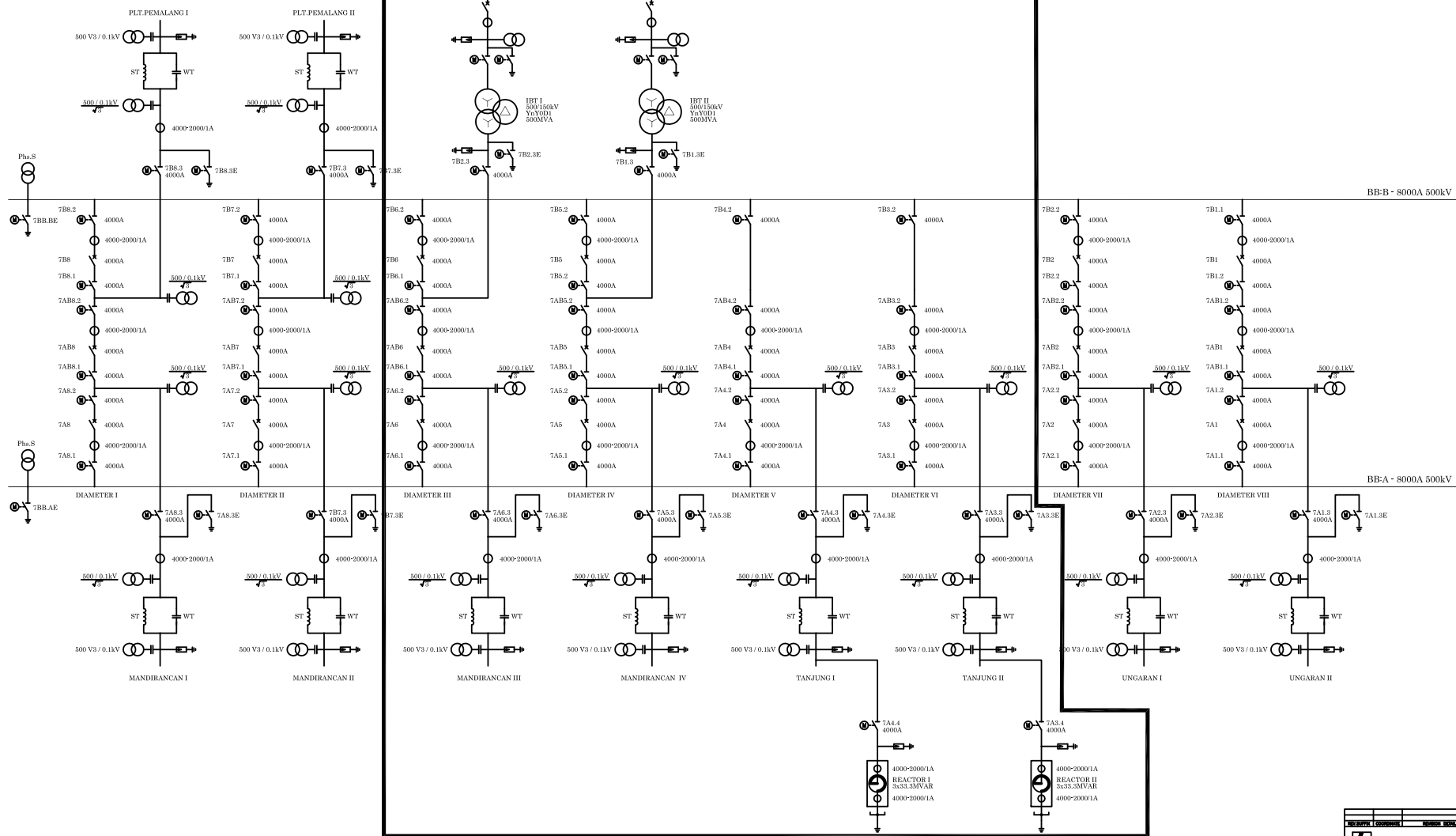


## Appendix II

### Design of Substations

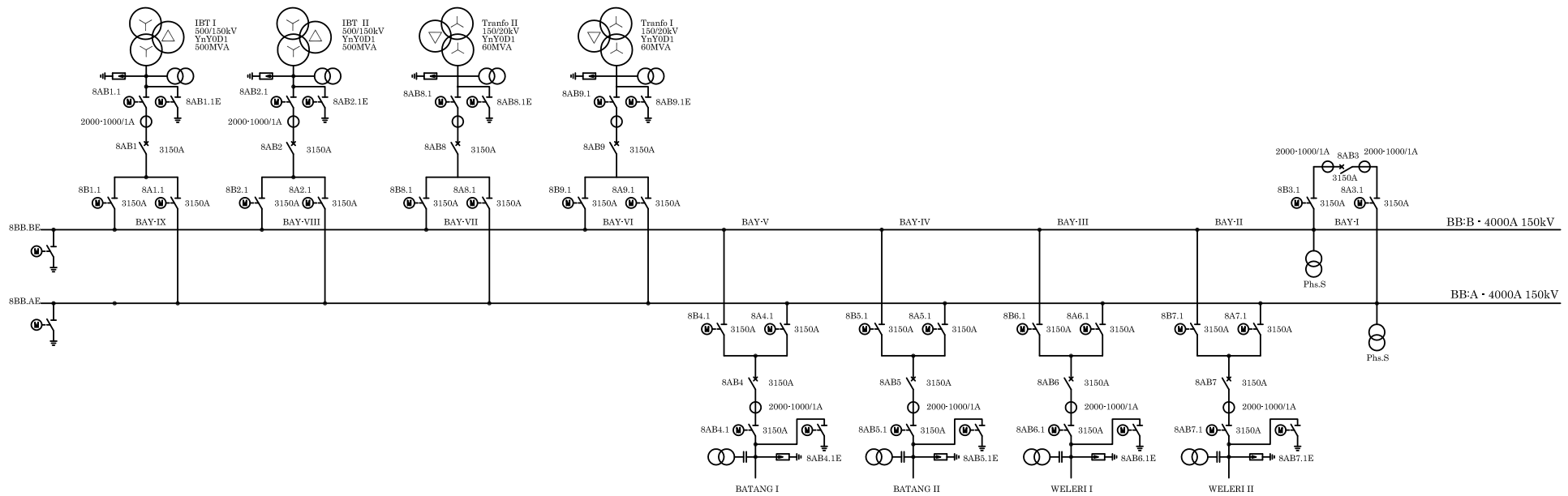
# 500kV Single Line Diagram of Pemalang Substation



JICA Project

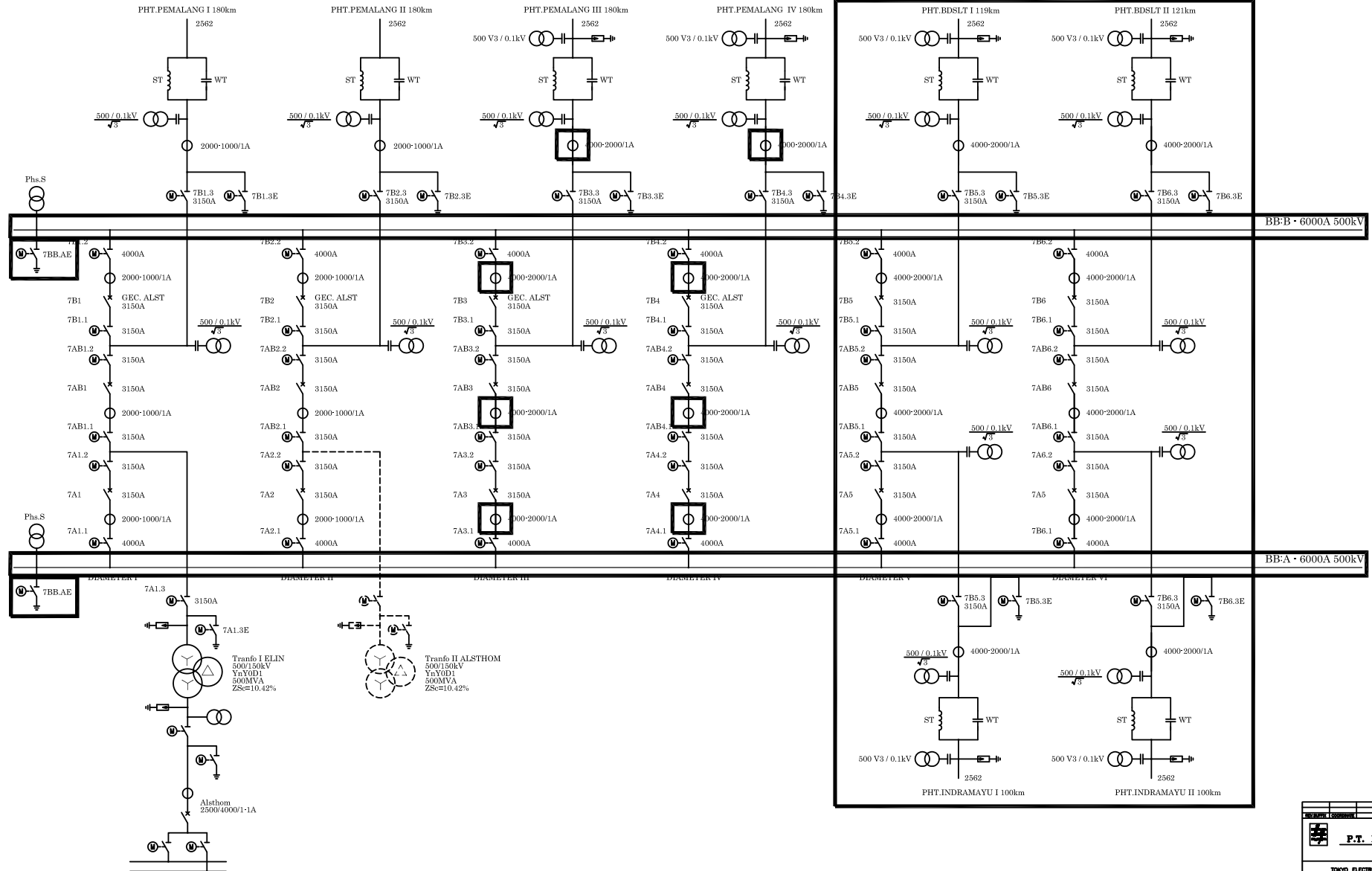
|                                                                                            |              |          |         |          |      |
|--------------------------------------------------------------------------------------------|--------------|----------|---------|----------|------|
| NO. SUPPLY                                                                                 | COORDINATE   | REVISION | REMARK  | BY       | DATE |
| <b>P.T. PLN (PERSERO)</b>                                                                  |              |          |         |          |      |
| TOKYO ELECTRIC POWER SERVICES CO., LTD.                                                    |              |          |         |          |      |
| FOR THE<br>CENTRAL AND WEST JAVA 500kV TRANSMISSION LINE PROJECT                           |              |          |         |          |      |
| SUBSTATION NAME<br><b>PEMALANG SUBSTATION<br/>500kV SINGLE LINE DIAGRAM<br/>(PLAN(PB))</b> |              |          |         |          |      |
| APPROVED BY                                                                                | REVISION NO. |          |         |          |      |
| APPROVED                                                                                   | REVISION     |          |         |          |      |
| DATE                                                                                       | PROPOSED     | DESIGNED | CHECKED | REVIEWED |      |
| -                                                                                          | -            | -        | -       | -        |      |

# 150kV Single Line Diagram of Pemalang Substation



|                                                                  |  |             |  |               |  |
|------------------------------------------------------------------|--|-------------|--|---------------|--|
| NO. 160/150KV                                                    |  | REVISION    |  | NO. 160/150KV |  |
| P.T. PLN (PERSERO)                                               |  |             |  |               |  |
| TOKYO ELECTRIC POWER SERVICES CO., LTD.                          |  |             |  |               |  |
| FOR THE<br>CENTRAL AND WEST JAVA 500KV TRANSMISSION LINE PROJECT |  |             |  |               |  |
| WORKING TITLE                                                    |  |             |  |               |  |
| FEMALANG SUBSTATION<br>160KV SINGLE LINE DIAGRAM<br>(PLAN1(PB))  |  |             |  |               |  |
| APPROVED BY                                                      |  | DESIGNED BY |  | CHECKED BY    |  |
| DATE                                                             |  | DATE        |  | DATE          |  |
| DRAWN BY                                                         |  | PROVEN BY   |  | REVIEWED BY   |  |

