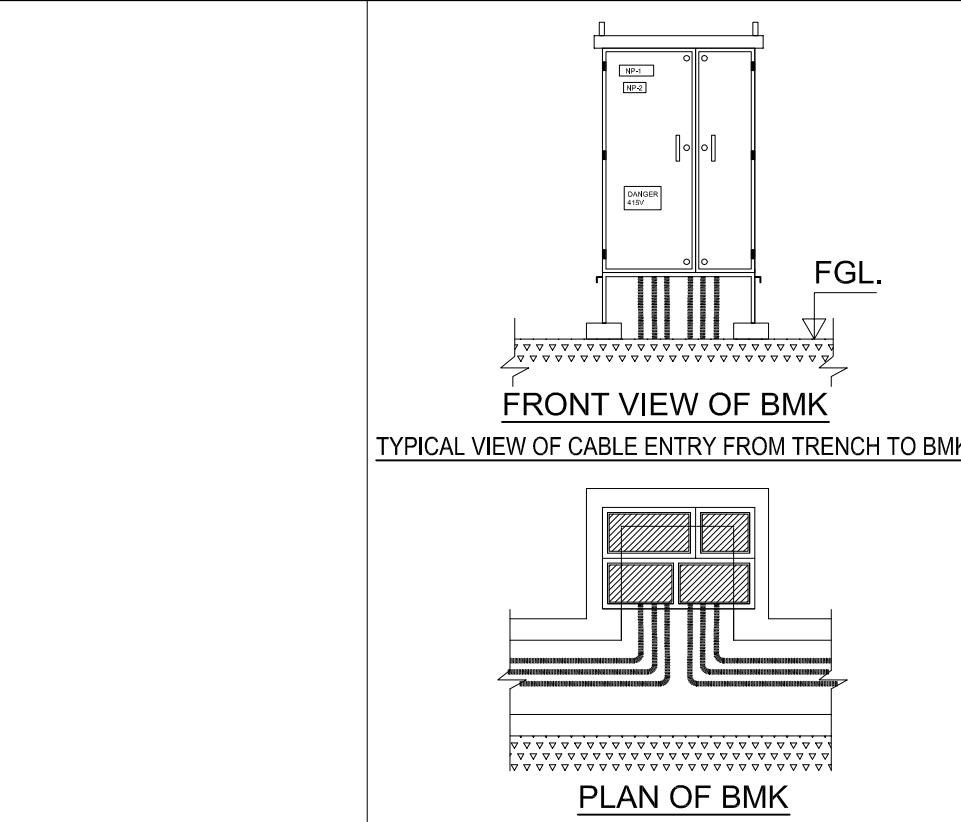
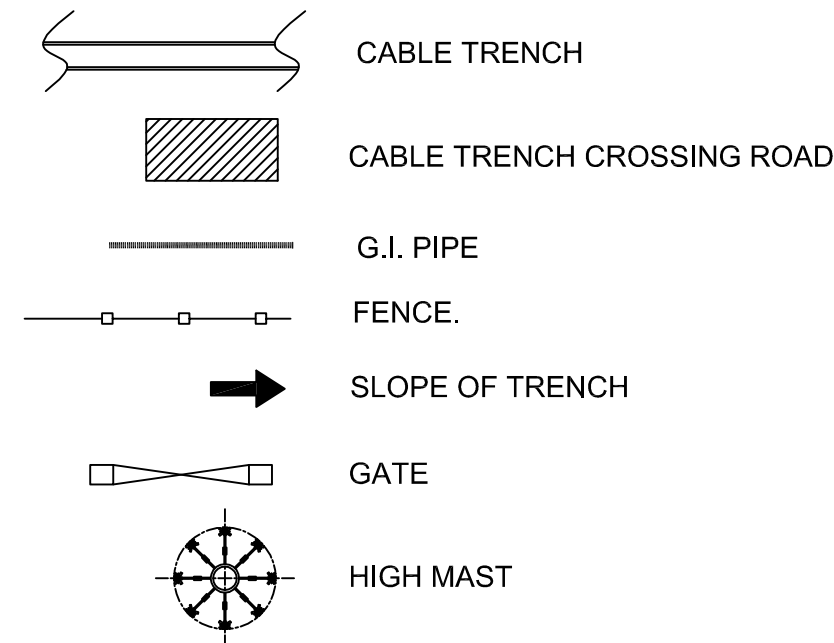
TABLE OF RUNNING LENGTH:



| S.NO. | DESCRIPTION | LENGTH (FOR INFORMATION ONLY) |
|-------|--------------------|----------------------------------|
| 1 | 100 MM Ø G.I. PIPE | 750 MTR. |
| 2 | 50 MM Ø G.I. PIPE | 500 MTR. |
| 3 | TRENCH SECTION 1-1 | 15 MTR. |
| 4 | TRENCH SECTION 2-2 | 230 MTR. |
| 5 | TRENCH SECTION 4-4 | 450 MTR. |

