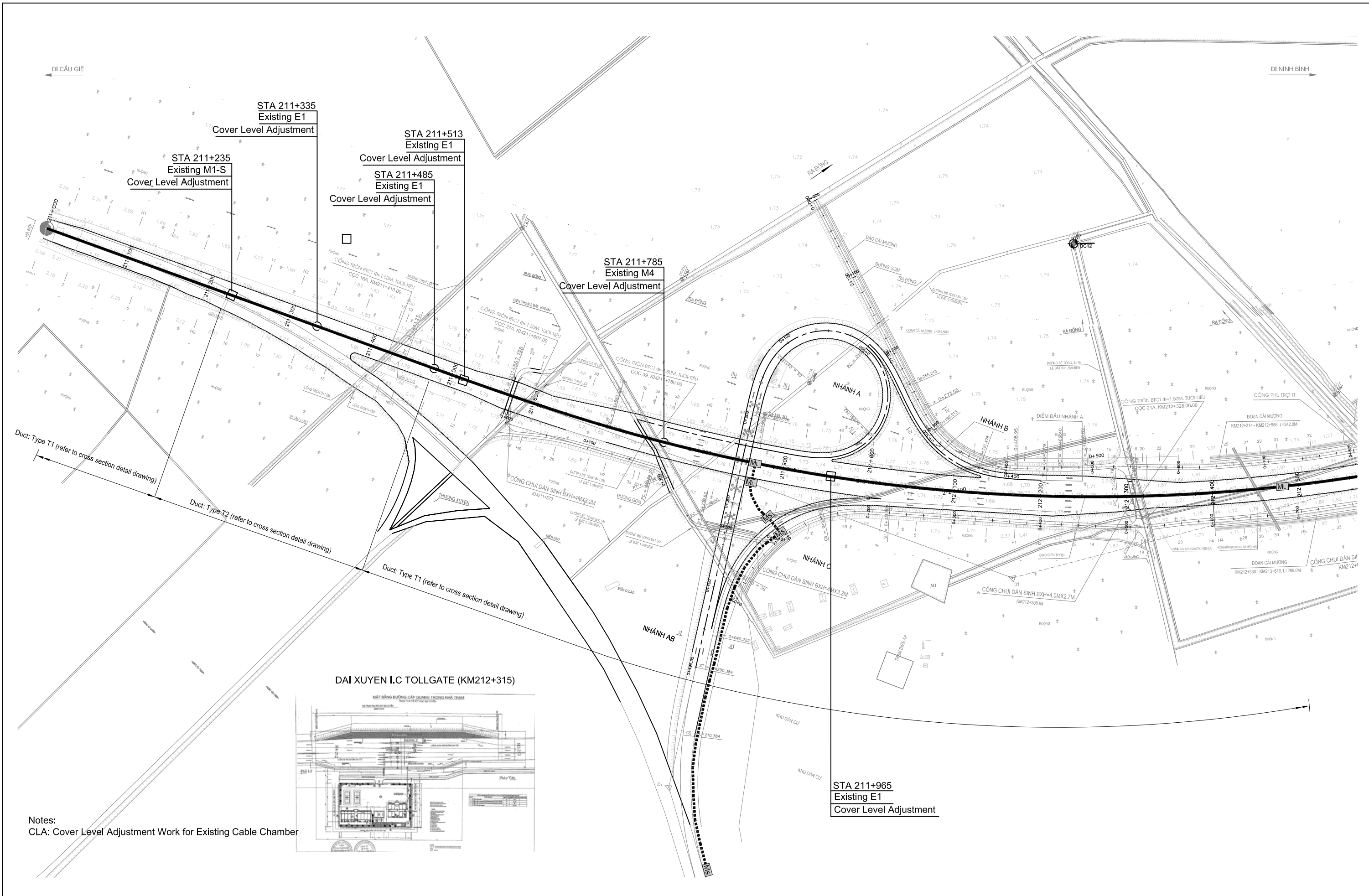
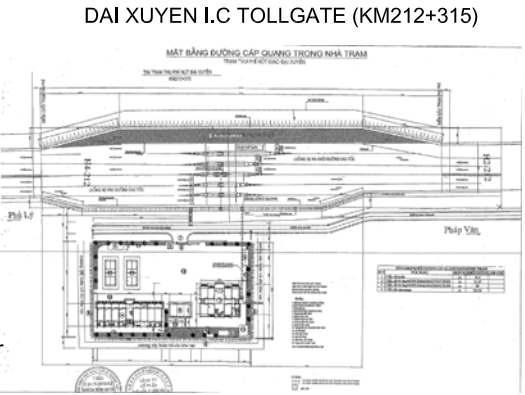


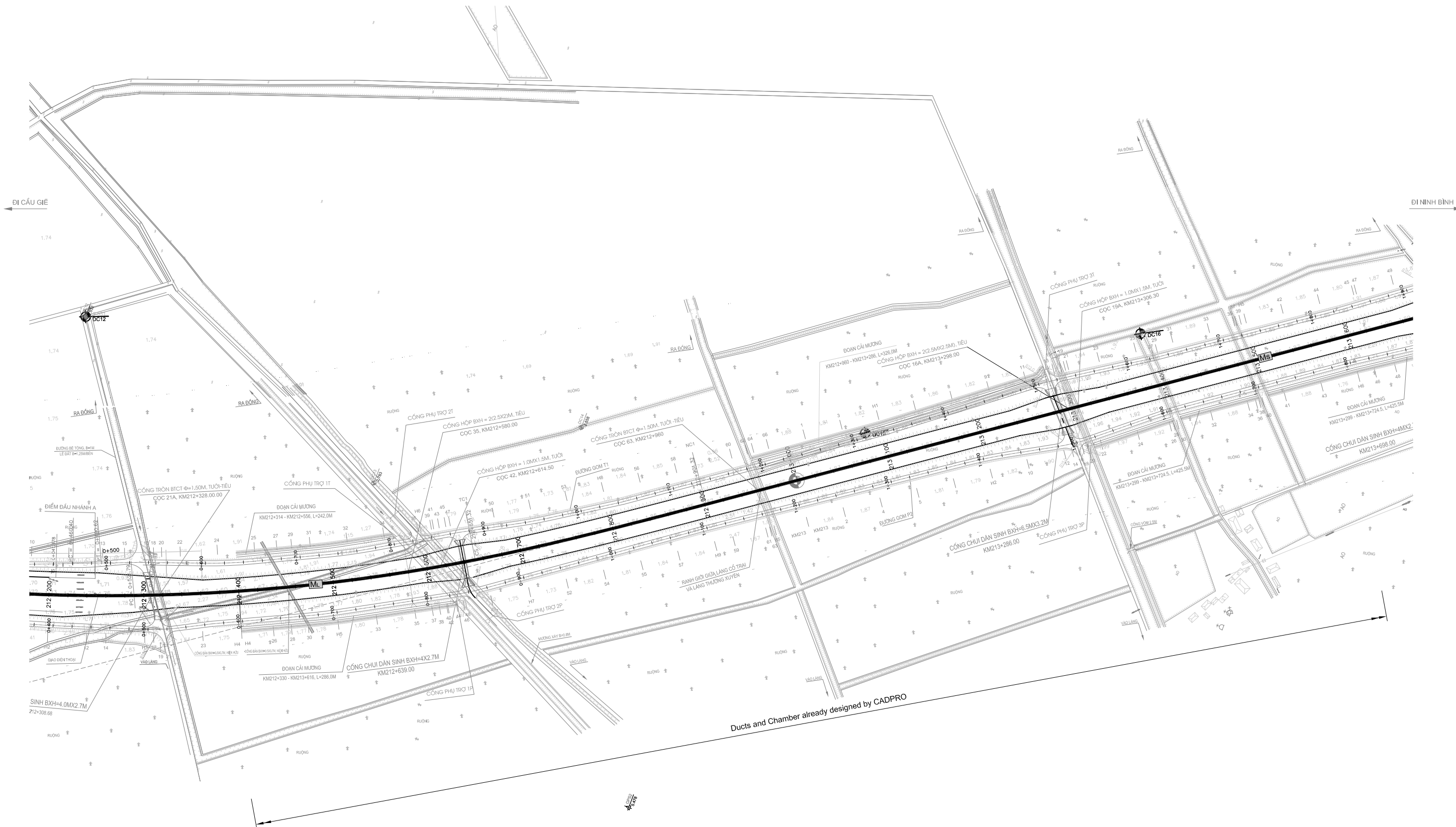
GIE - NINH BINH EXPRESSWAY



Notes:
 CLA: Cover Level Adjustment Work for Existing Cable Chamber



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| CONSULTANT | | | | | SOCIALIST REPUBLIC OF VIETNAM | | | | | ITS INTEGRATION PROJECT IN NORTHERN AREA OF VIETNAM | | | | | PACKAGE: | | | | | |
| ORIENTAL CONSULTANTS GLOBAL CO., LTD METROPOLITAN EXPRESSWAY CO., LTD NEXCO EAST ENGINEERING CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD ABEAM CONSULTING LTD. | | | | | TITLE | NAME | SIGNATURE | DATE | MINISTRY OF TRANSPORT | | | | | DRAWING TITLE: | | | | | DRAWING No.: | |
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Notes:
 Roadside equipment must be designed in this project.