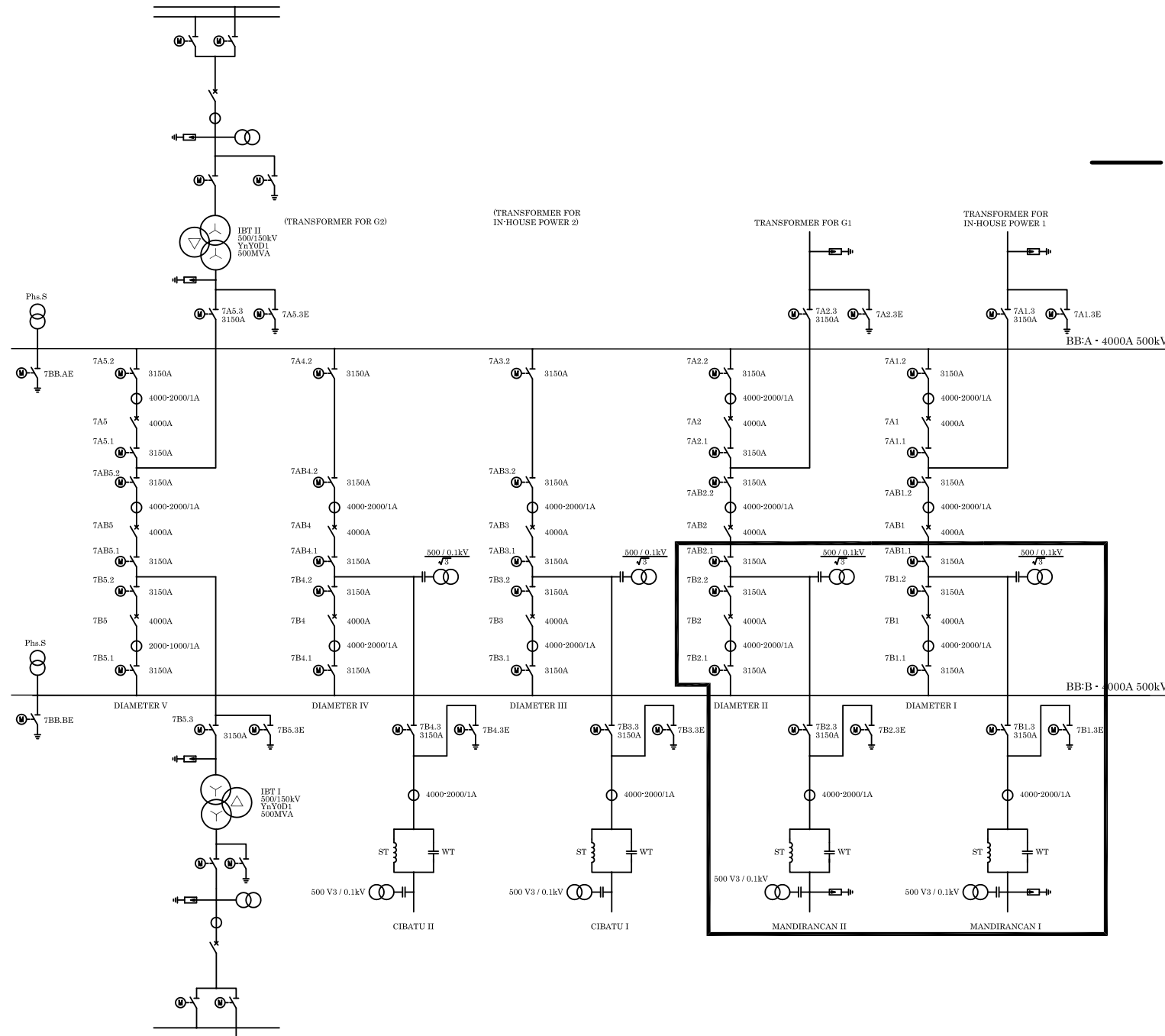
# 500kV Single Line Diagram of Mandirancan Substation



|                                                                                                                                                                                                                        |          |          |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|---------|
| NO. 001/000000                                                                                                                                                                                                         | REVISION | DATE     | BY      |
|                                                                                                                                                                                                                        |          |          |         |
| TOKYO ELECTRIC POWER SERVICES CO., LTD.<br>FOR THE<br>CENTRAL AND WEST JAVA 500KV TRANSMISSION LINE PROJECT<br>DRAWING TITLE<br><b>MANDARANCAN SUBSTATION</b><br><b>500KV SINGLE LINE DIAGRAM</b><br><b>(PLAN(PB))</b> |          |          |         |
| APPROVED BY                                                                                                                                                                                                            |          |          |         |
| DATE                                                                                                                                                                                                                   | PROPOSED | DESIGNED | CHECKED |

# 500kV Single Line Diagram of Indramayu Substation

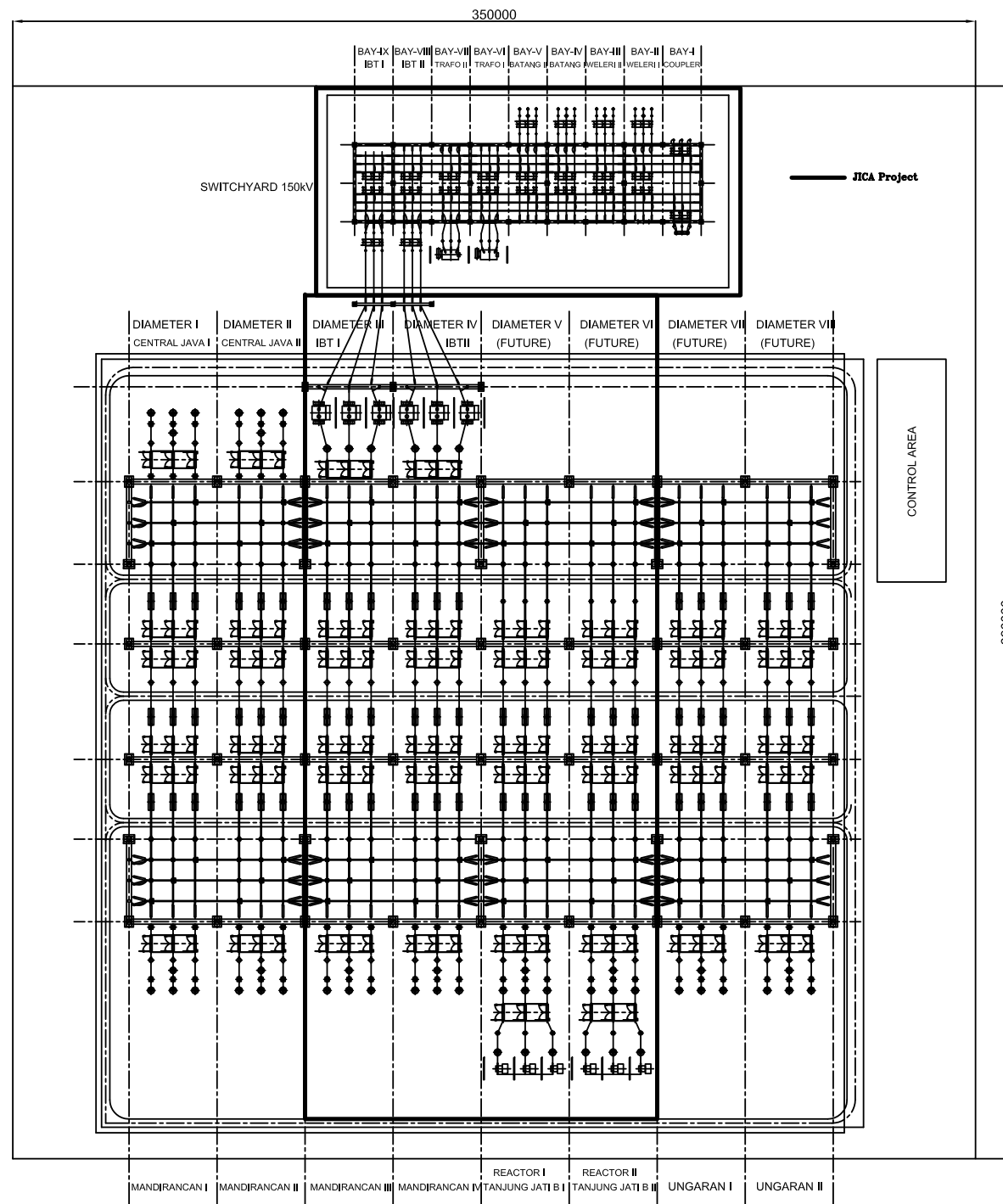




JICA Project

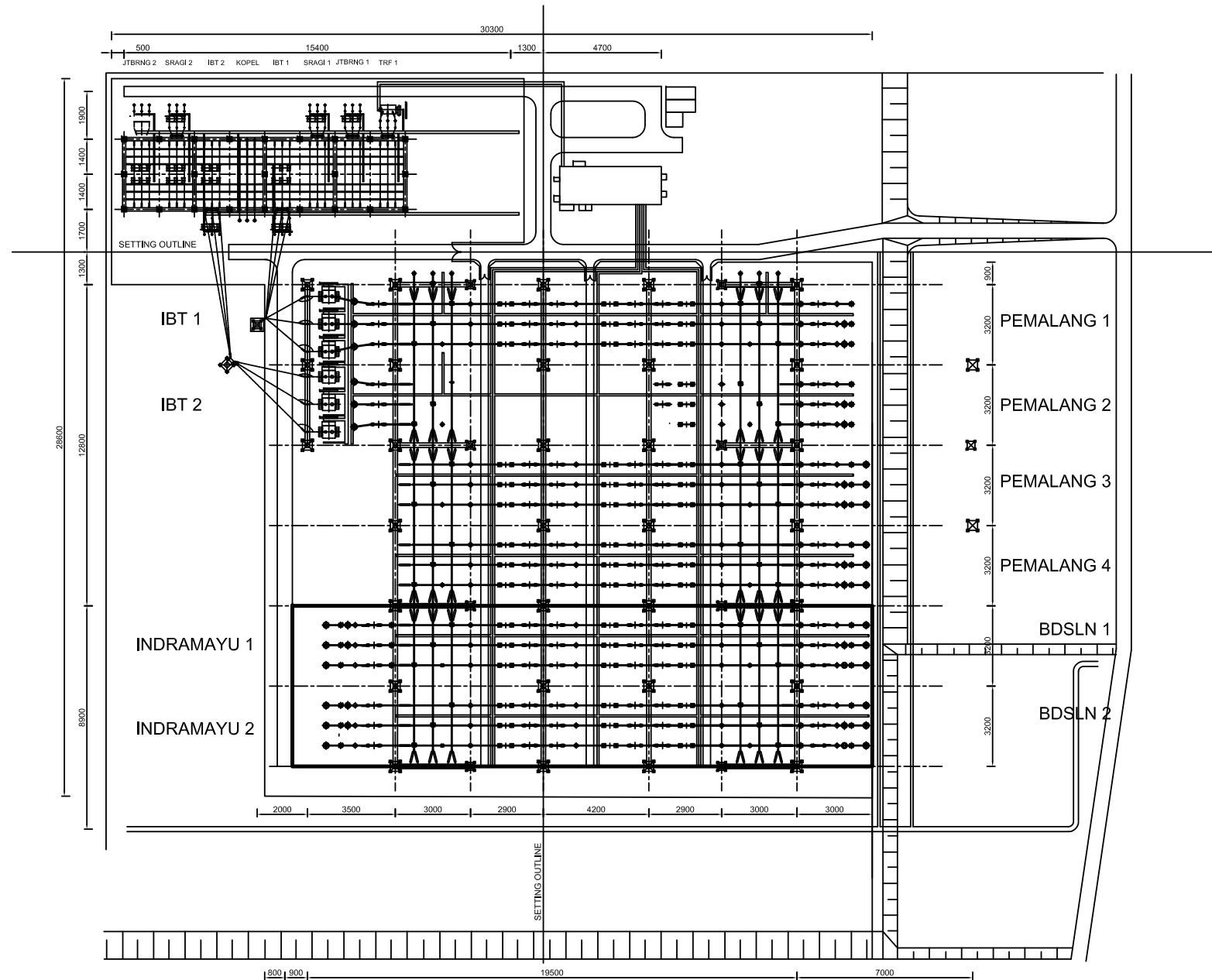
|                                                                  |          |          |          |
|------------------------------------------------------------------|----------|----------|----------|
| REVISION                                                         | REVISION | REVISION | REVISION |
| 1                                                                | 2        | 3        | 4        |
| P.T. PLN (PERSERO)                                               |          |          |          |
| TOKYO ELECTRIC POWER SERVICES CO., LTD.                          |          |          |          |
| FOR THE<br>CENTRAL AND WEST JAVA 500KV TRANSMISSION LINE PROJECT |          |          |          |
| INDRAMAYU SUBSTATION<br>500KV SINGLE LINE DIAGRAM<br>(PLAN/PR)   |          |          |          |
| APPROVED                                                         | DESIGNED | CHECKED  | REVIEWED |
| DATE                                                             | DATE     | DATE     | DATE     |