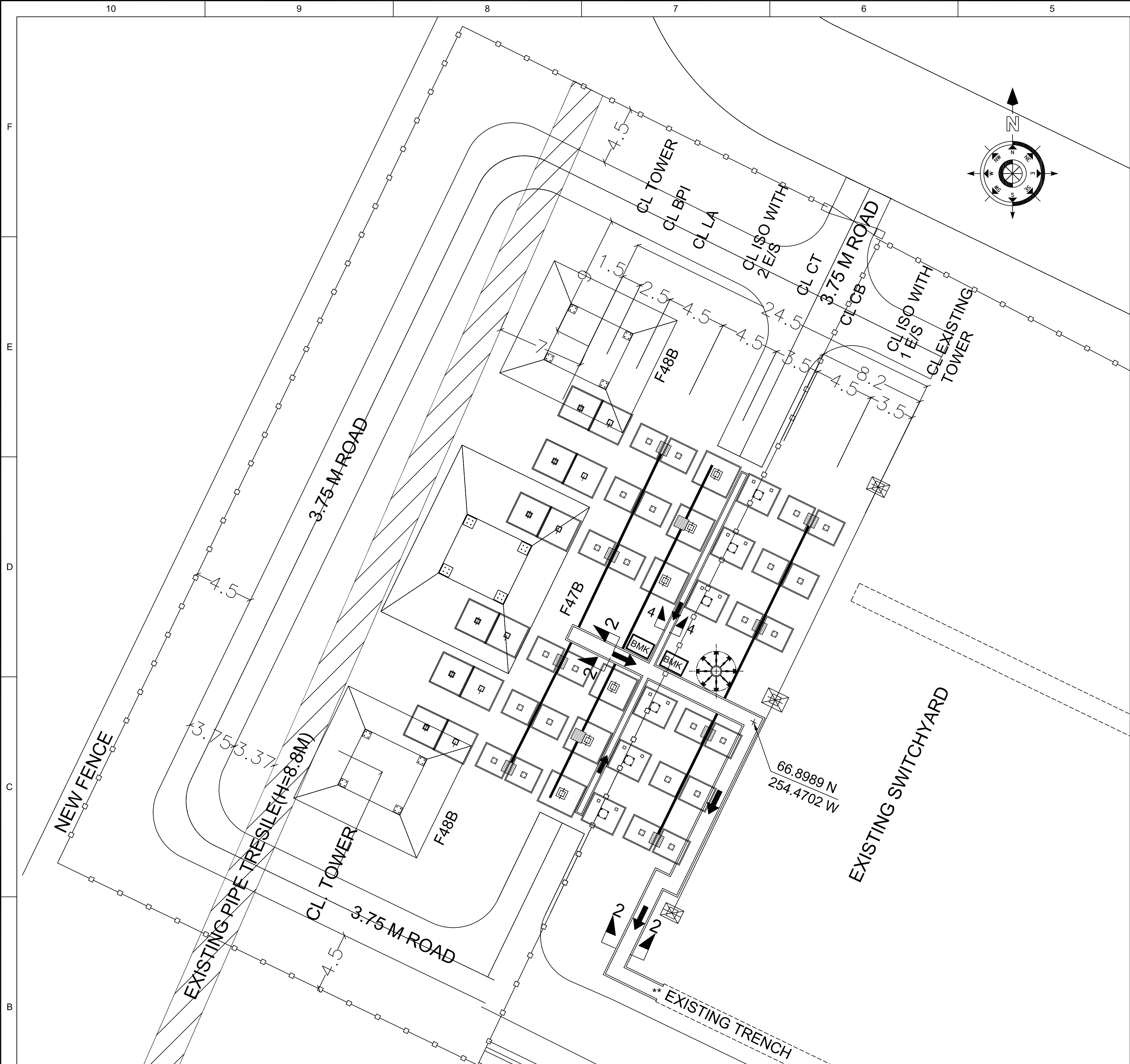
DETAILS OF G.I. PIPE / TRENCH FOR EQUIPMENTS :-



LEGENDS:



| | | | | | |
|------------|--|---|--------|---------|------------|
| 4 | FIFTH SUBMISSION | D.S | A.M | B.S | 08.01.2019 |
| 3 | FOURTH SUBMISSION | D.S | A.M | B.S | 10.12.2018 |
| 2 | THIRD SUBMISSION | D.S | A.M | B.S | 07.08.2017 |
| 1 | SECOND SUBMISSION | D.S | A.M | B.S | 16.02.2017 |
| 0 | FIRST SUBMISSION | D.S | A.M | B.S | 13.09.2016 |
| REV. | DESCRIPTION | PREP. | CHKD. | APPD. | DATE |
| | | DESCRIPTION | | | |
| CLIENT |  | NTPC LIMITED A GOVT. OF INDIA ENTERPRISE | | | |
| EPCC |  | TECHNO ELECTRIC & ENGG. CO. LTD. ENGINEERS & CONSTRUCTORS KOLKATA , INDIA | | | |
| NOA NO. | CS/9562/573/2/FC-NOA/6420 dated 12.10.2015 CS/9562/573/2/SC-NOA/6421 dated 12.10.2015 | | | | |
| PROJECT | TANDA THERMAL POWER PROJECT, STAGE - II (2x660 MW) | | | | |
| PACKAGE | SWITCHYARD PACKAGE | | | | |
| DRG. TITLE | OVERALL FOUNDATION & CABLE TRENCH LAYOUT (400kV & 200kV) | | | | |
| DRG .No. | 9562-573-PVC-F-0015 | | | | |
| SCALE : | N.T.S | JOB No. : | 0715TA | SHEET : | 3 OF 4 |



220KV SIDE OF BUS SECTION

TABLE OF RUNNING LENGTH:

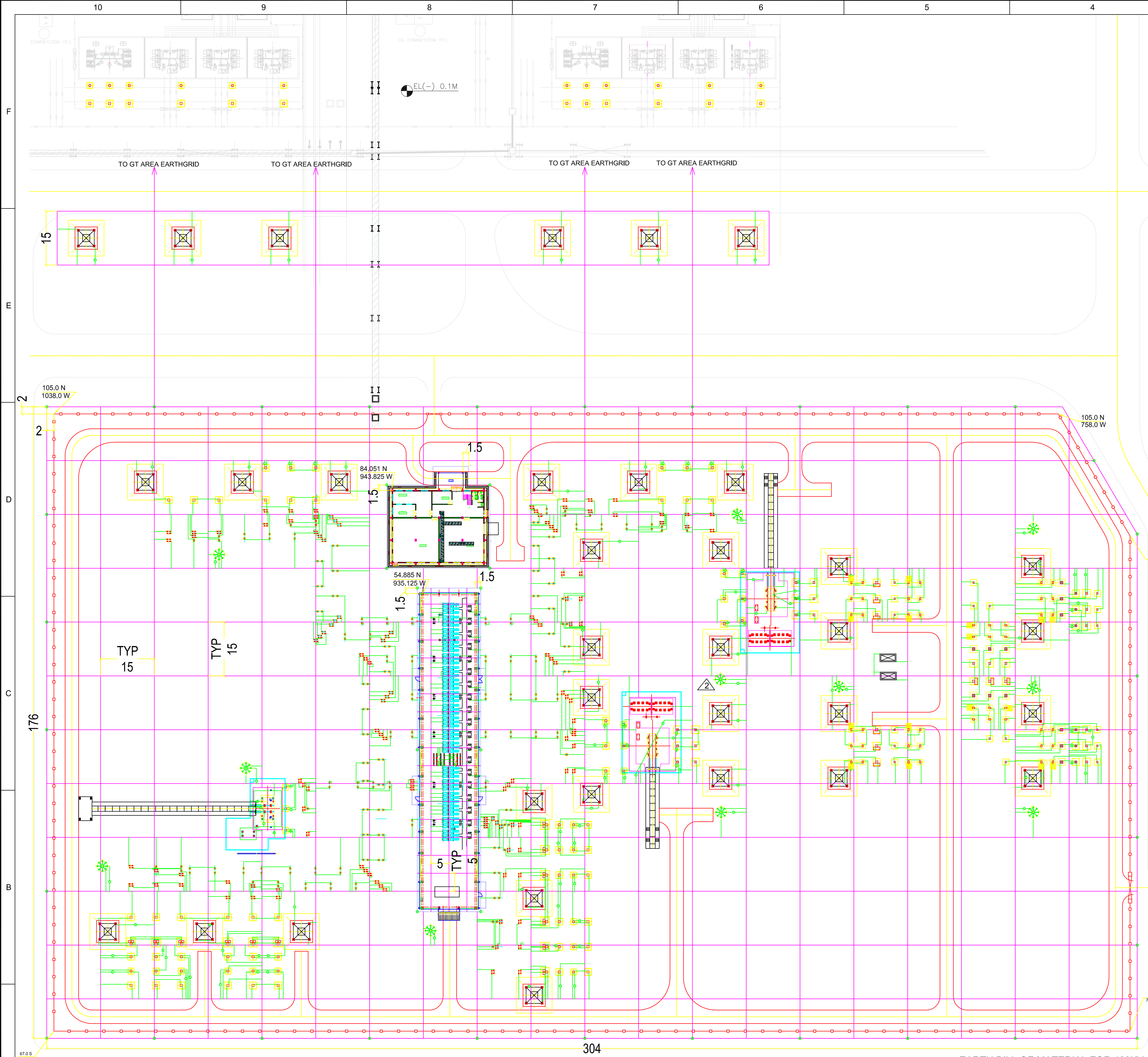
| S.NO. | DESCRIPTION | LENGTH (FOR INFORMATION ONLY) |
|-------|--------------------|----------------------------------|
| 1 | 100 MM Ø G.I. PIPE | 250 MTR. |
| 2 | 50 MM Ø G.I. PIPE | 200 MTR. |
| 3 | TRENCH SECTION 2-2 | 50 MTR. |
| 4 | TRENCH SECTION 4-4 | 30 MTR. |

NOTE:-
 ** THE INVERT LEVEL OF THE EXISTING CABLE TRENCH IS RL. (+) 87.55M.
 THE INVERT LEVEL OF THE PRESENT CABLE TRENCH IS RL. (+) 88.79M. HENCE OK.

LEGENDS:

- CABLE TRENCH
- G.I. PIPE
- FENCE.
- SLOPE OF TRENCH
- GATE
- HIGH MAST

| | | | | | |
|------------|--|-----------|--------|----------------|------------|
| 3 | FOURTH SUBMISSION | D.S | A.M | B.S | 08.01.2019 |
| 2 | THIRD SUBMISSION | D.S | A.M | B.S | 10.12.2018 |
| 1 | SECOND SUBMISSION | D.S | A.M | B.S | 07.08.2017 |
| 0 | FIRST SUBMISSION | SNS | S.P | S.C/CKT | 15.03.2017 |
| REV. | DESCRIPTION | PREP. | CHKD. | APPD. | DATE |
| CLIENT | <div><div><div>एन टी पी सी</div><div>NTPC</div></div><div><div>NTPC LIMITED</div><div>A GOVT. OF INDIA ENTERPRISE</div></div></div> | | | | |
| EPCC | <div><div><div></div></div><div><div>TECHNO ELECTRIC & ENGG. CO. LTD.</div><div>ENGINEERS & CONSTRUCTORS</div><div>KOLKATA , INDIA</div></div></div> | | | | |
| NOA NO. | CS/9562/573/2/FC-NOA/6420 dated 12.10.2015 CS/9562/573/2/SC-NOA/6421 dated 12.10.2015 | | | | |
| PROJECT | TANDA THERMAL POWER PROJECT, STAGE - II (2x660 MW) | | | | |
| PACKAGE | SWITCHYARD PACKAGE | | | | |
| DRG. TITLE | OVERALL FOUNDATION & CABLE TRENCH LAYOUT (400kV & 200kV) | | | | |
| DRG .No. | 9562-573-PVC-F-0015 | | | | |
| SCALE : | N.T.S | JOB No. : | 0715TA | SHEET : 4 OF 4 | |