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 M1, M3, M4, T2, T3 shall be designed in this project.

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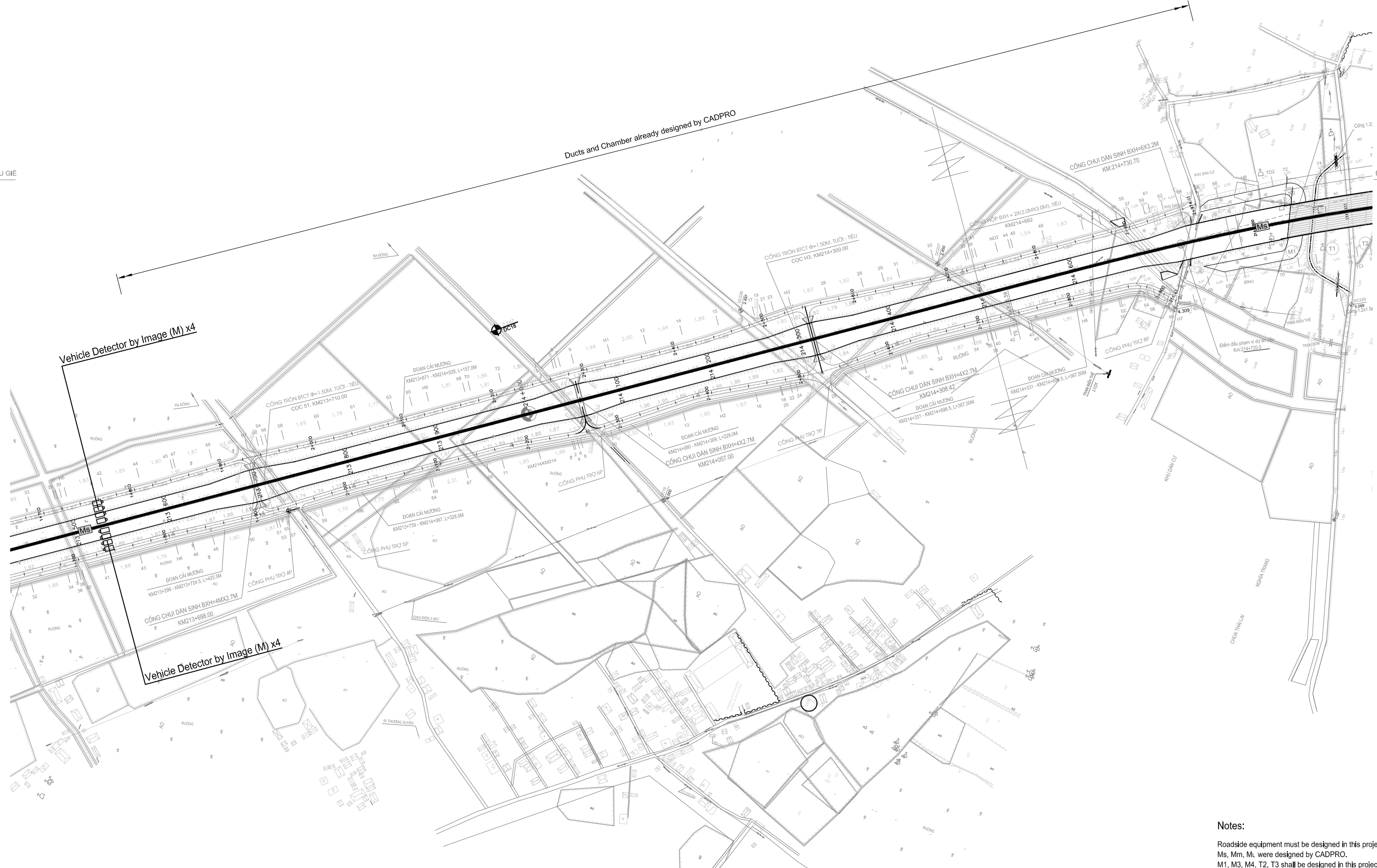
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Ducts and Chamber already designed by CADPRO