# Layout of Pemalang Substation



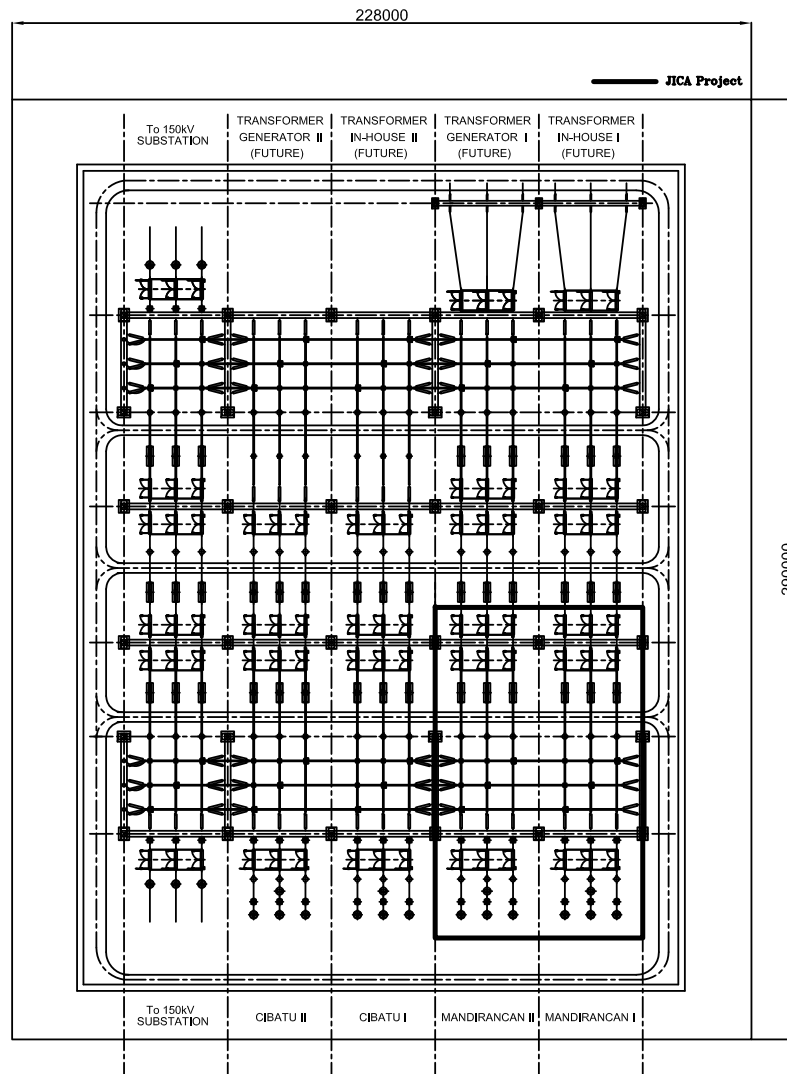
|                                                                                                                 |             |            |             |
|-----------------------------------------------------------------------------------------------------------------|-------------|------------|-------------|
| REVISION                                                                                                        | DESCRIPTION | REVISION   | DESCRIPTION |
| 1                                                                                                               |             | 2          |             |
|  <b>P.T. PLN (PERSERO)</b> |             |            |             |
| TOKYO ELECTRIC POWER SERVICES CO.,LTD.                                                                          |             |            |             |
| FOR THE<br>CENTRAL AND WEST JAVA 500KV TRANSMISSION LINE PROJECT                                                |             |            |             |
| DRAWING TITLE<br><b>FEMALANG SUBSTATION<br/>LAYOUT<br/>(PLANS)</b>                                              |             |            |             |
| DESIGNED BY                                                                                                     | DESIGNED BY | CHECKED BY | CHECKED BY  |
| APPROVED                                                                                                        | APPROVED    | APPROVED   | APPROVED    |
| DATE                                                                                                            | DATE        | DATE       | DATE        |
| 1/800                                                                                                           | 1/800       | 1/800      | 1/800       |

# Layout of Mandirancan Substation



|                                                                  |             |             |             |
|------------------------------------------------------------------|-------------|-------------|-------------|
| NO. 10/2019                                                      | REVISI      | REVISI      | REVISI      |
| P.T. PLN (PERSERO)                                               |             |             |             |
| TOKYO ELECTRIC POWER SERVICES CO., LTD.                          |             |             |             |
| FOR THE<br>CENTRAL AND WEST JAVA 500KV TRANSMISSION LINE PROJECT |             |             |             |
| DRAWING TITLE<br>MANDIRANCIAN SUBSTATION<br>LAYOUT<br>(PLAN(FR)) |             |             |             |
| DESIGNED BY                                                      | DESIGNED BY | DESIGNED BY | DESIGNED BY |
| CHECKED BY                                                       | CHECKED BY  | CHECKED BY  | CHECKED BY  |
| DATE                                                             | DATE        | DATE        | DATE        |
| SCALE                                                            | 1/300       | PROVIDED    | DESIGNED    |

# Layout of Indramayu Substation



|                                                                  |              |              |
|------------------------------------------------------------------|--------------|--------------|
| NO. 10/10/10                                                     | NO. 10/10/10 | NO. 10/10/10 |
| <b>P.T. PLN (PERSERO)</b>                                        |              |              |
| TOKYO ELECTRIC POWER SERVICES CO., LTD.                          |              |              |
| FOR THE<br>CENTRAL AND WEST JAVA 500KV TRANSMISSION LINE PROJECT |              |              |
| INDRAMAYU SUBSTATION<br>500KV LAYOUT<br>(PLAN/PR)                |              |              |
| DESIGNED BY                                                      | DESIGNED BY  | DESIGNED BY  |
| APPROVED                                                         | APPROVED     | APPROVED     |
| DATE                                                             | DATE         | DATE         |
| 1/100                                                            | 1/100        | 1/100        |