| SL. NO. | DESCRIPTION | TOTAL QTY SWITCHYARD GRID (NOS.) | TOTAL QTY GT/ST AREA GRID (NOS.) |
|------------------------------------|---|----------------------------------|----------------------------------|
| MS ROD EARTH ELECTRODE | | | |
| 1 | LA (ROD ELECTRODE) | 33 | 12 |
| 2 | CVT (ROD ELECTRODE) | 30 | 0 |
| 3 | HIGH MAST (ROD ELECTRODE) | 11 | 0 |
| 4 | TOWERS WITH PEAK (ROD ELECTRODE) | 28 | 6 |
| 5 | FENCE CORNERS (ROD ELECTRODE) | 30 | 0 |
| 6 | CONTROL ROOM (ROD ELECTRODE) | 4 | 0 |
| 7 | GIS ROOM (ROD ELECTRODE) | 6 | 0 |
| 8 | REACTOR BODY EARTHING (ROD ELECTRODE) | 2 | 0 |
| 9 | SWITCHYARD SERVICE TRAFO. BODY EARTHING (ROD ELECTRODE) | 4 | 0 |
| 10 | ICT BODY EARTHING (ROD ELECTRODE) | 4 | 0 |
| PIPE EARTH ELECTRODE | | | |
| 11 | REACTOR NEUTRAL | 2 | 0 |
| 12 | SWITCHYARD SERVICE TRAFO NEUTRAL | 4 | 0 |
| 13 | ICT NEUTRAL | 4 | 0 |
| TOTAL | | 152 | 18 |
| ROD (3M LONG, 40mm DIA) ELECTRODE | | | |
| PIPE (3M LONG, 40mm DIA) ELECTRODE | | 10 | 0 |

- ADDITIONAL NOTES:**
- EARTHMAT WILL BE LAID UP TO 2000mm OUTSIDE THE FENCE.
 - CABLE TRENCH EARTHING WILL BE DONE WITH 75x12mm GS FLAT AND RUN ALONG THE CABLE SUPPORTING STRUCTURE. EARTHMAT OF CABLE TRENCH WILL BE CONNECTED TO THE MAIN EARTHING GRID AT 30M INTERVAL.
 - FENCE WILL BE EARTHED AT EVERY POST.
 - EARTH CONDUCTOR CONNECTION ABOVE GROUND SHALL BE GENERALLY MADE BY ELECTRIC ARC WELDING. RESISTANCE OF ARC SHALL NOT BE MORE THAN THE EQUIPMENT LENGTH OF THE CONDUCTOR.
 - ALL EQUIPMENT SHALL BE EARTHED AT TWO POINTS WITH 75x12mm GS FLAT. FOR THIS ONE DIRECT RISER WILL BE CONNECTED TO EARTHMAT. ONE EARTHING ELECTRODE SHALL BE PROVIDED FOR EACH LA, CVT, TOWER WITH PEAK/LM IN THIS DIRECT RISER. SECOND EARTHING SHOULD BE DONE BY USING STRUCTURE BODY AT EARTHING CONDUCTOR BY CONNECTING STRUCTURE AT TOP WITH EQUIPMENT AND BOTTOM WITH EARTHMAT, PRACTICE IS ADOPTED AS PER IS:3043 CODE OF EARTHING PRACTICES. RISER SHALL BE PROVIDED AT DIAGONALLY OPPOSITE CORNER OF THE EQUIPMENT THROUGH EXTENDED EARTHMAT BELOW GROUND. THIS RISER SHOULD BE PROVIDED CLOSE TO THE EQUIPMENT STRUCTURE.
 - SWITCHYARD EARTHMAT SHALL BE CONNECTED TO GT AREA EARTHING SYSTEM AS INDICATED IN THE DRAWING.
 - LA AND BPI IN GT/ST AREA TO BE CONNECTED TO NEAREST EARTHGRID AS PER EQUIPMENT EARTHING PHILOSOPHY.