Vehicle Detector by Image (M) x4

Vehicle Detector by Image (M) x4



Notes:
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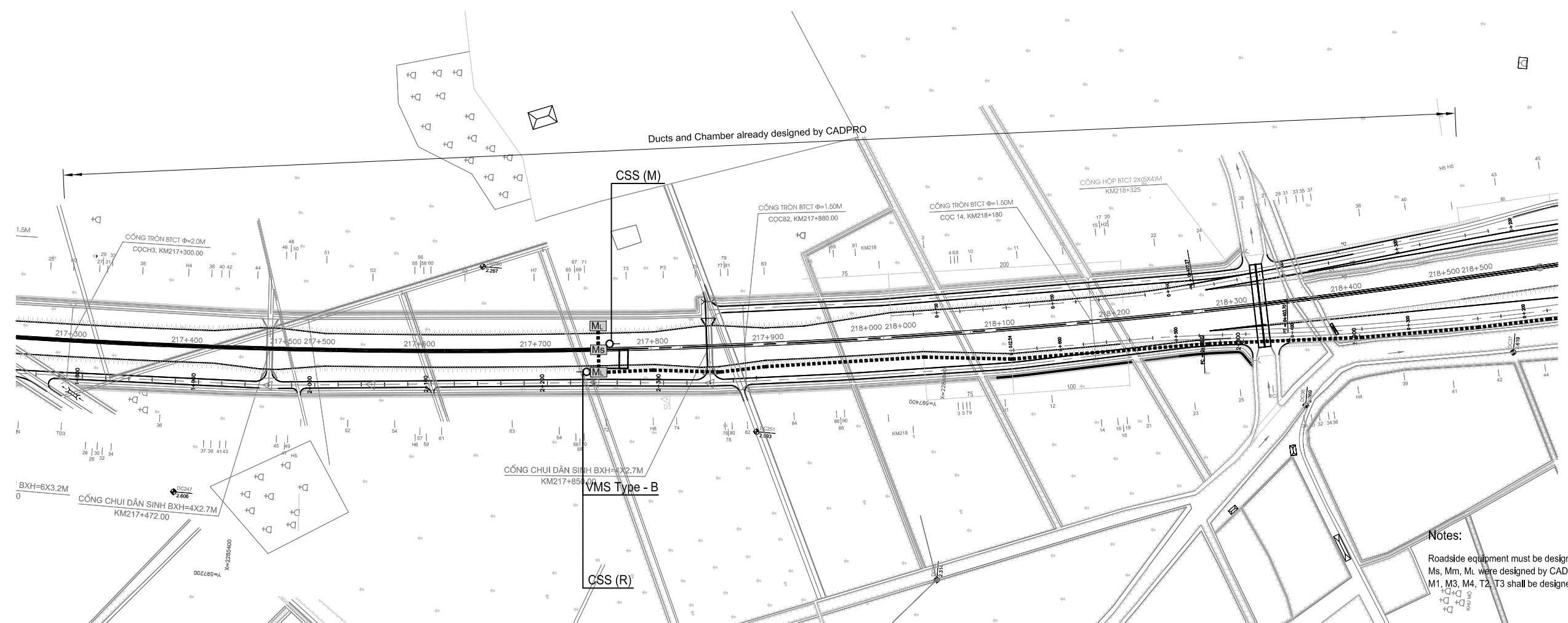
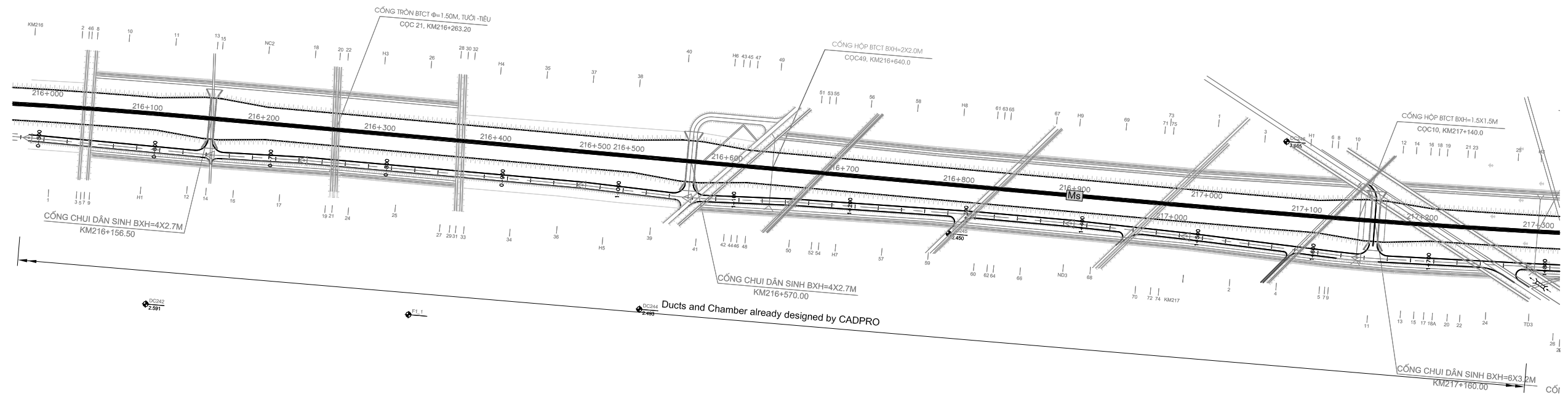
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| | | | | | PREPARED