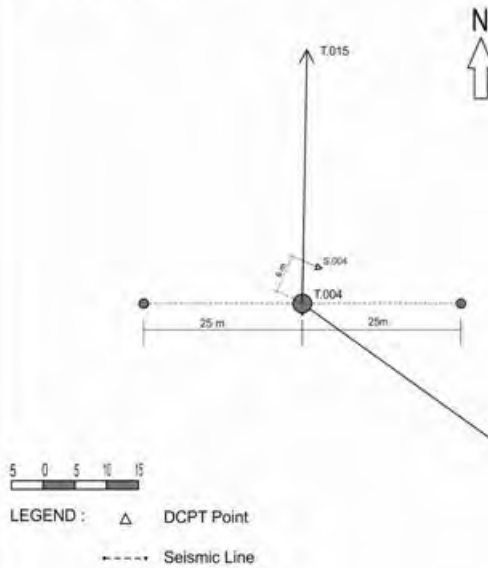
## Appendix III

### Compiled Result of Dutch Cone Penetration Test and Seismic Refraction Survey

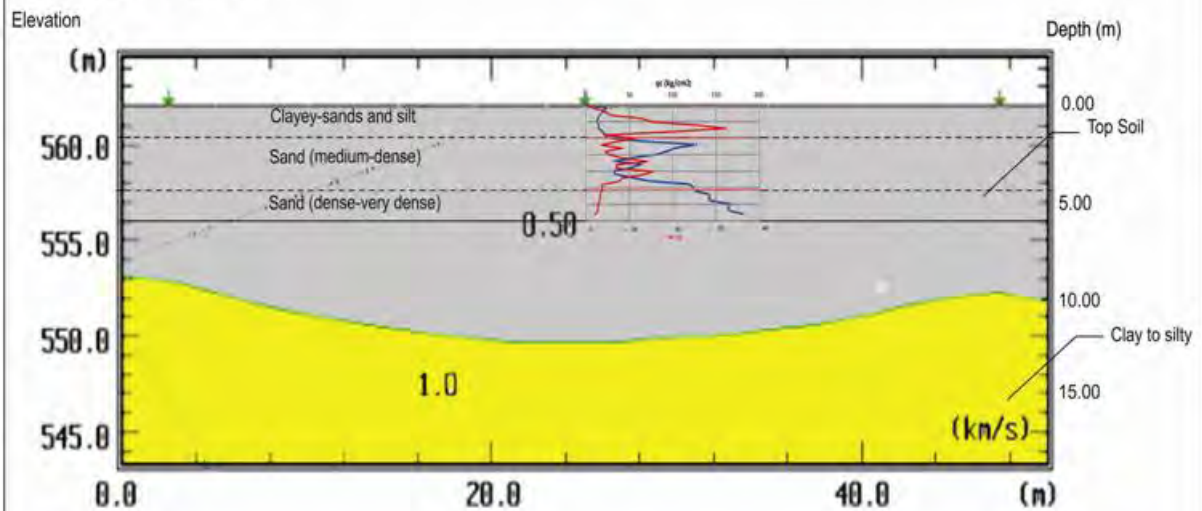


T.004

## Plan Preview



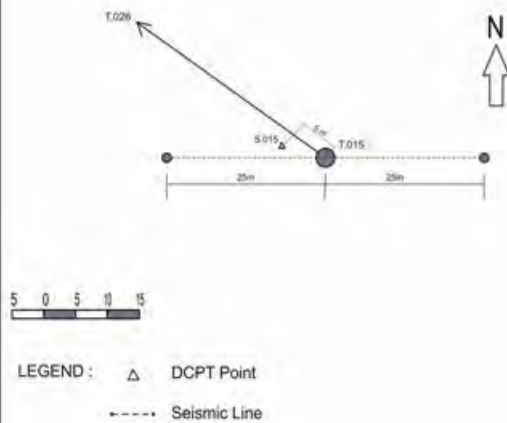
## Cross Section



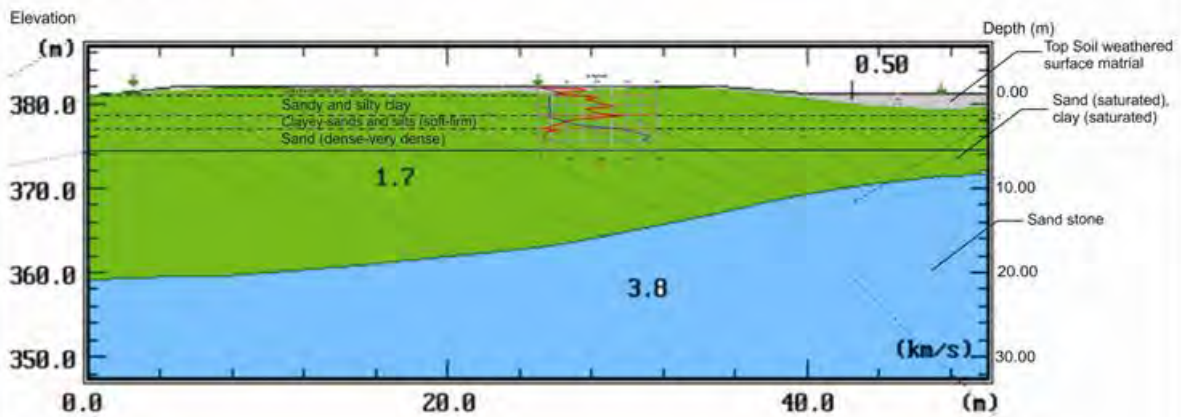
1) T.004 Ungaran - Mandirancan

T.015

## Plan Preview



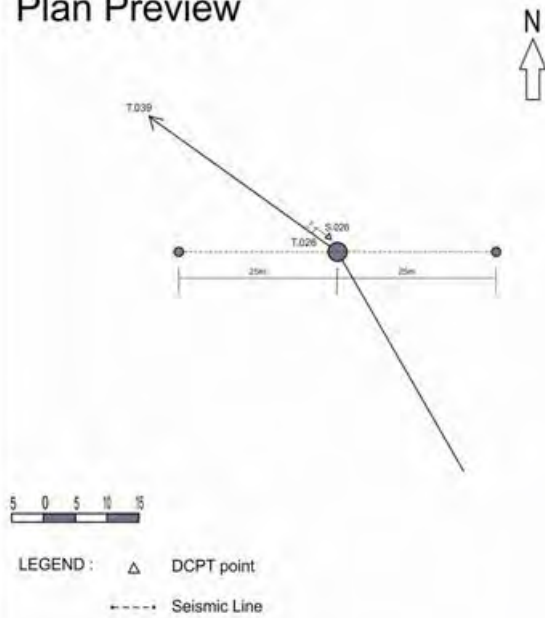
## Cross Section



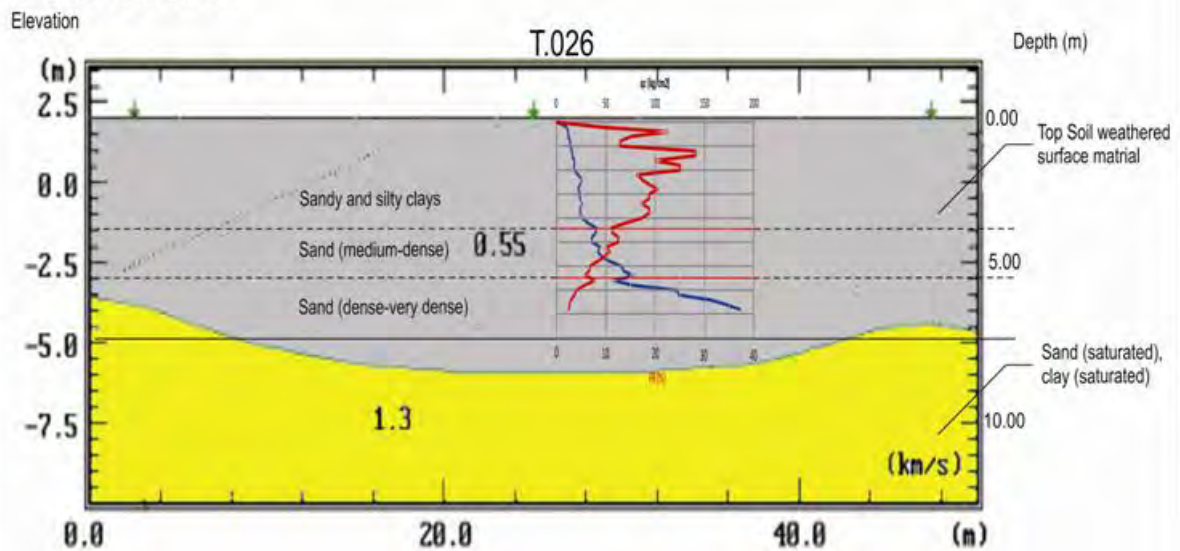
2) T.015 Ungaran - Mandirancan

T.026

## Plan Preview



## Cross Section

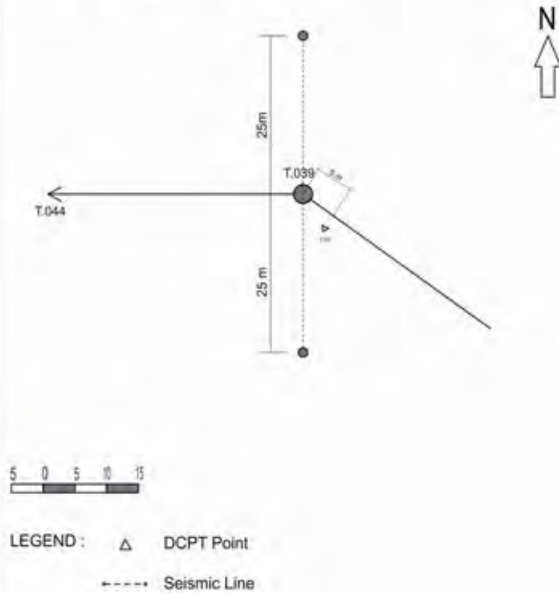


3) T.026 Ungaran - Mandirancan

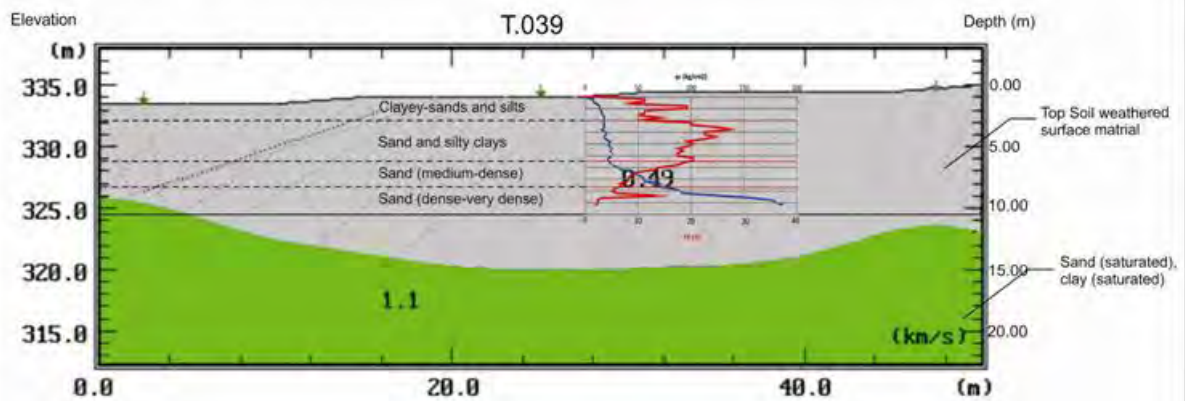


T.039

## Plan Preview



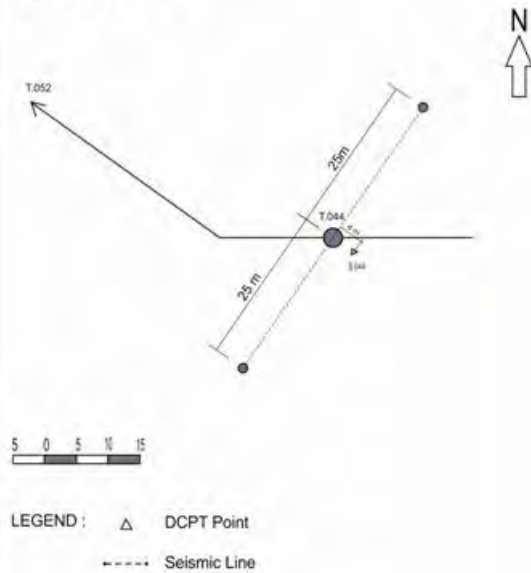
## Cross Section



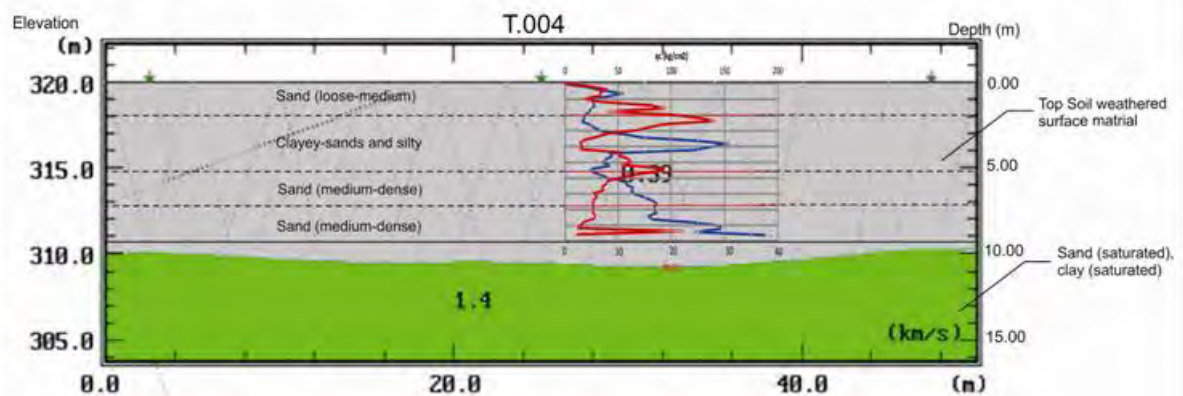
4) T.039 Ungaran - Mandirancan

T.044

## Plan View



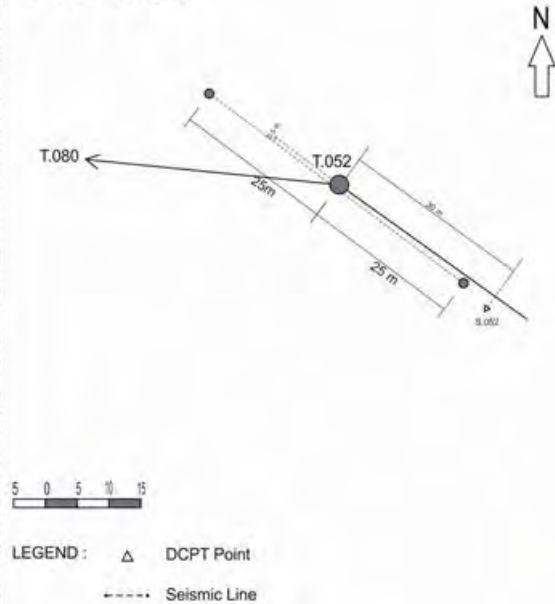
## Cross Section



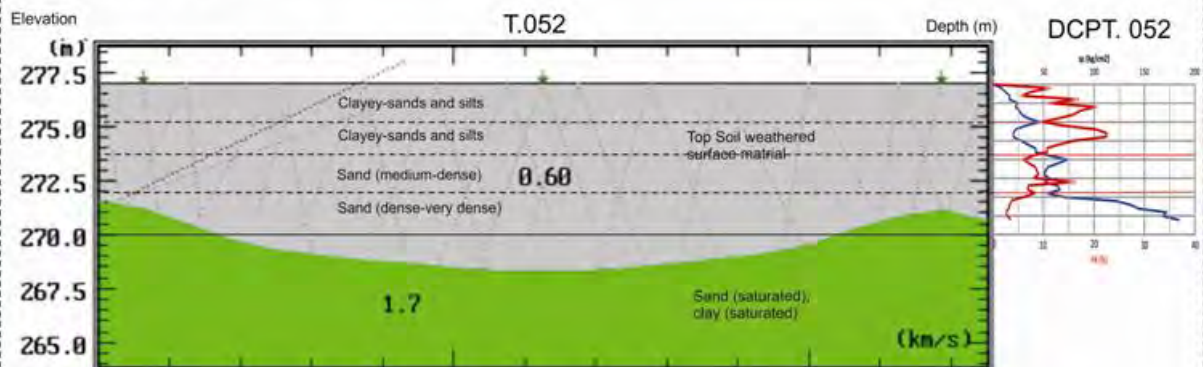
5) T.044 Ungaran - Mandirancan

T.052

## Plan View



## Cross Section

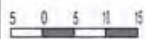
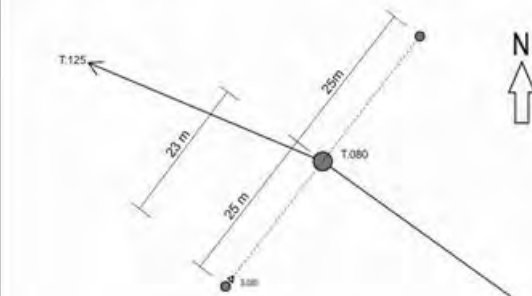


6) T.052 Ungaran - Mandirancan



T.080

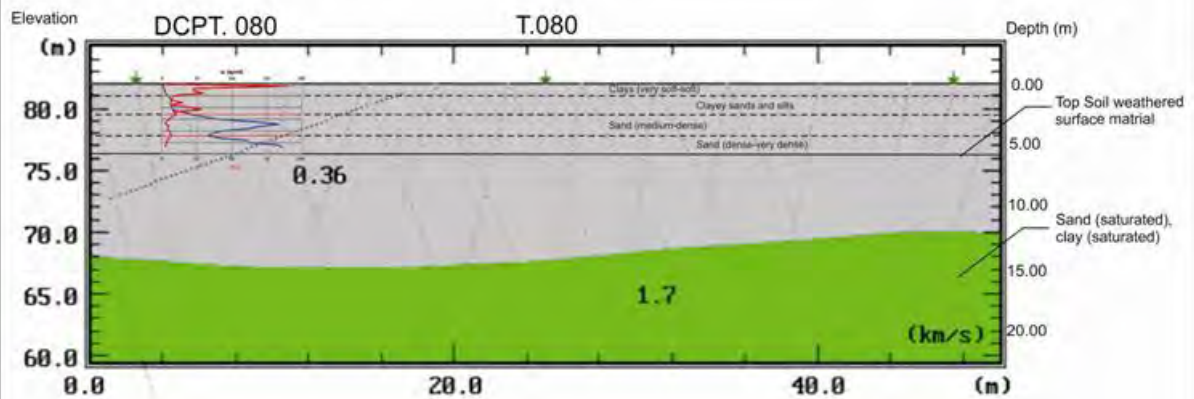
## Plan View



LEGEND :  $\Delta$  DCPT Point  
 - - - - - Seismic Line



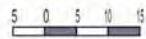
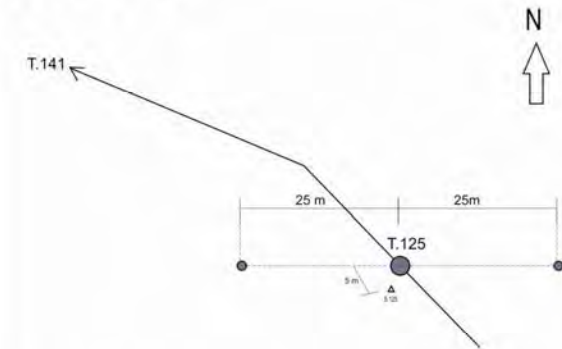
## Cross Section