- GENERAL NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
 - THIS MAIN EARTH GRID LAYOUT IS BASED ON EARTHING DESIGN CALCULATION DOC. NO. : 9562-573-PVE-U-0029
 - SIZE OF MAIN EARTHMAT CONDUCTOR IS 40 DIA MS ROD & SPACING OF MAIN EARTHMAT IS 15 MTRS AND DEPTH OF MAIN EARTHMAT IS 600mm BELOW THE F.C.L.
 - SURFACE DETAIL: CRUSHED ROCK LAYER OF 150mm. THICK FROM FGL. WILL BE PROVIDED AS PER TECHNICAL SPECIFICATION AREA TO BE GRAVEL SHALL BE MARKED IN THE GRAVEL LAYOUT SEPARATELY.
 - 40mm. DIA. 3 M LONG ROD ELECTRODE AS PER APPD. DRG. SHALL BE PROVIDED IN EARTH PIT FOR TRANSFORMER, LA, LM, PEAK TOWER, REACTOR, CVT & FENCE.
 - EARTHING CONDUCTOR RUNNING BELOW CABLE TRENCH, DRAINS, ROADS & RAIL WILL BE LAID 300mm BELOW THE BOTTOM OF ABOVE SAID ITEMS.
 - THIS DRG. IS ONLY SYMBOLIC REPRESENTATION OF EARTHING CONDUCTOR LAYOUT. AT ACTUAL SITE CONDITION CONDUCTOR WILL BE ROUTED IN SUCH A MANNER SO THAT IT DOES NOT HINDER WITH ANY FOUNDATION.
 - ALL EARTHING SHALL BE DONE IN ACCORDANCE WITH IS:3043 UNLESS OTHERWISE STATED IN THE TECHNICAL SPECIFICATION.
 - EARTHING CONDUCTORS AROUND CONTROL ROOM AND GIS BUILDING WILL BE LAID AT A MINIMUM DISTANCE OF 1.5 M FROM OUTER BOUNDARY OF THE BUILDING.
 - FOR EQUIPMENT & STRUCTURE EARTHING DETAILS REFER DOC. NO. : 9562-573-PVE-F-0013
 - INSIDE THE GIS ROOM EARTHMAT TO BE LAID AT 5 MTR GRID SPACING FOR BETTER CONNECTIVITY BETWEEN GIS MODULE AND EQUIPMENTS.
 - 1500x1500mm AUXILIARY EARTHMAT COMPRISE OF 40mm DIA MS RODS SPACED AT 300x300mm SHALL BE PROVIDED AT THE DEPTH OF 300mm FROM GROUND LEVEL BELOW OPERATING HANDLES OF MOM/BOOM BOX OF THE ISOLATOR. THIS WILL BE DONE AS PER LOCATION OF EDM/MOM AT SITE.
 - EARTHING CONNECTIONS TO EQUIPMENT EARTHING SHALL BE OF BOLTED TYPE.
 - ALL WELDED JOINTS SHALL BE TREATED WITH RED LEAD AND THEREAFTER THICKLY COATED WITH BITUMEN COMPOUND TO PREVENT CORROSION.
 - ALL GROUND CONNECTIONS SHALL BE MADE BY ELECTRIC ARC WELDING & FOR WELDED JOINTS LOW HYDROGEN CONTENT ELECTRODES SHALL BE USED. BENDING OF CONDUCTOR WHEREVER NECESSARY SHALL BE DONE BY GAS HEATING.
 - ALL ELECTRICAL EQUIPMENT & OTHER NON-CURRENT CARRYING METAL PARTS SHALL BE CONNECTED TO THE MAIN PLANT EARTHING SYSTEM.
 - THE CONNECTION OF SWITCHYARD EARTH-MAT TO POWER PLANT EARTHING IS UNDER 'SWITCHYARD PACKAGE' VENDOR'S SCOPE AND CONNECTION WOULD BE MADE SUITING THE SITE CONDITIONS.
 - ALL THE I BEAM / COLUMN OF GIS BUILDING TO BE CONNECTED WITH MAIN MAT BY 75 x 12 MM GS FLAT.
 - RAIL TRACK WITHIN SWITCHYARD SHALL BE BONDED ACROSS THE FISH PLATES AND CONNECTED TO EARTHGRID AS PER EARTHING DETAILS IN DOC. NO 9562-573-PVE-F-0013

- REF DRG:**
- Earthing Design Calculation - 9562-573-PVE-U-0029-02
 - Equipment Earthing Philosophy & Details - 9562-573-PVE-F-0013
 - Layout Plan & Section - 400kv - 9562-573-PVE-F-0005
 - Overall Foundation & Cable Trench Layout (400 kV and 220 kV) - 9562-573-PVC-F-0015
 - Foundation plan and loads of equipments For GIS in Building - 9562-573-PVC-C-0134
 - Foundation plans for bus duct of GIS - 9562-573-PVE-U-0135

EARTH BILL OF MATERIAL FOR 400KV SWITCHYARD.