BY | | | | | | | | | LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 213+600 ~ KM 214+800 , GIE - NINH BINH EXP.) | | | | | VII.1-03 | |
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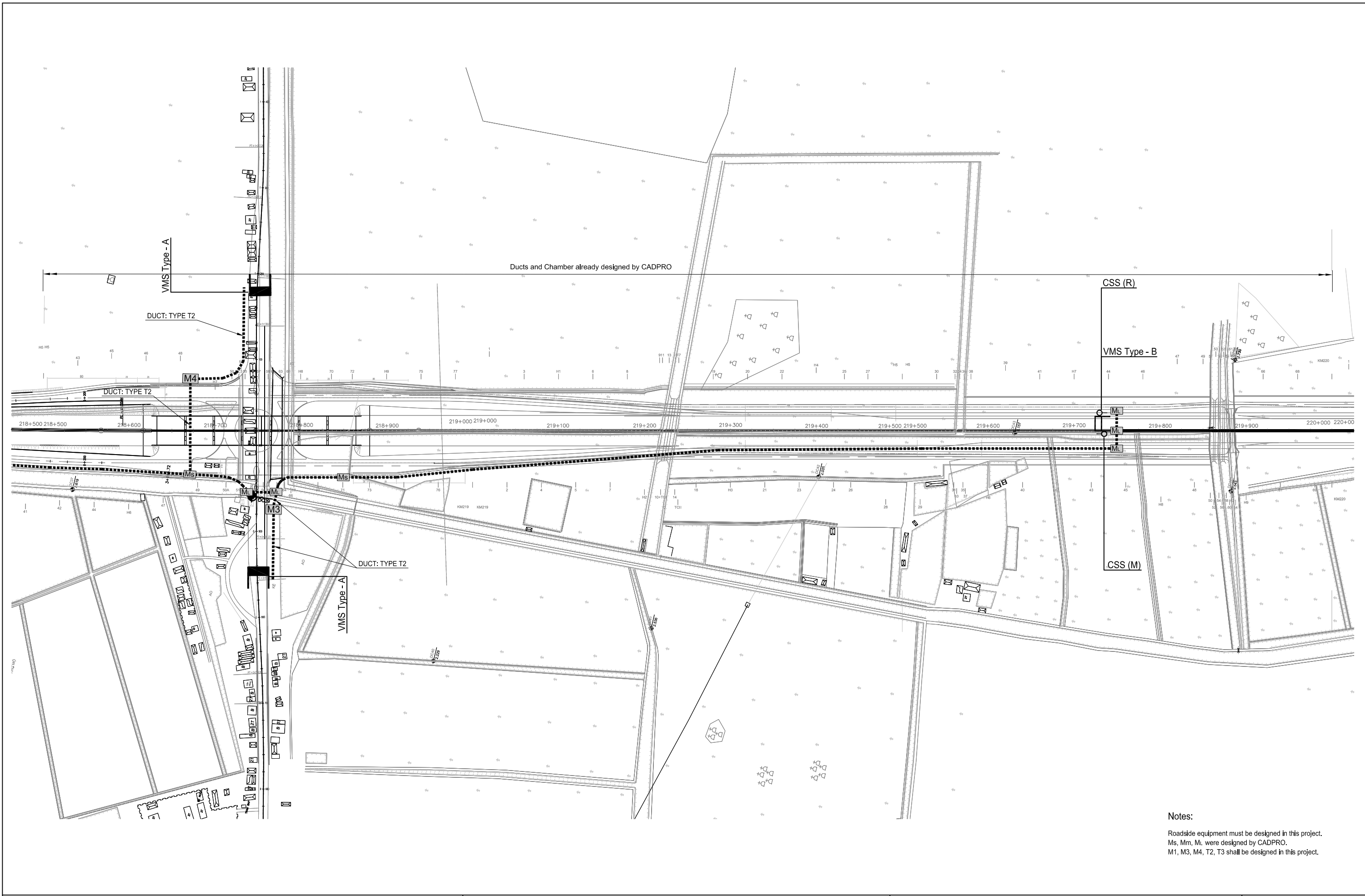


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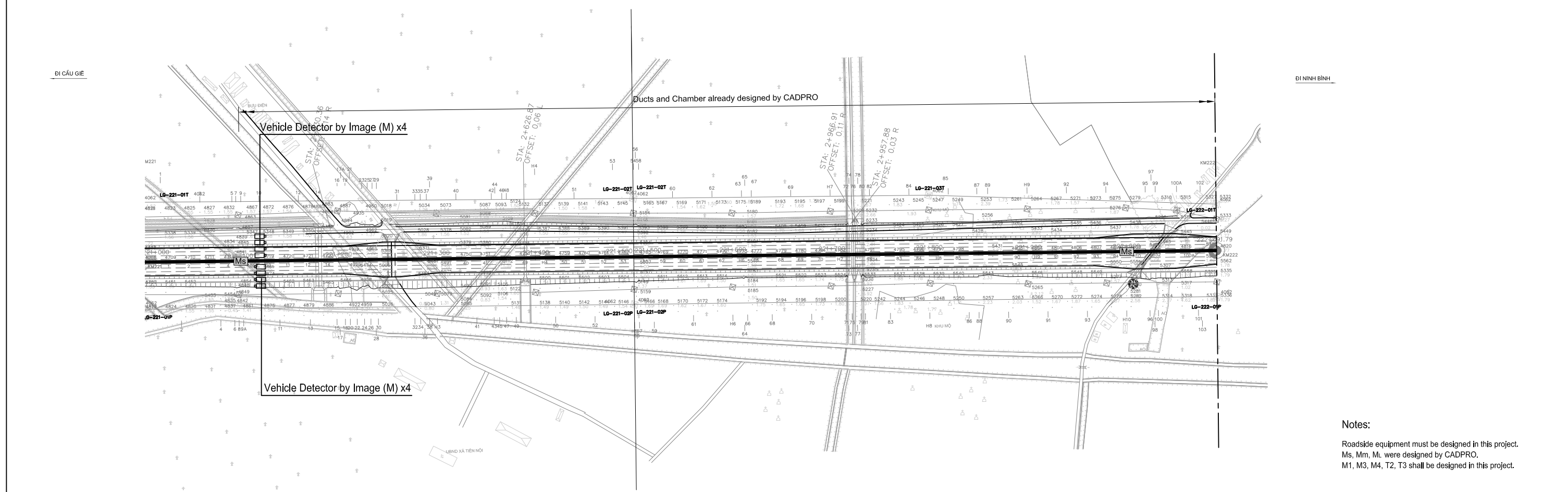