7) T.080 Ungaran - Mandirancan

T.125

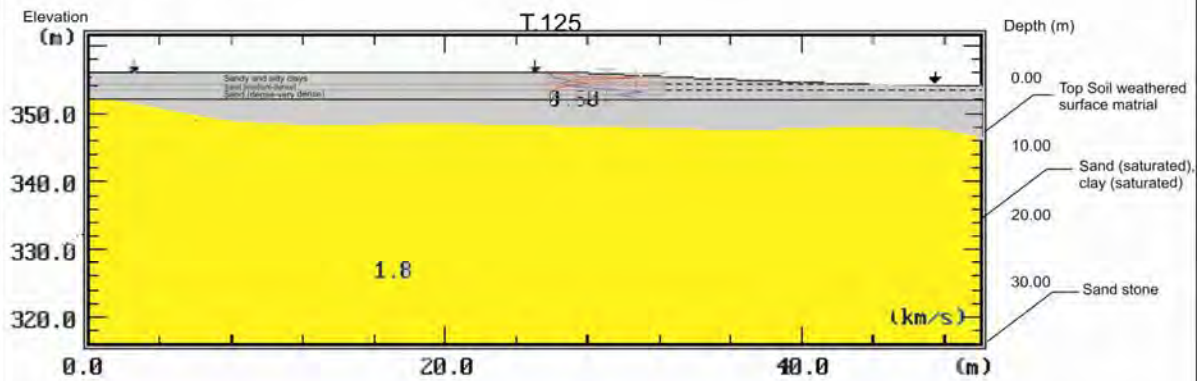
## Plan View



LEGEND :   
 Δ DCPT Point   
 - - - - - Seismic Line



## Cross Section

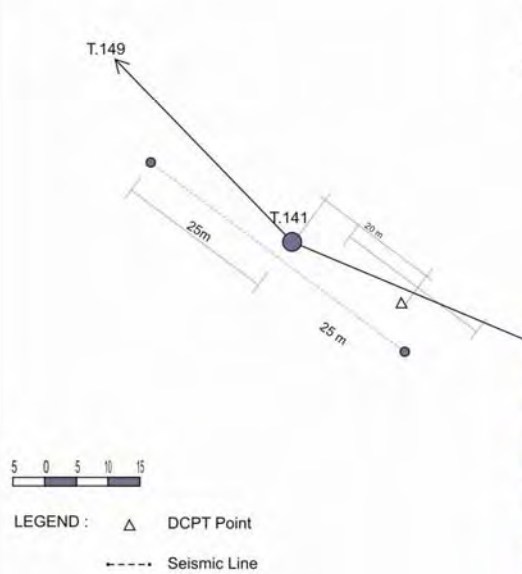


8) T.125 Ungaran - Mandirancan

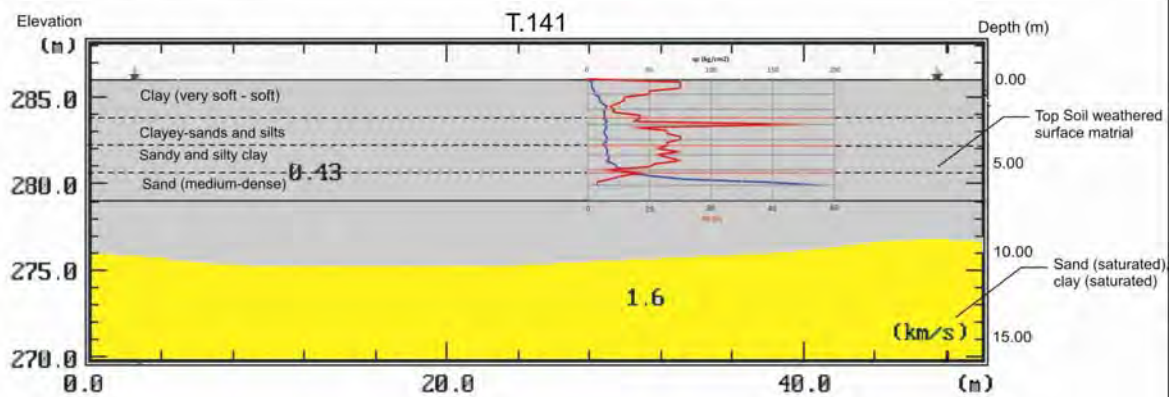


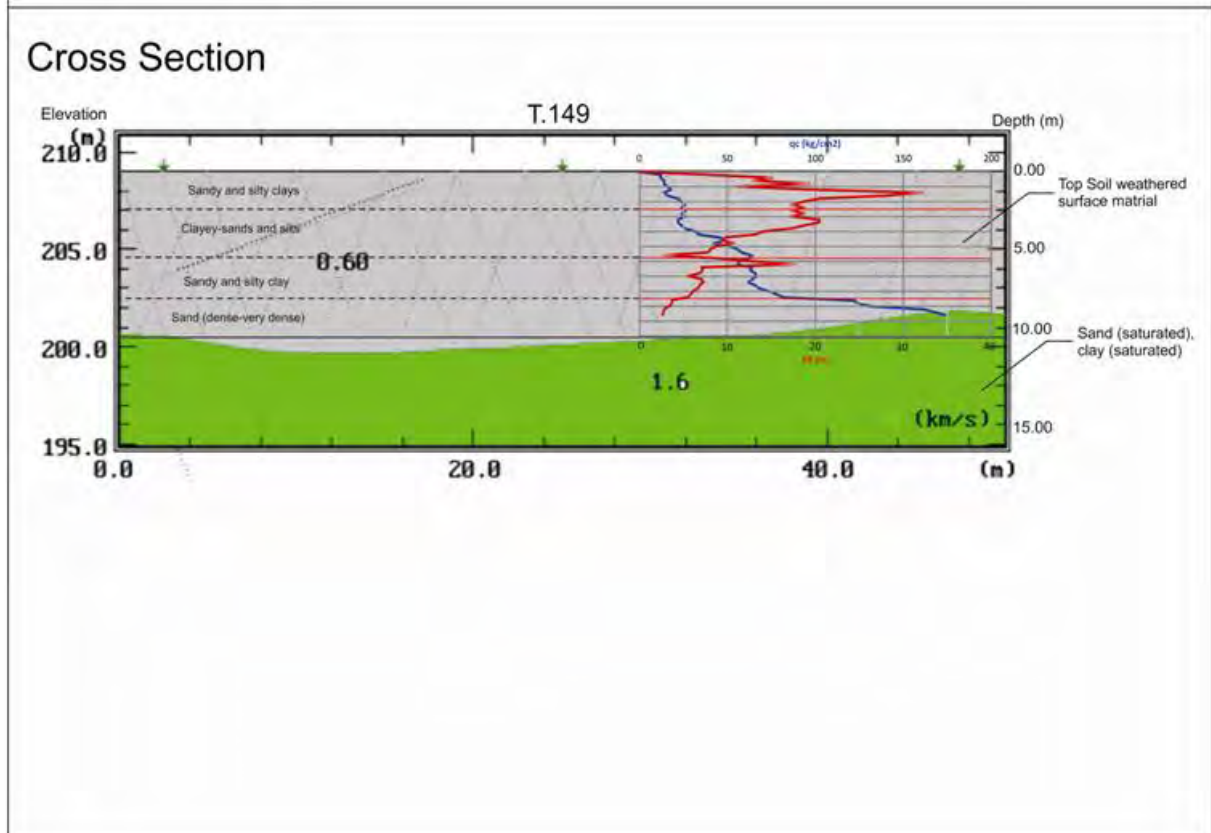
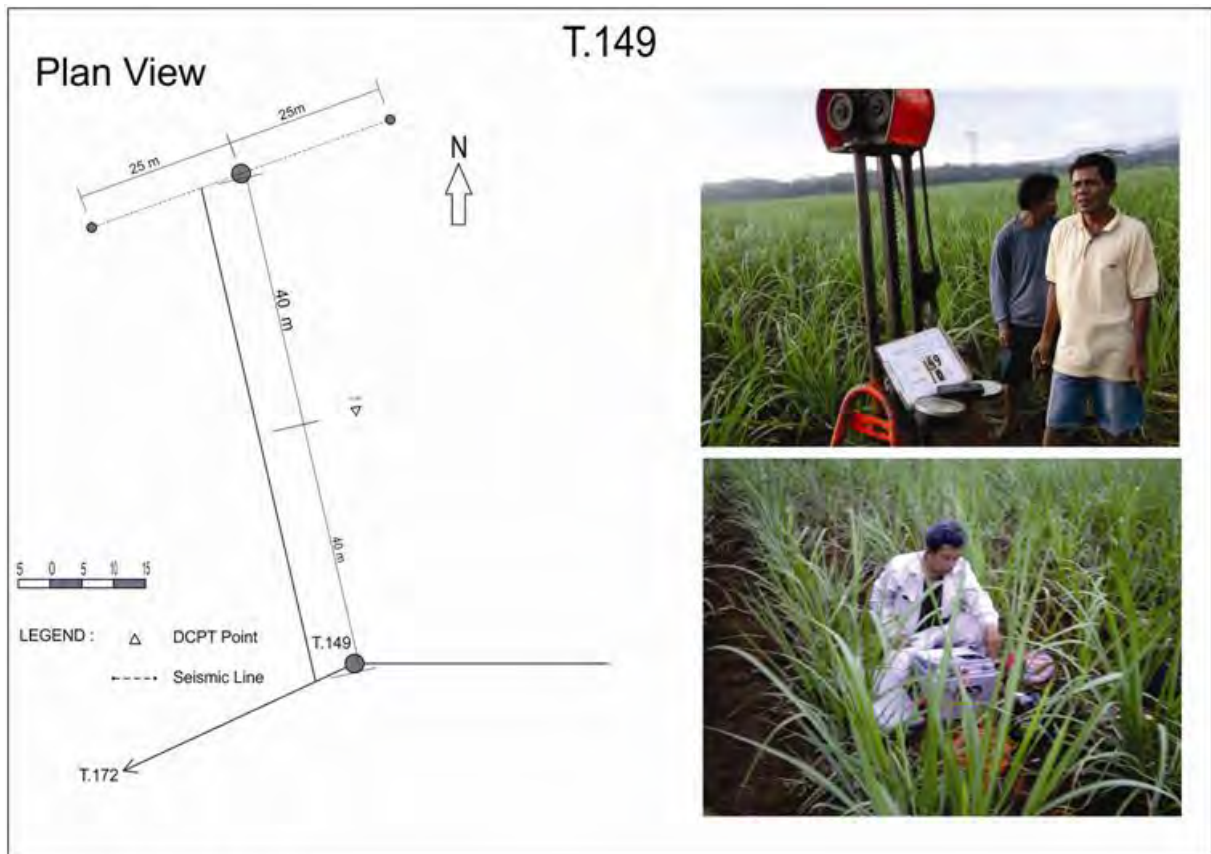
T.141

## Plan View



## Cross Section

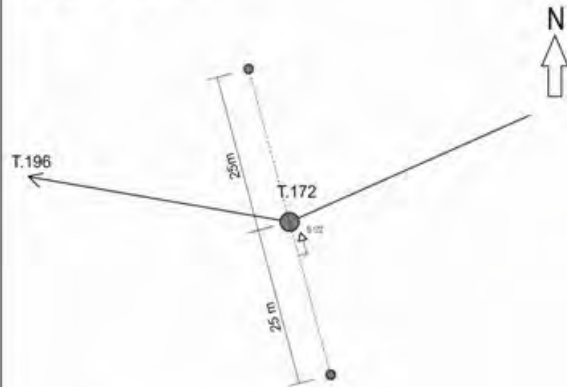




10) T.149 Ungaran - Mandirancan

T.172

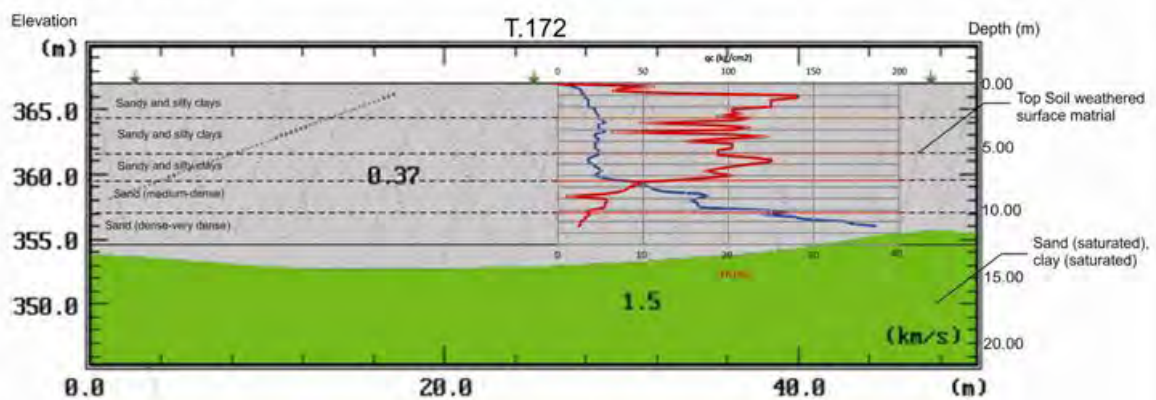
## Plan View



LEGEND :  $\Delta$  DCPT Point  
 - - - - - Seismic Line



## Cross Section

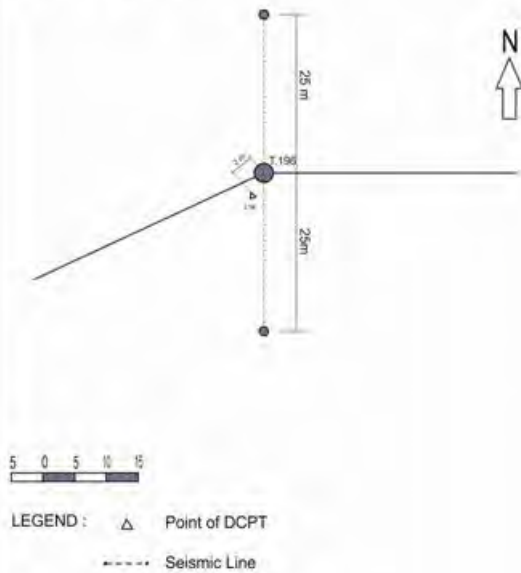


11) T.172 Ungaran - Mandirancan

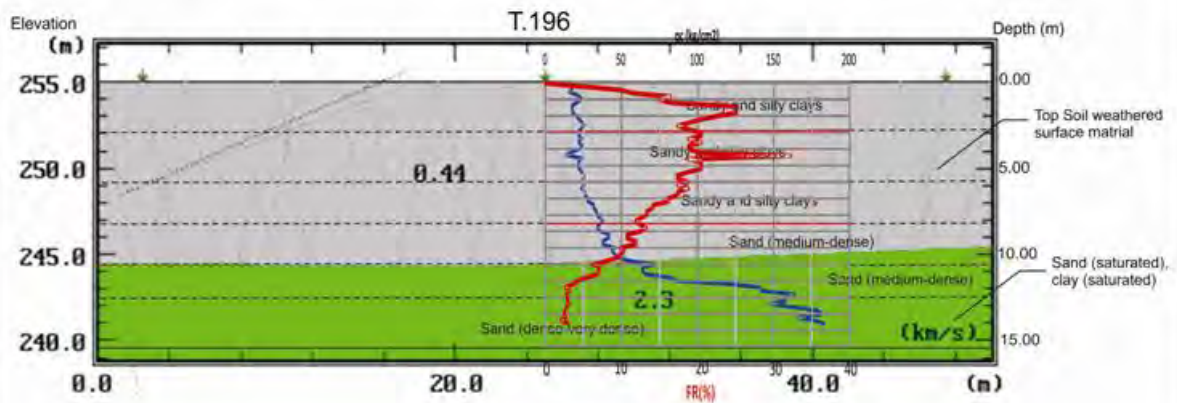


T.196

### Plan View



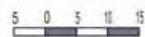
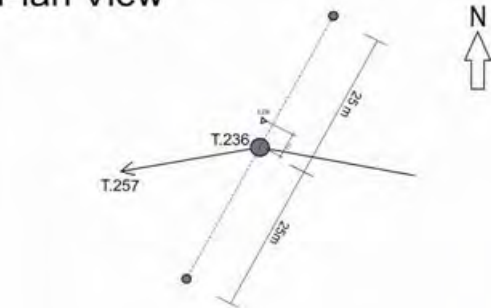
### Cross Section