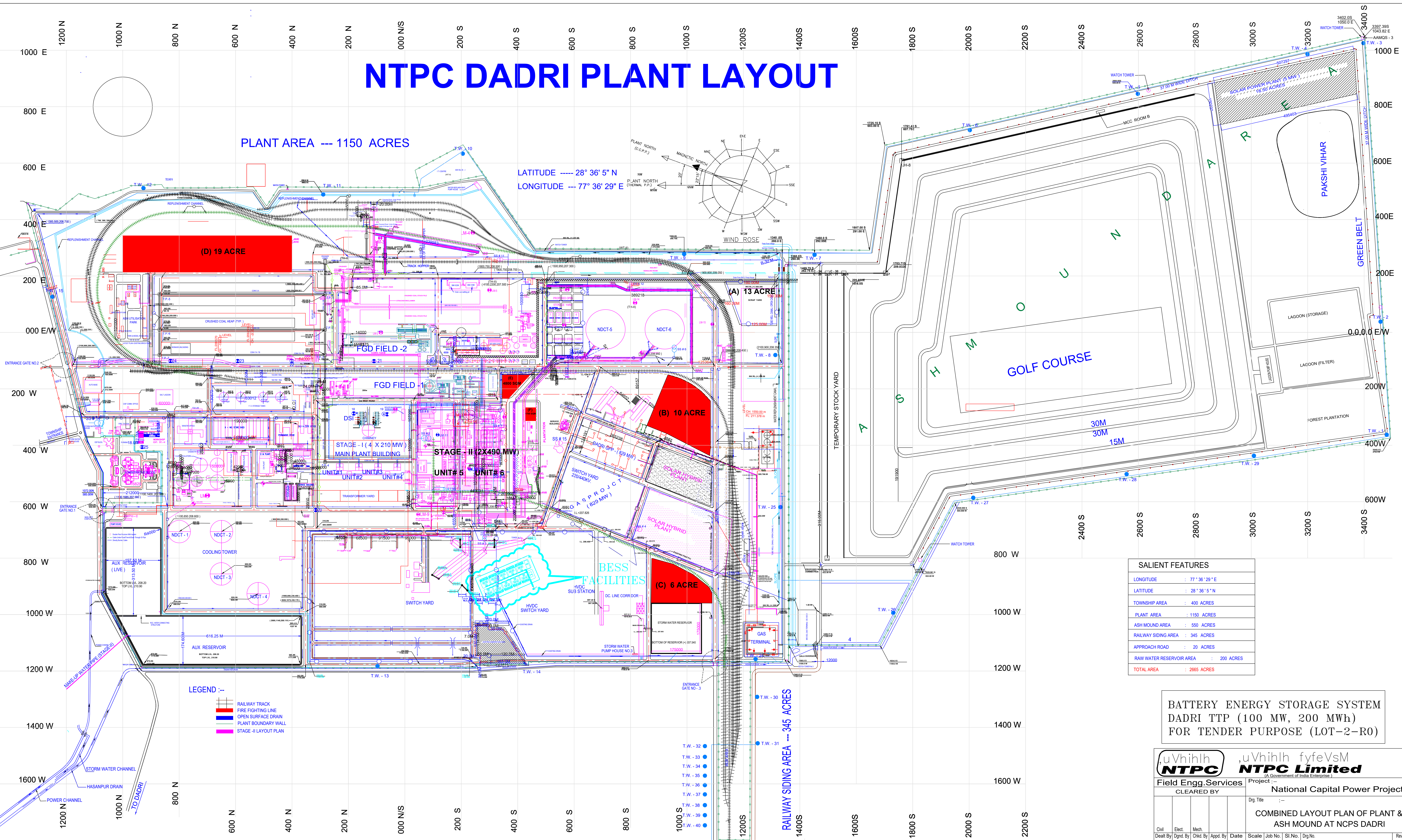
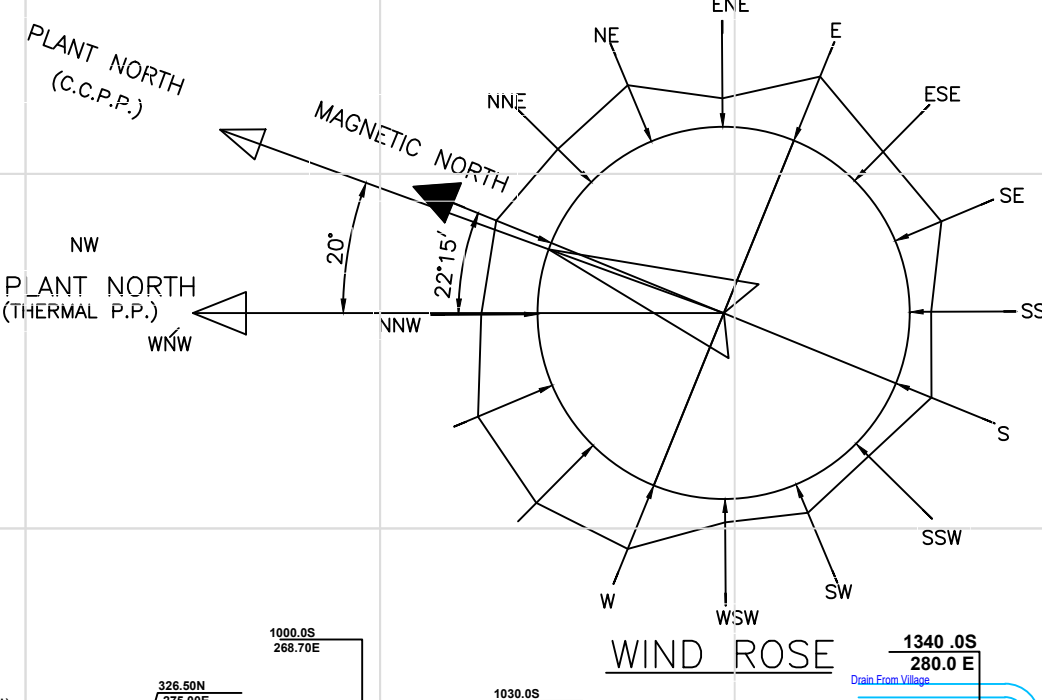
| SL. NO. | MATERIAL DESCRIPTION | MAIN EARTHMAT. | ABOVE GROUND RISER | AUX. MAT | BELOW GROUND RISER | TOTAL QTY | UNIT |
|---------|-------------------------------|----------------|--------------------|----------|--------------------|-----------|------|
| 1 | 40mm DIA MS ROD CONDUCTOR | 9700 | 0 | 500 | 5650 | 15850 | Mtr |
| 2 | 75x12 GS FLAT | 0 | 4600 | 0 | 0 | 4600 | Mtr |
| 3 | 50x6 GS FLAT | 0 | 900 | 0 | 0 | 900 | Mtr |
| 4 | CLEAT CLAMP FOR 75x12 GS FLAT | 0 | 1050 | 0 | 0 | 1050 | Nos. |
| 5 | CLEAT CLAMP FOR 50x6 GS FLAT | 0 | 150 | 0 | 0 | 150 | Nos. |