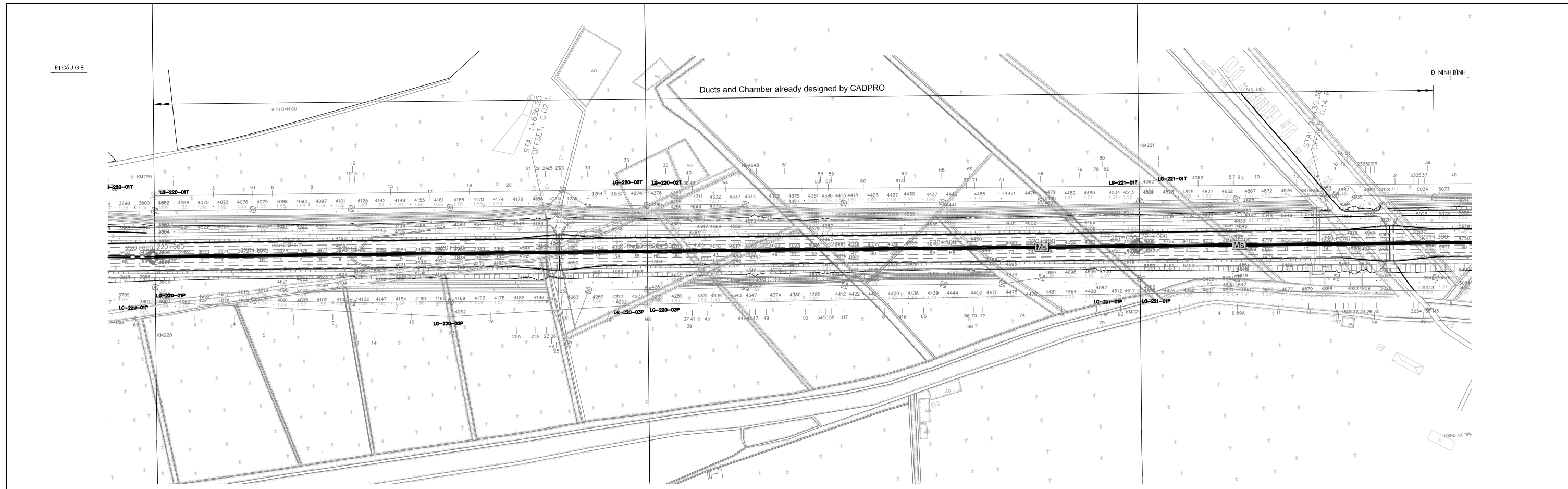
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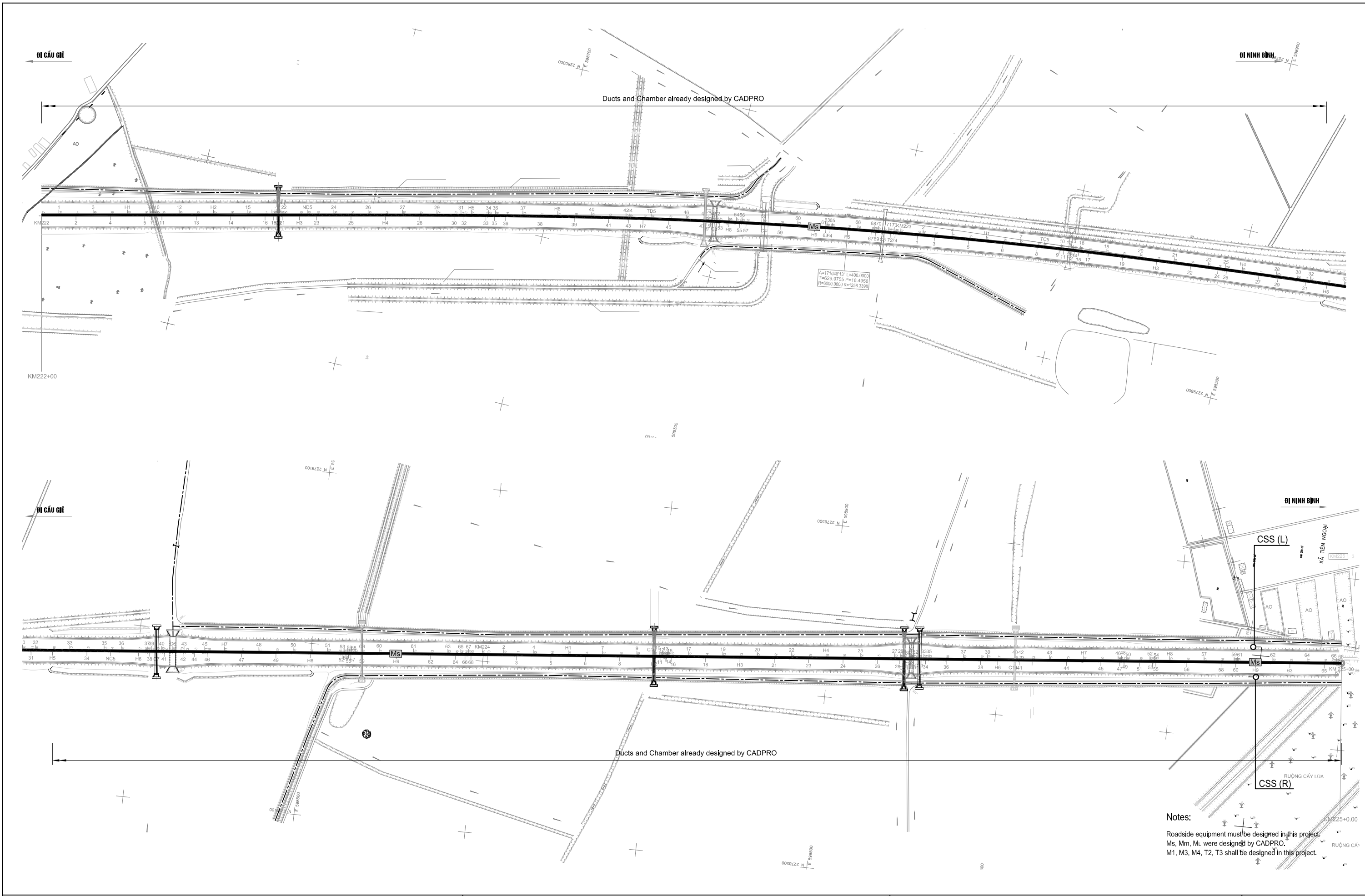
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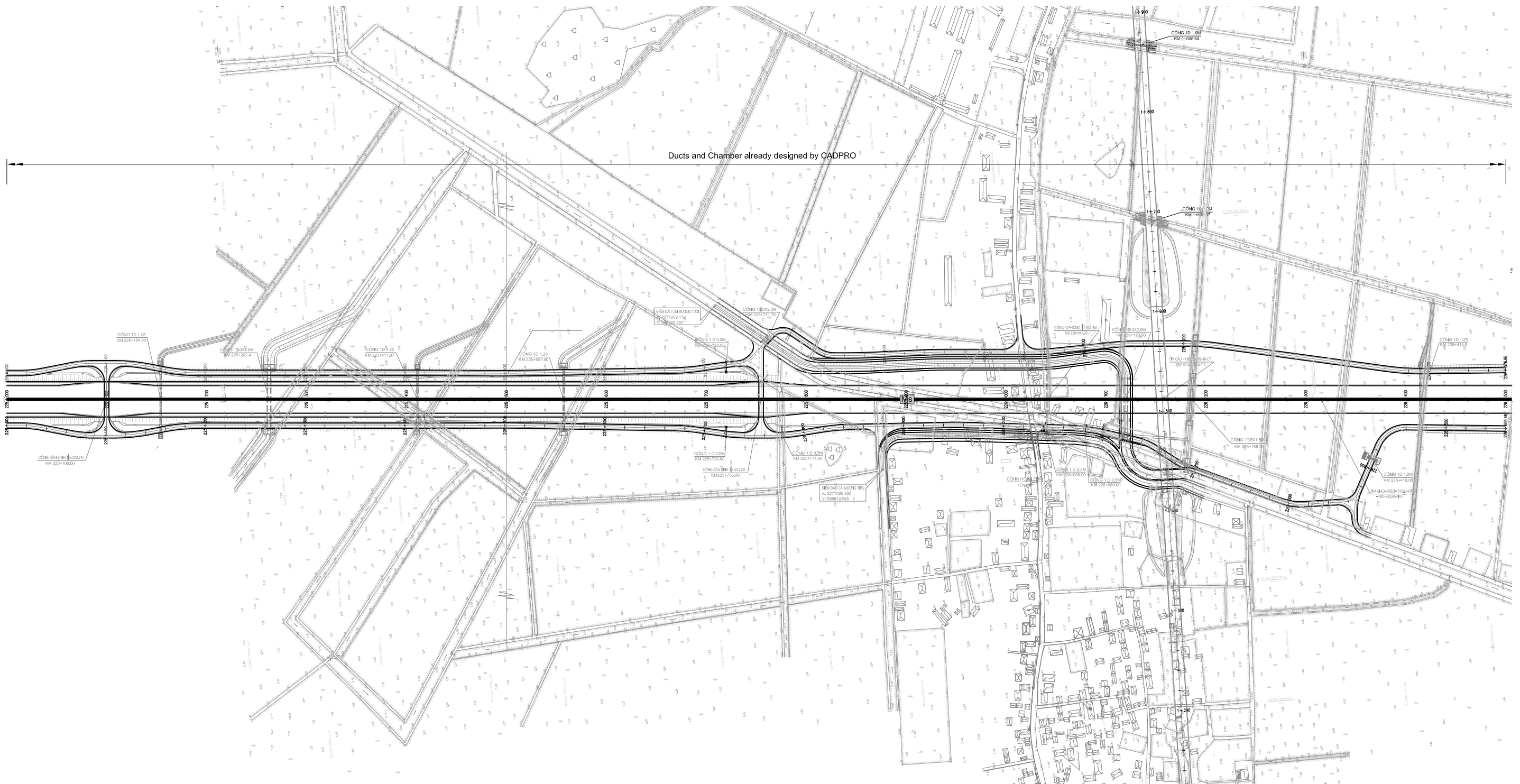