12) T.196 Ungaran - Mandirancan

T.236

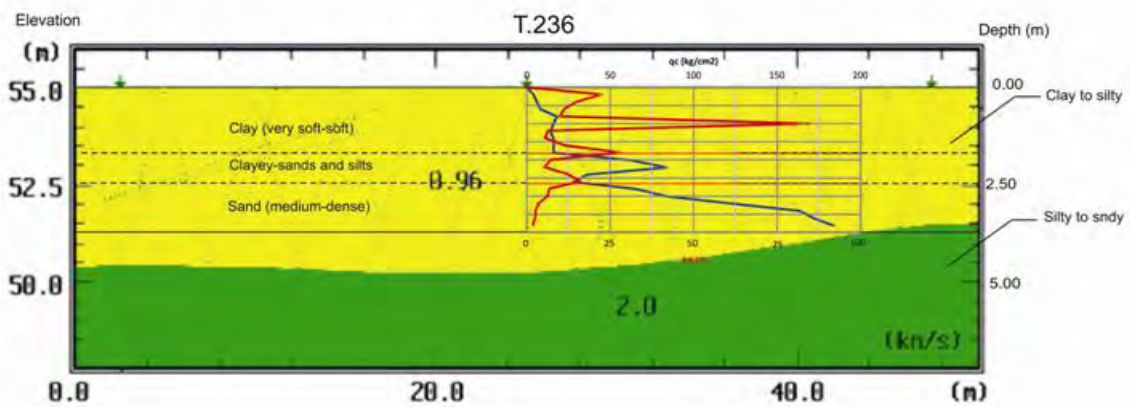
### Plan View



LEGEND :  $\Delta$  DCPT Point  
 - - - - Seismic Line

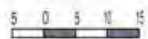
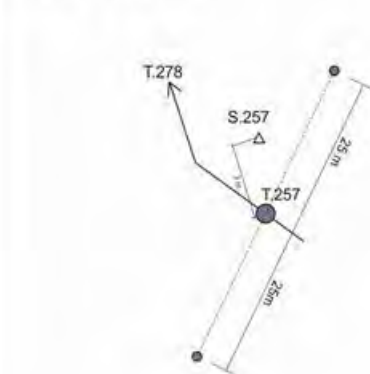


### Cross Section



T.257

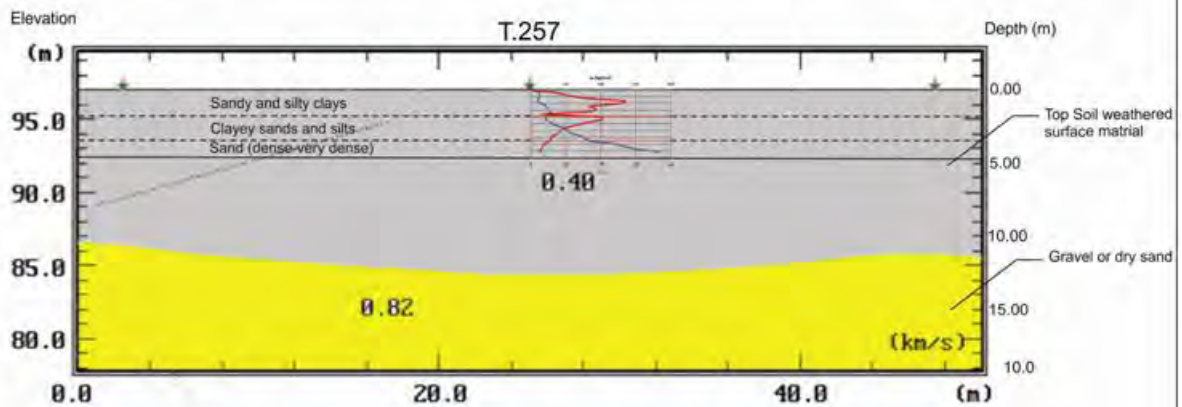
## Plan View



LEGEND :  $\Delta$  DCPT Point  
 --- Seismic Line



## Cross Section

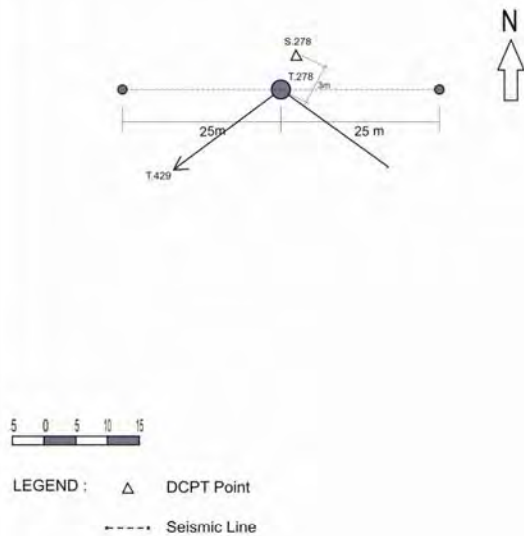


14) T.257 Ungaran - Mandirancan

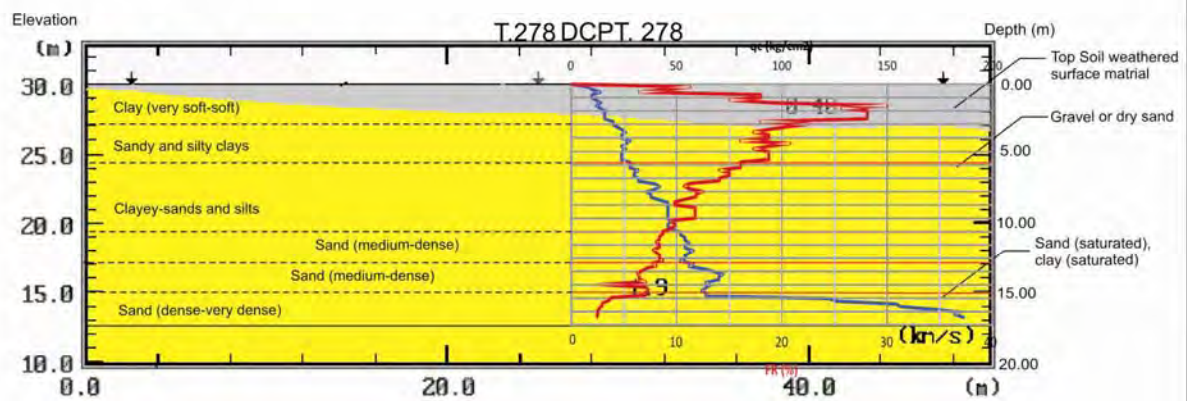


T.278

## Plan View

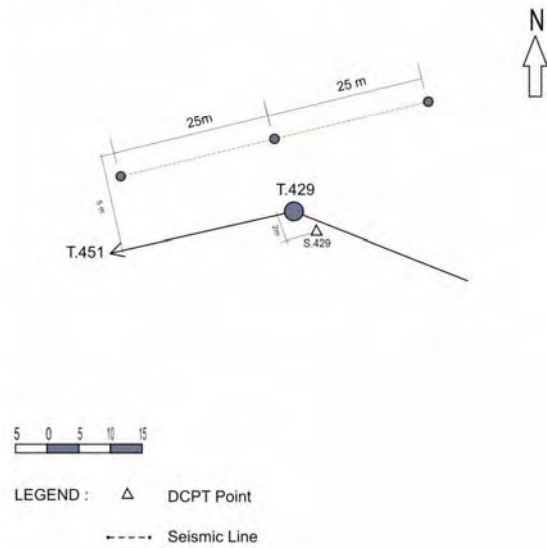


## Cross Section

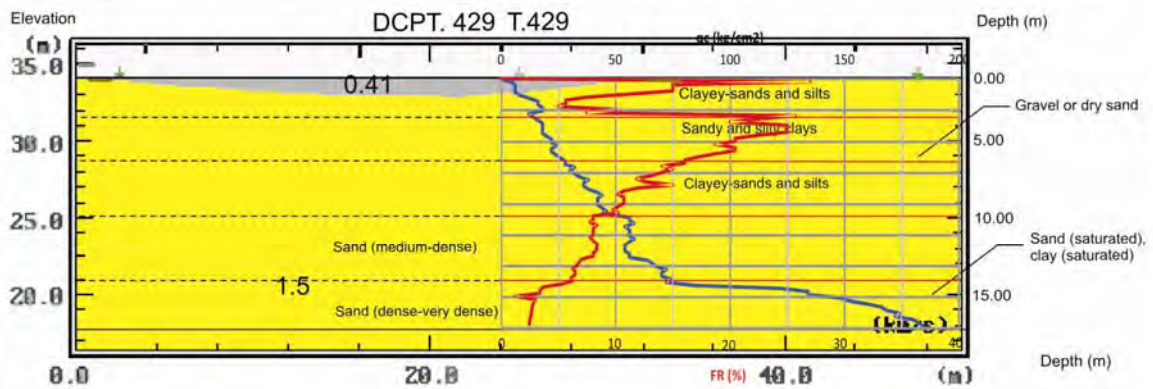


T.429

## Plan View



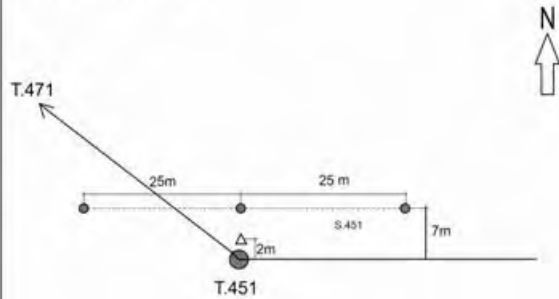
## Cross Section





T.451

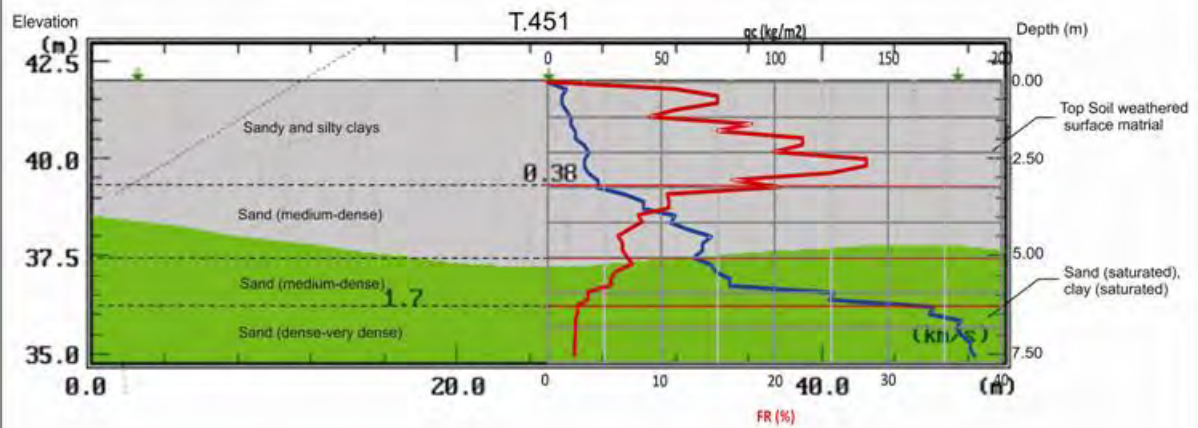
## Plan View



LEGEND :  $\Delta$  DCPT Point  
 ----- Seismic Line



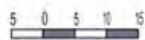
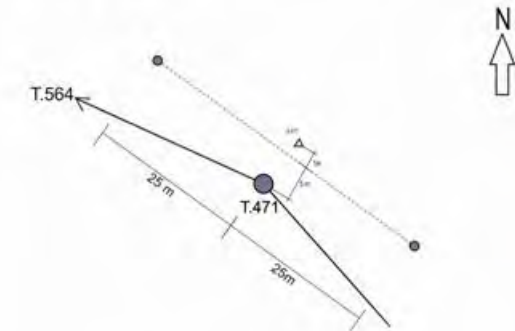
## Cross Section