| | | | | | |
|------------|--|-----------|--------|---------|------------|
| 3 | FOURTH SUBMISSION | A.M. | B.S. | B.S. | 20.03.2017 |
| 2 | THIRD SUBMISSION | A.M. | B.S. | B.S. | 09.02.2017 |
| 1 | SECOND SUBMISSION | A.M. | B.S. | B.S. | 15.09.2016 |
| 0 | FIRST SUBMISSION | A.M. | B.S. | B.S. | 22.07.2016 |
| REV. | DESCRIPTION | PREP. | CHKD. | APPD. | DATE |
| CLIENT | NTPC LIMITED A GOVT. OF INDIA ENTERPRISE | | | | |
| EPCC | TECHNO ELECTRIC & ENGG. CO. LTD. ENGINEERS & CONSTRUCTORS KOLKATA, INDIA | | | | |
| NOA NO. | CS/9562/573/2/FC-NOA/6420 dated 12.10.2015 CS/9562/573/2/SC-NOA/6421 dated 12.10.2015 | | | | |
| PROJECT | TANDA THERMAL POWER PROJECT, STAGE - II (2x660 MW) | | | | |
| PACKAGE | SWITCHYARD PACKAGE | | | | |
| DRG. TITLE | EARTHMAT LAYOUT | | | | |
| DRG. No. | 9562-573-PVE-F-0012 | | | | |
| SCALE : | N.T.S | JOB No. : | 0715TA | SHEET : | 1 OF 1 |

NTPC DADRI PLANT LAYOUT

PLANT AREA --- 1150 ACRES

LATITUDE ---- 28° 36' 5" N
LONGITUDE --- 77° 36' 29" E

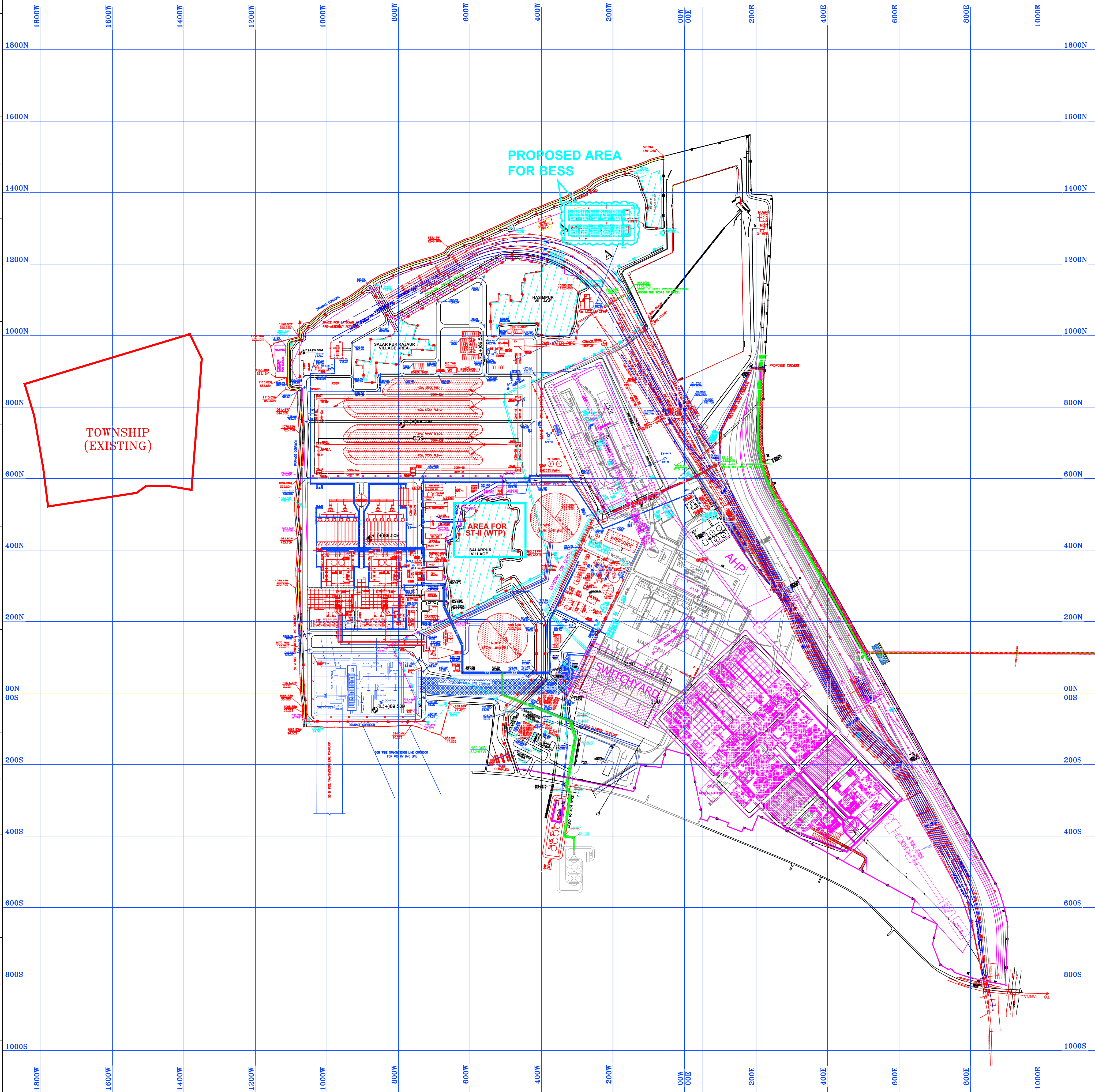
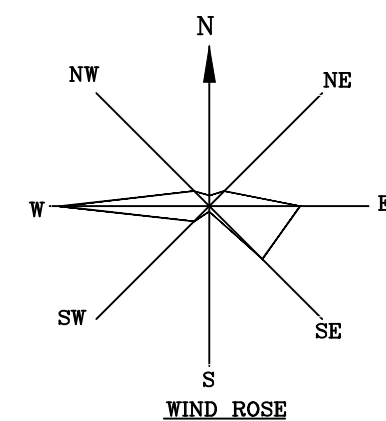