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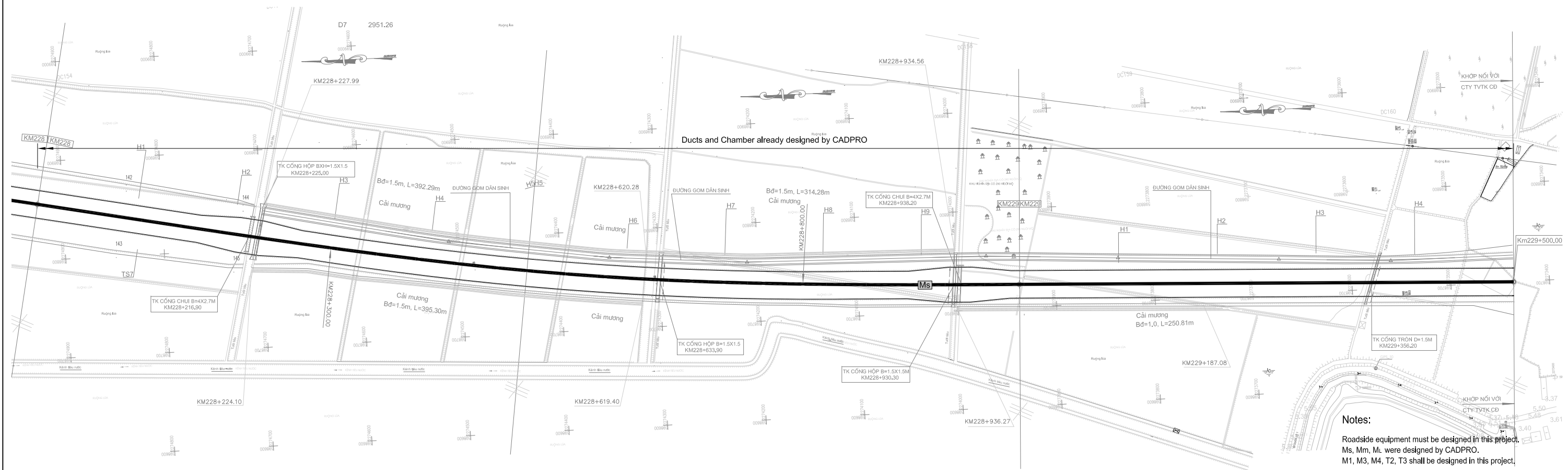
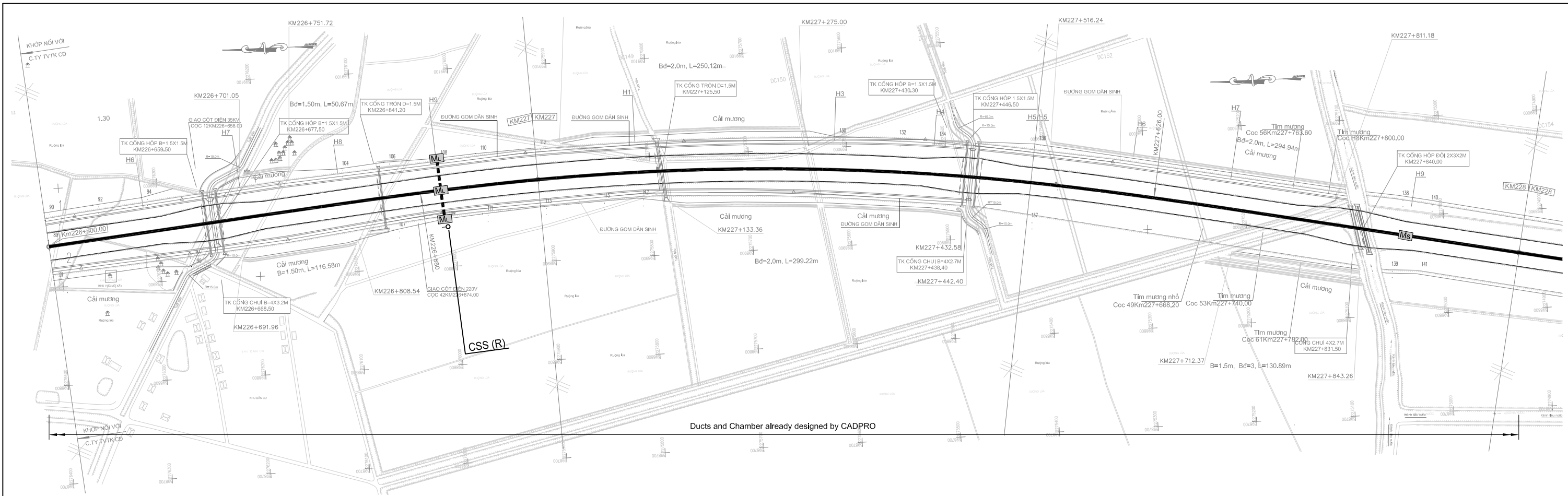
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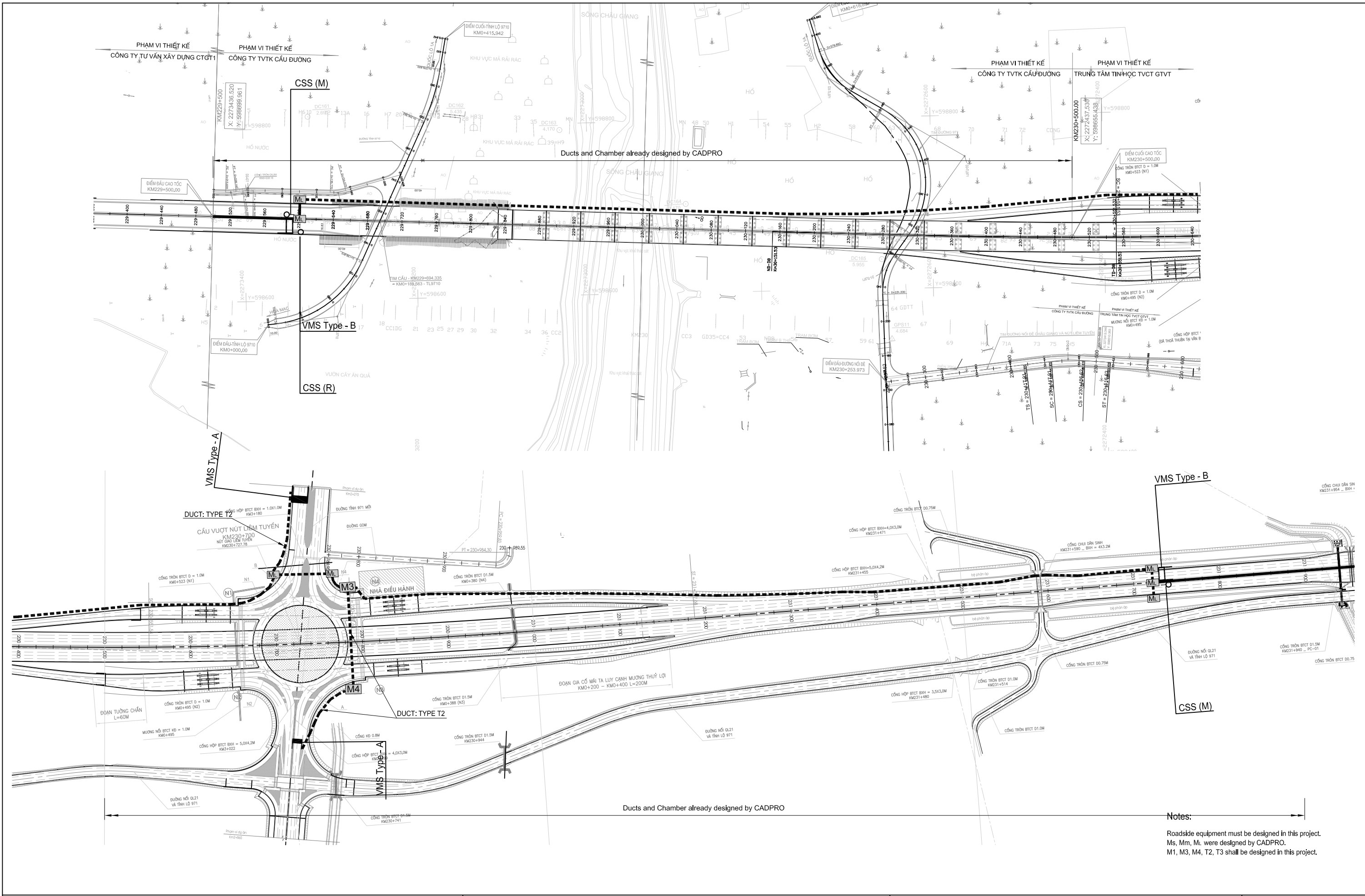
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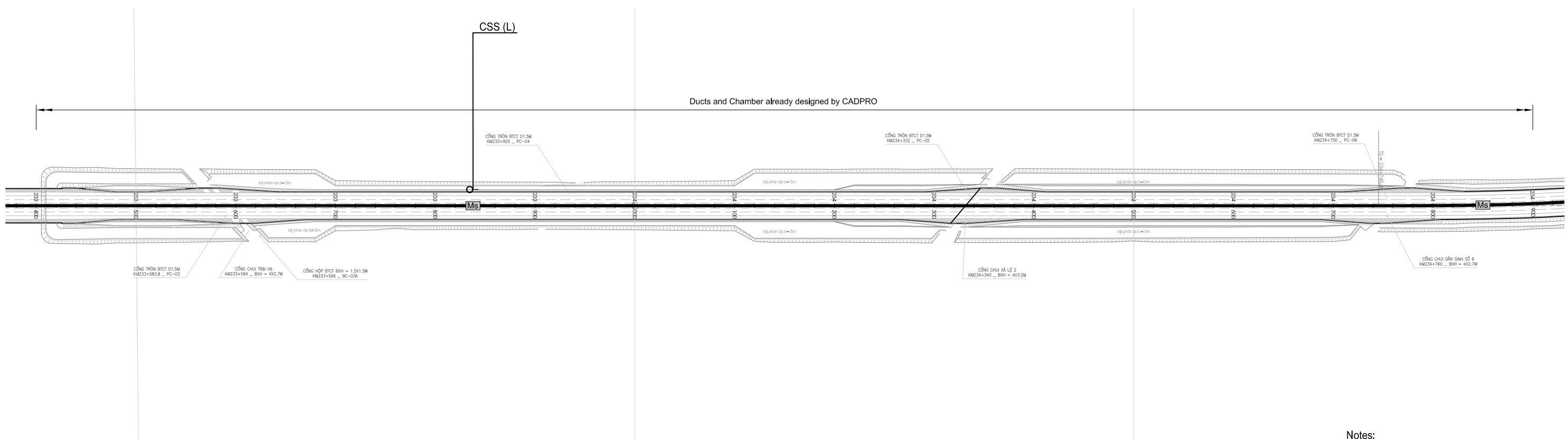