17) T.451 Ungaran - Mandirancan

T.471

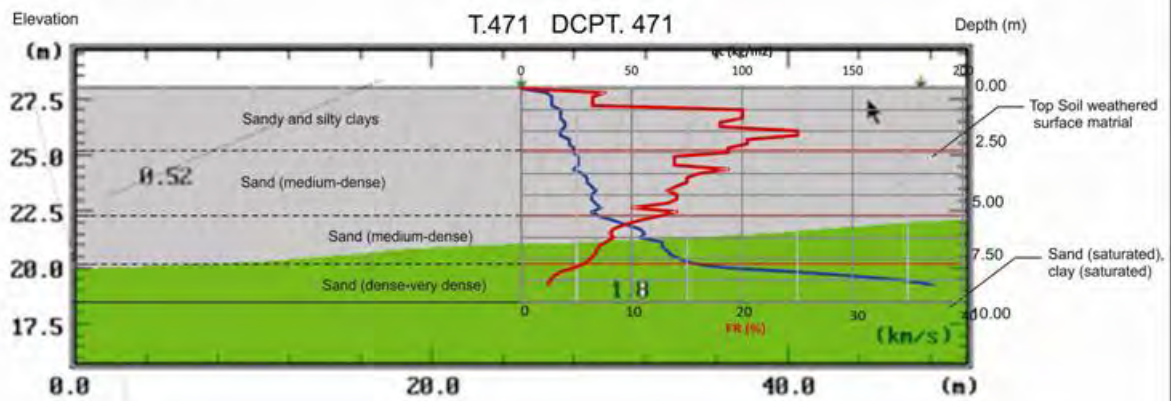
## Plan View



LEGEND :  $\Delta$  DCPT Point  
 - - - - - Seismic Line



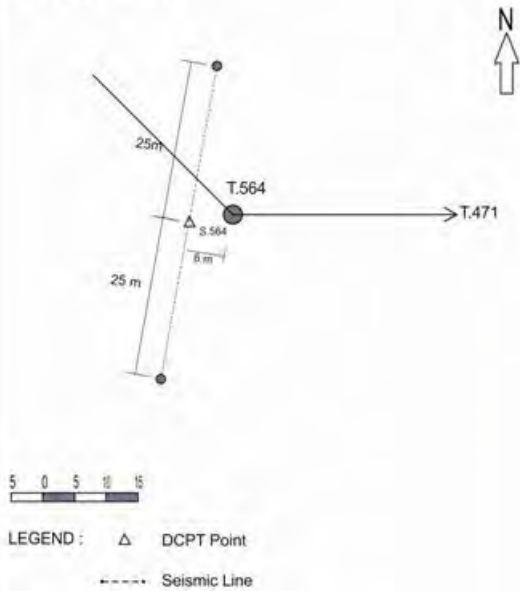
## Cross Section



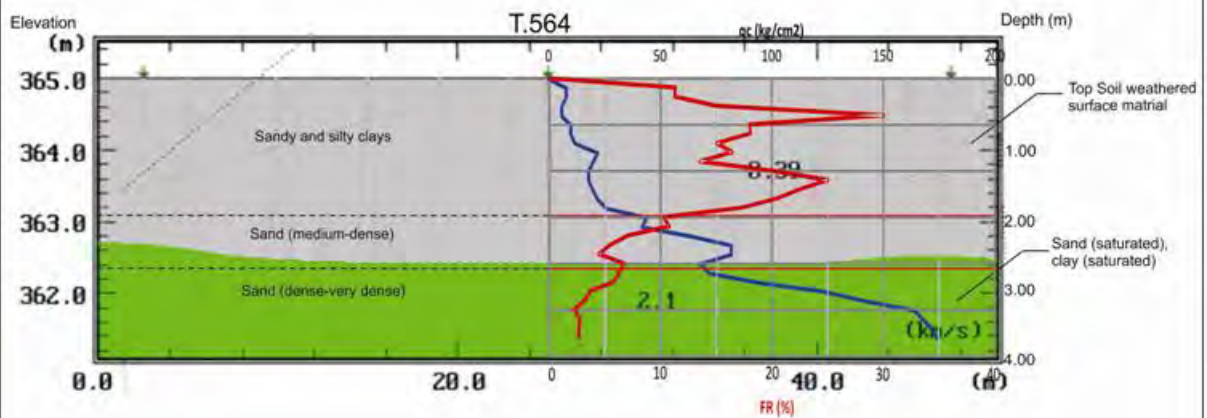
18) T.471 Ungaran - Mandirancan

T.564

### Plan View



### Cross Section

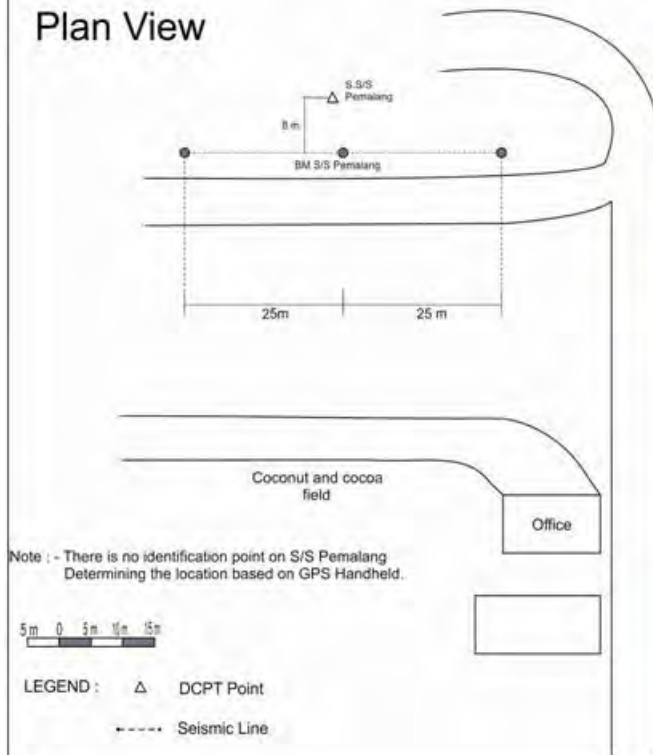


19) T.564 Ungaran - Mandirancan

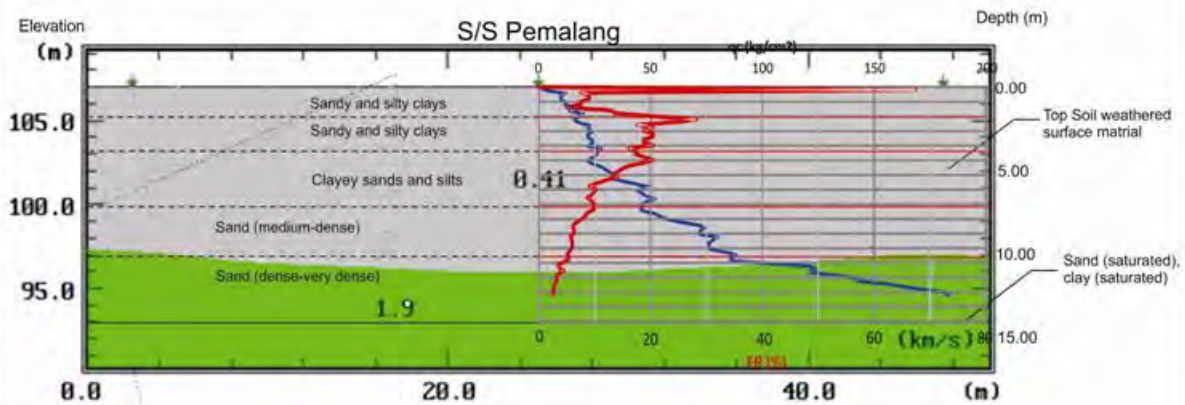


## S/S Pemalang

### Plan View

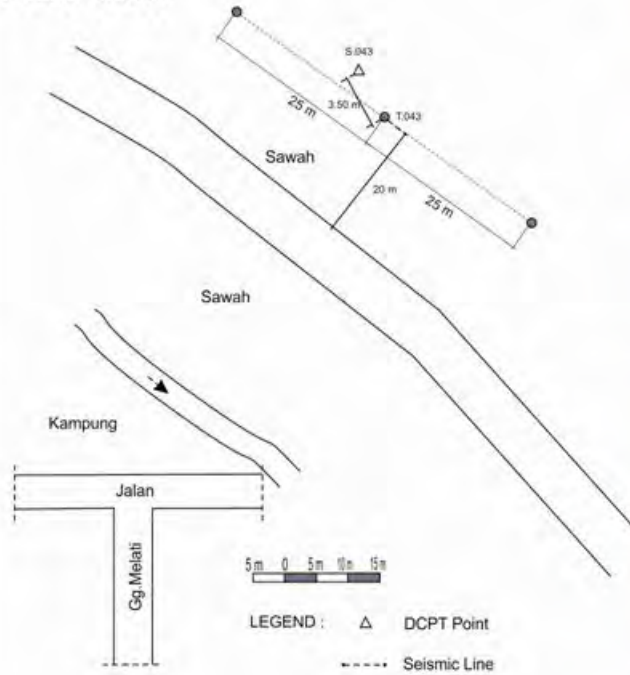


### Cross Section

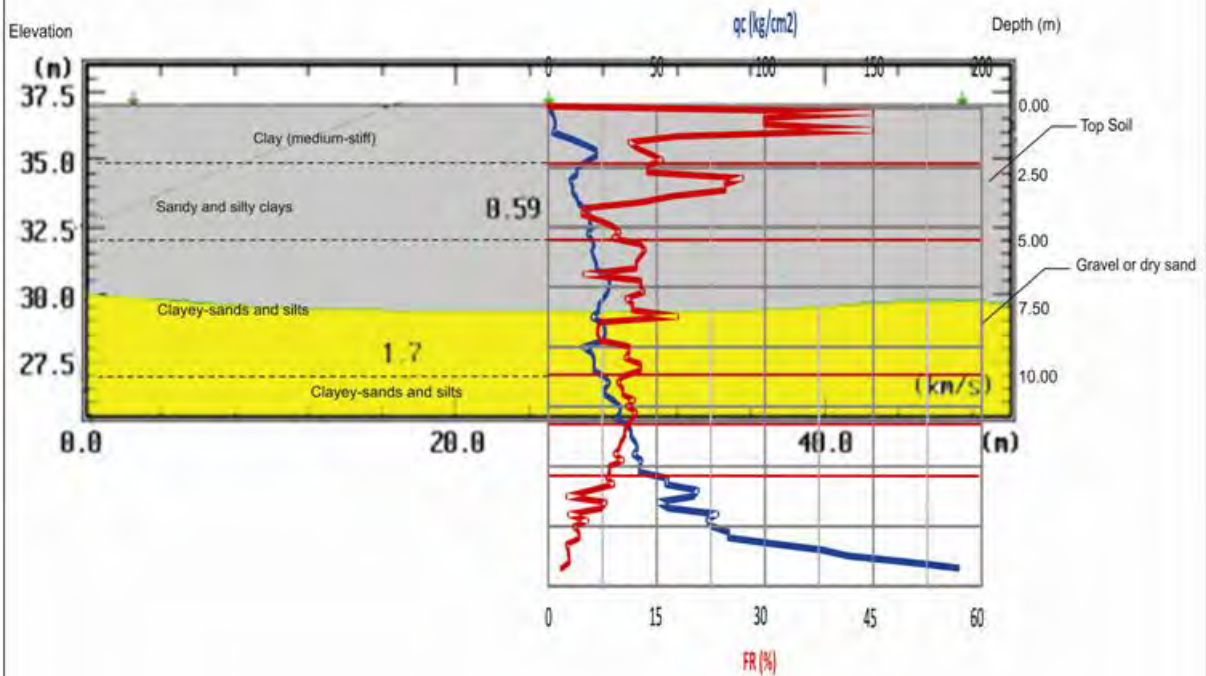


T.043