LEGEND :-
RAILWAY TRACK
FIRE FIGHTING LINE
OPEN SURFACE DRAIN
PLANT BOUNDARY WALL
STAGE-II LAYOUT PLAN

| SALIENT FEATURES | |
|--------------------------|-----------------|
| LONGITUDE | : 77° 36' 29" E |
| LATITUDE | : 28° 36' 5" N |
| TOWNSHIP AREA | : 400 ACRES |
| PLANT AREA | : 1150 ACRES |
| ASH MOUND AREA | : 550 ACRES |
| RAILWAY SIDING AREA | : 345 ACRES |
| APPROACH ROAD | : 20 ACRES |
| RAW WATER RESERVOIR AREA | : 200 ACRES |
| TOTAL AREA | : 2865 ACRES |

BATTERY ENERGY STORAGE SYSTEM
DADRI TTP (100 MW, 200 MWh)
FOR TENDER PURPOSE (LOT-2-R0)

| | | | |
|----------------------|--|--|--|
| NTPC | | NTPC Limited | |
| Field Engg. Services | | Project :- | |
| CLEARED BY | | National Capital Power Project | |
| Civil | | Dig. Title :- | |
| Elect. | | COMBINED LAYOUT PLAN OF PLANT & | |
| Mech. | | ASH MOUND AT NCPS DADRI | |
| Dealt By | | Scale | |
| Dgn. By | | Job No. | |
| Chk. By | | Sl. No. | |
| Appd. By | | Dig. No. | |
| Date | | Rev. | |
| M. T. S. | | 031 433 6110 - 031 - FEC - MISC. - 530 | |
| 06/05/2001 | | 01 | |



BATTERY ENERGY STORAGE SYSTEM
TANDA TPP (100 MW, 200 MWh)
FOR TENDER PURPOSE (LOT-2-R0)

LEGEND:-

- | | | | |
|--|--|------------------------------------|--|
| 1. ROADS (DOUBLE LINE) | | 12. BOUNDARY (PROFILE SHEET) | |
| 2. BOUNDARY WALL (EXISTING) | | 13. BOUNDARY (CHAIN LINK FENCING) | |
| 3. BOUNDARY WALL (TO BE DISMANTLED) | | 14. SUGGESTED FACILITIES STAGE-III | |
| 4. BOUNDARY WALL (PROPOSED NEW) | | | |
| 5. FENCING | | | |
| 6. RAIL TRACK | | | |
| 7. STAGE-II FACILITIES | | | |
| 8. EXISTING FACILITIES | | | |
| 9. CHIMNEY | | | |
| 10. EXISTING BUILDINGS (TO BE DISMANTLED) (DURING STAGE -II) | | | |
| 10. EXISTING BUILDINGS (TO BE RETAINED) (DURING STAGE -II) | | | |
| 11. EXISTING CW DUCTS | | | |

NOTES:-

- ALL DIMENSIONS AND LEVELS ARE IN METRES.
- EL. (+)0.00M CORRESPONDS TO RL(+)+90.00M.
- RAILWAY SIDING SHOWN IS BASED ON FR STAGE RAILWAY SIDING LAYOUT WITH SOME MODIFICATION. HOWEVER, DETAILED LAYOUT OF RAILWAY SIDING WILL BE INCORPORATED AFTER RECEIVING THE FINAL LAYOUT FROM RAILWAY SIDING CONSULTANT.
- CERTAIN PORTION OF HASANPUR VILLAGE (MARKED AS AREA-A) IS FOULING WITH RAILWAY SIDING WHICH IS UNAVOIDABLE. THIS PART OF VILLAGE NEEDS TO BE RE-LOCATED.

NTPC Limited
(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

TANDA THERMAL POWER PROJECT
STAGE-III (2X600MW)

| REV. NO. | | DESCRIPTION | | DRAWN | | DESIGN | | CHKD. | | M | | E | | C | | C&I | | ES | | APPD | | DATE | | SIZE | | SCALE | | DRG. NO. | | REV. NO. | |
|----------|--|-----------------------------------|--|-------|--|--------|--|-------|--|---|--|---|--|---|--|-----|--|----|--|------|--|----------|--|------|--|--------|--|--------------------|--|----------|--|
| 0 | | PRELIMINARY LAYOUT FOR STAGE - II | | CD | | | | | | | | | | | | | | | | | | 28.03.25 | | A0 | | 1:4000 | | 9562-999-POC-F-001 | | 0 | |