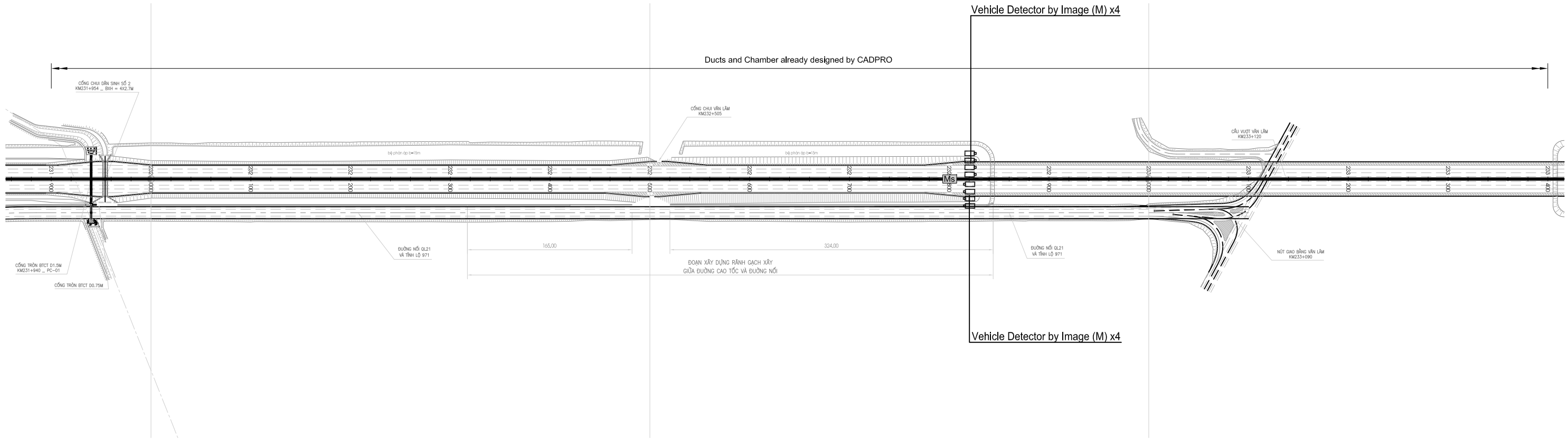


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DRAWING TITLE:
**LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT
 (KM 229+500 ~ KM 231+900 , GIE - NINH BINH EXP.)**

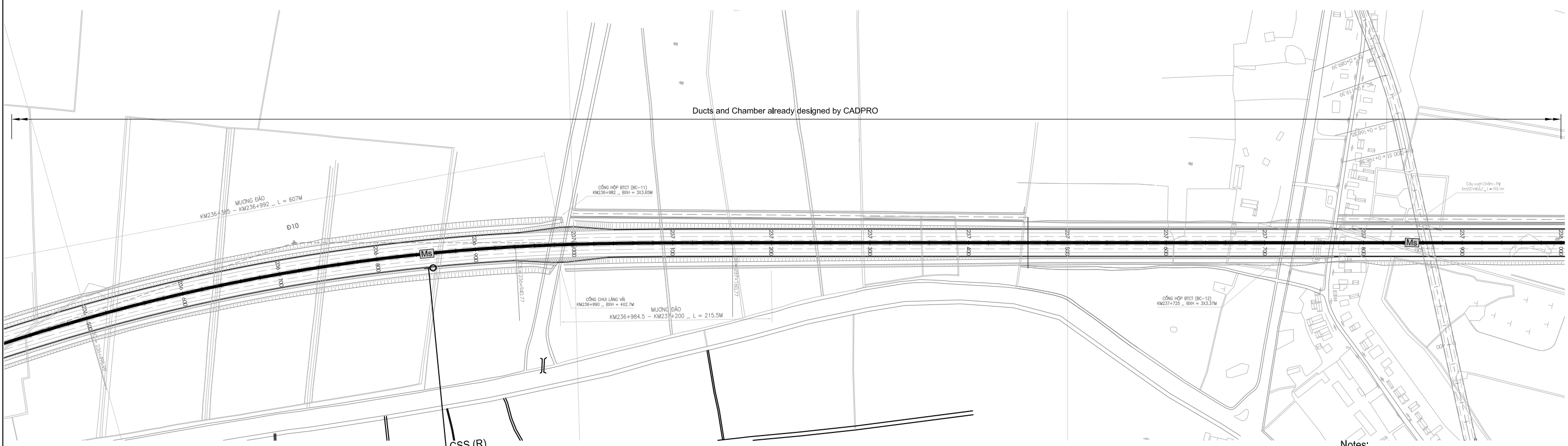
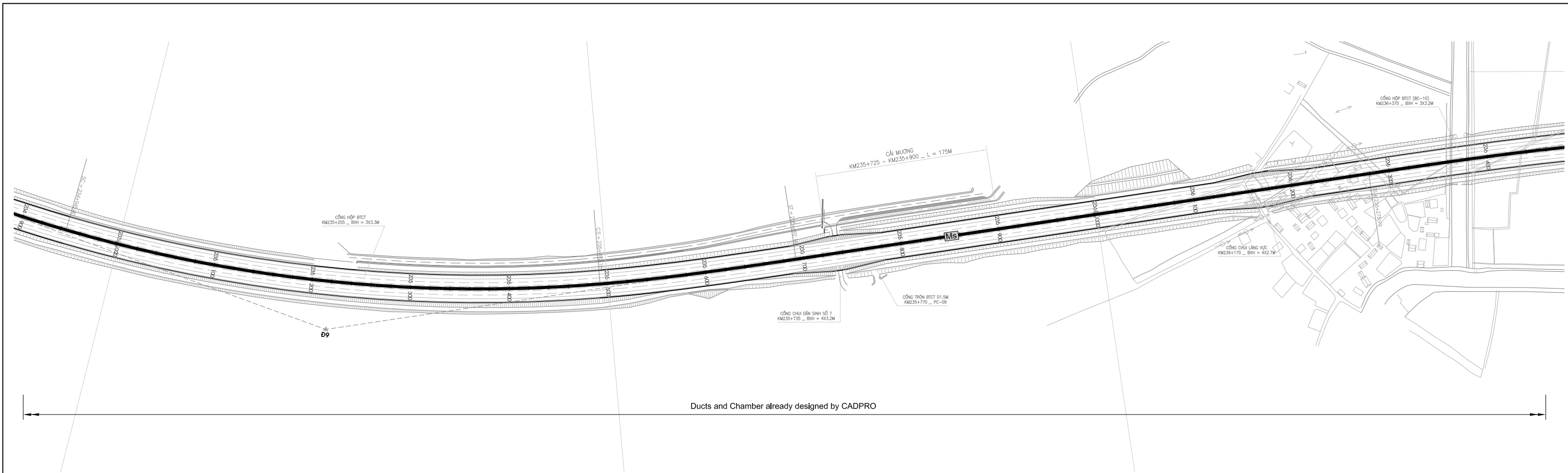