## Plan View



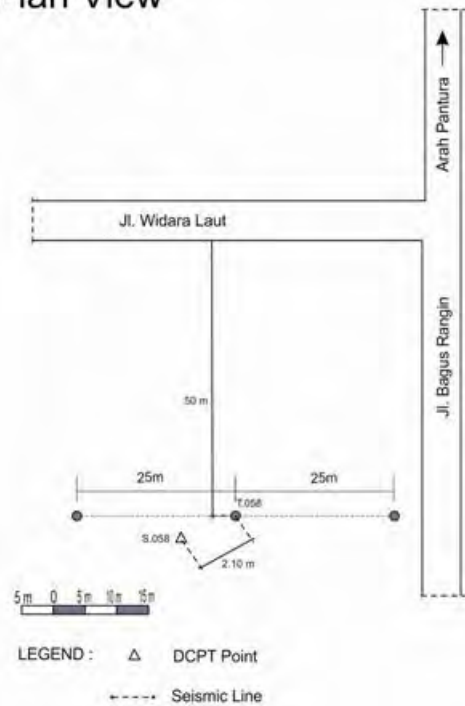
## Cross Section



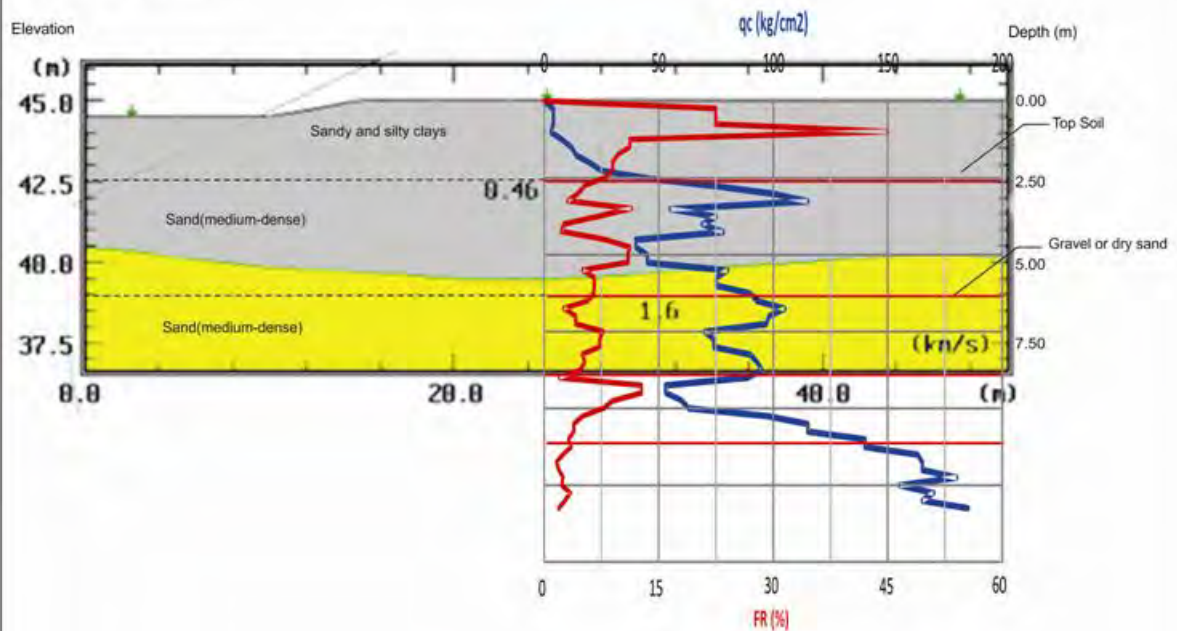
21) T.043 Mandirancan - Indramayu

T.058

## Plan View



## Cross Section

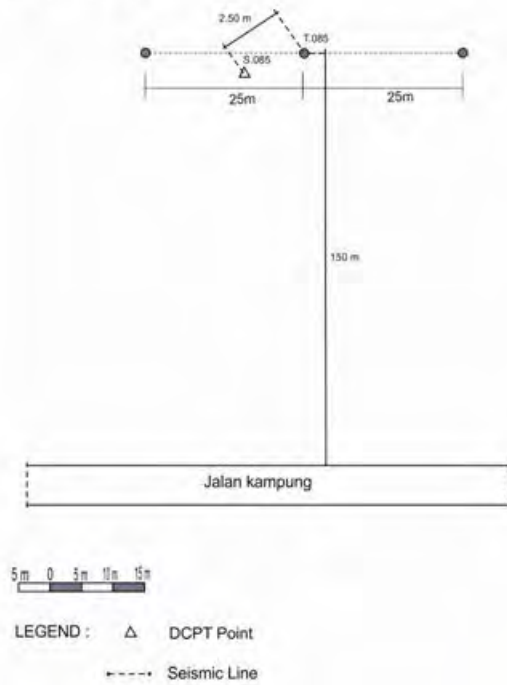


22) T.058 Mandirancan - Indramayu

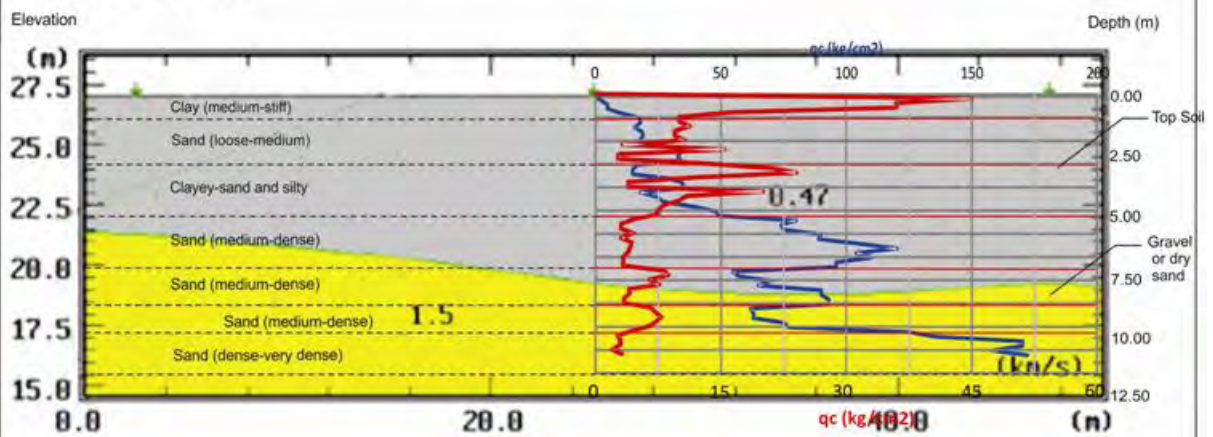


T.085

## Plan View

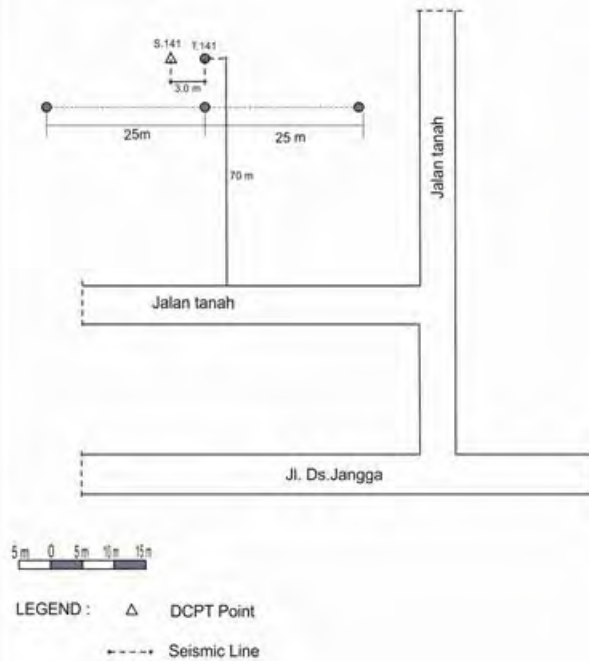


## Cross Section

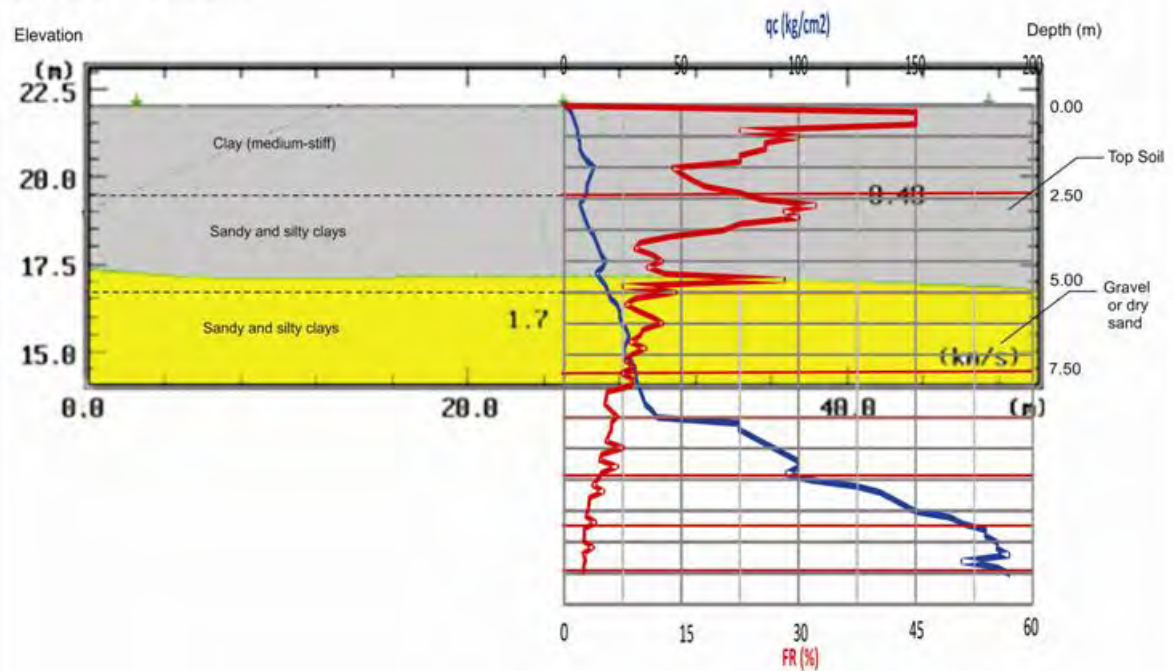


T.141

## Plan View

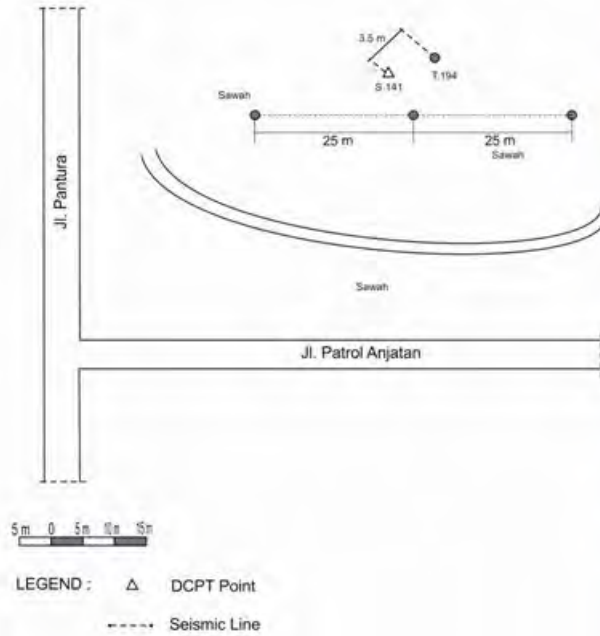


## Cross Section

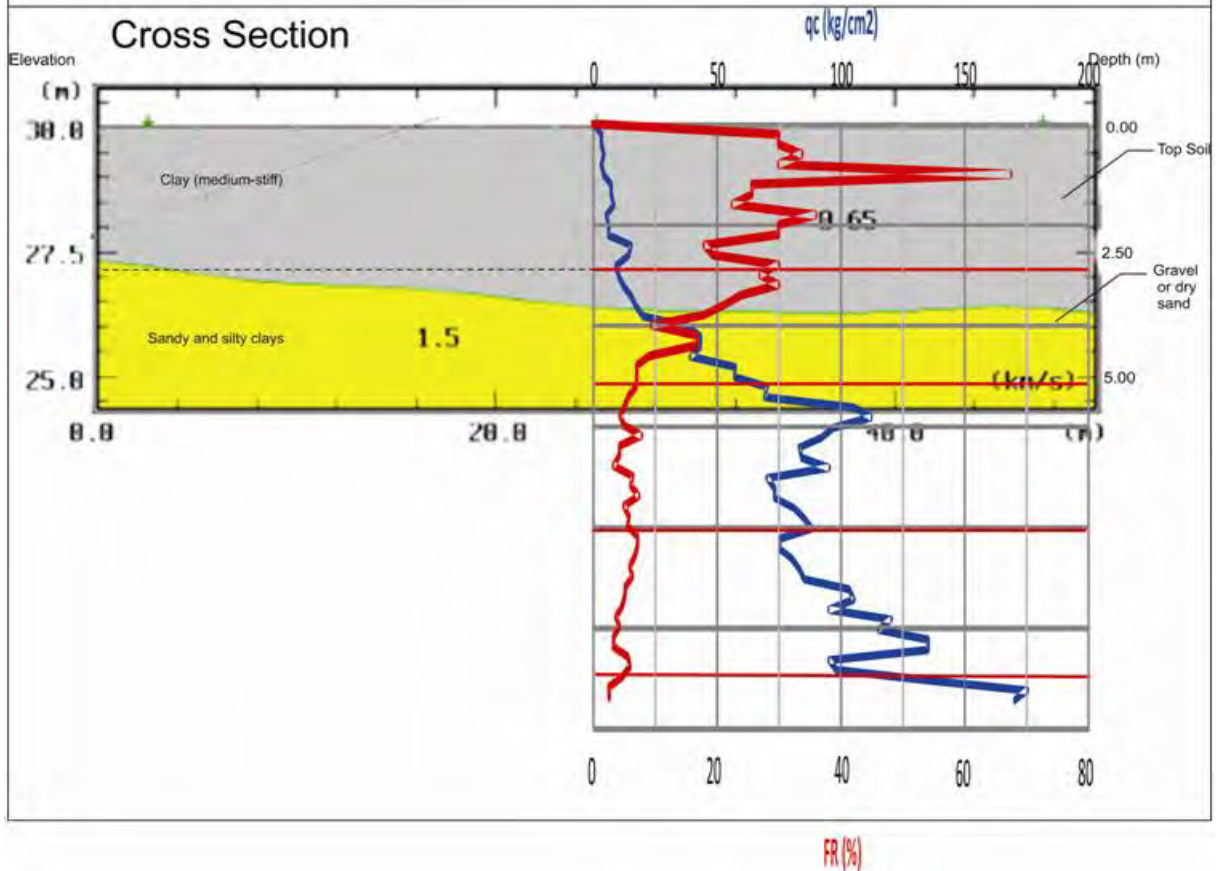


T.194

## Plan View



## Cross Section



25) T.194 Mandirancan - Indramayu