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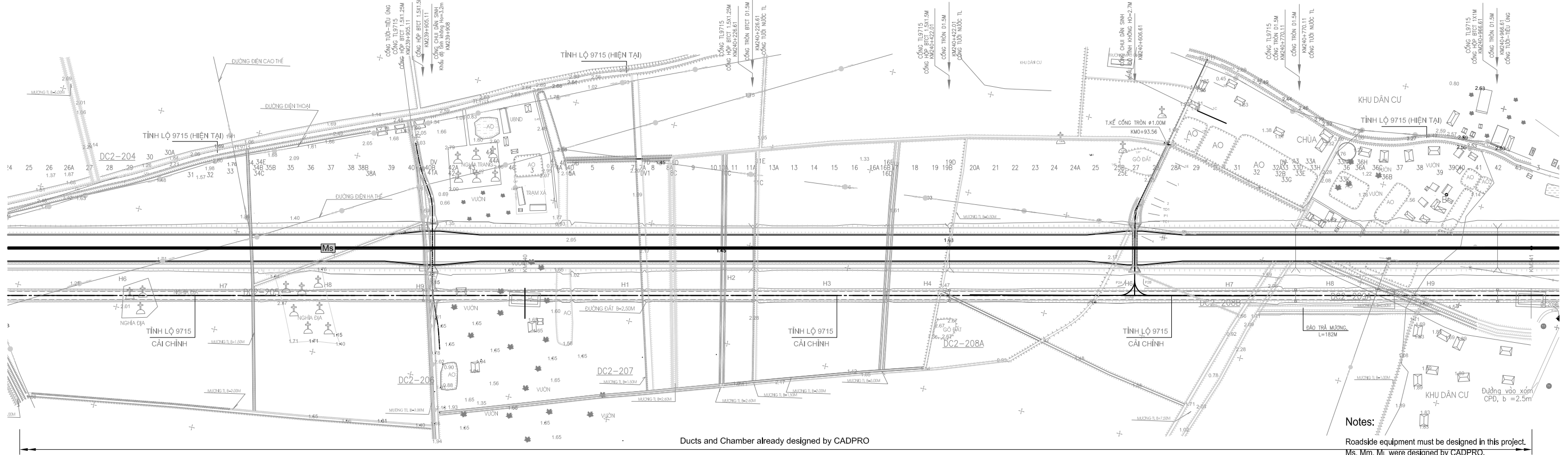
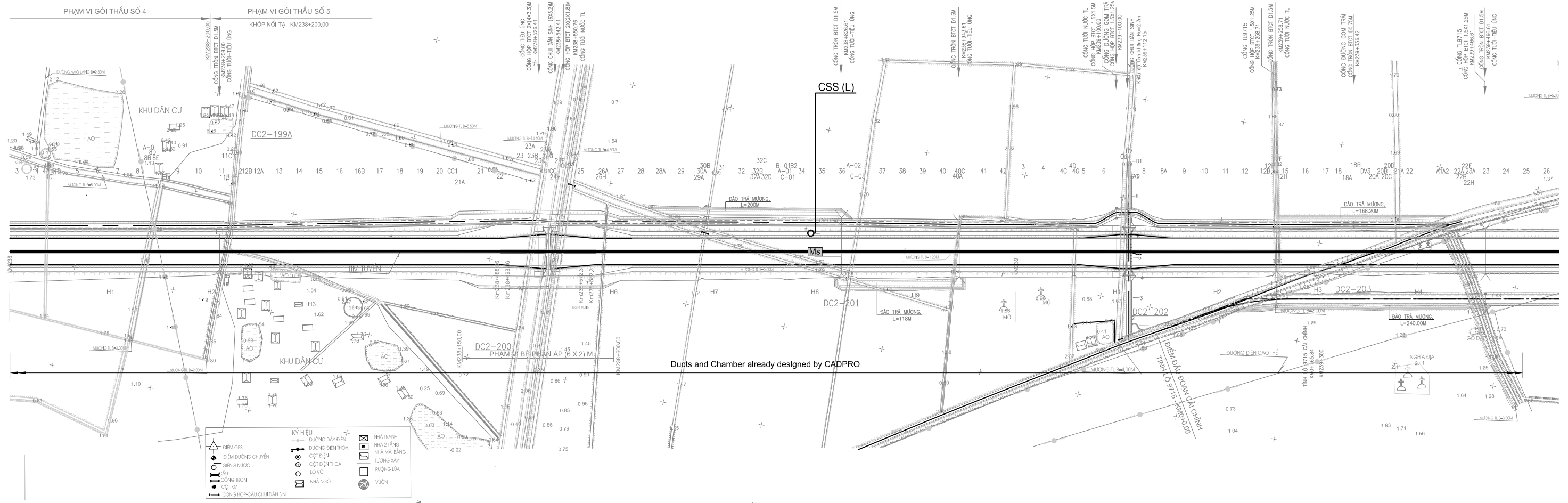
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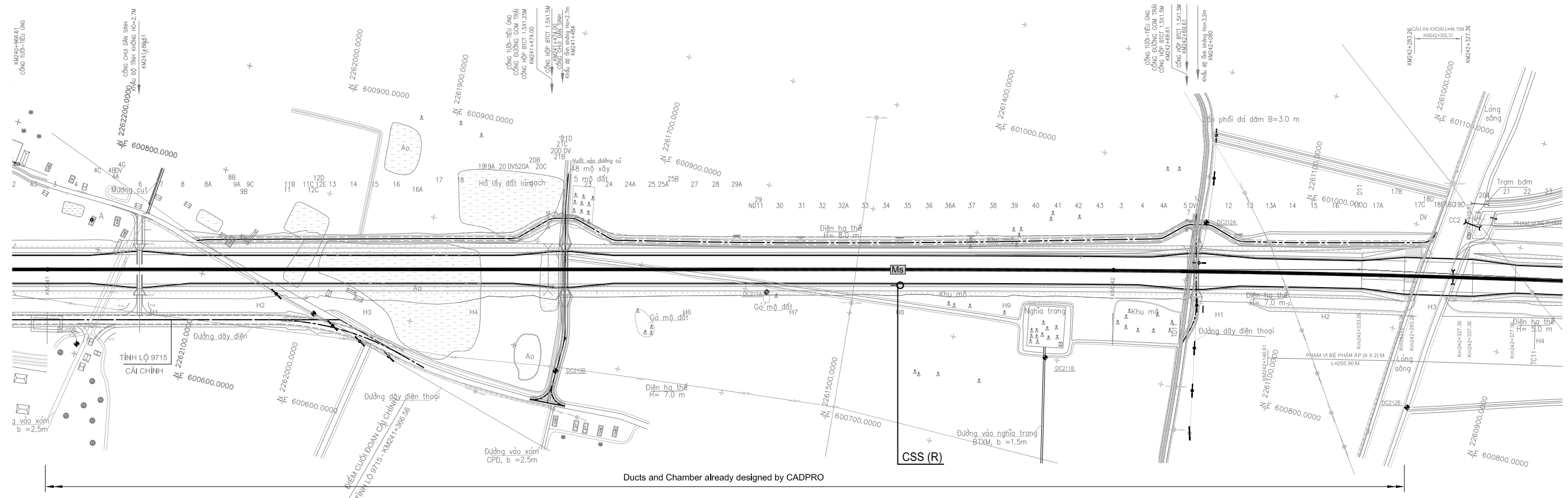
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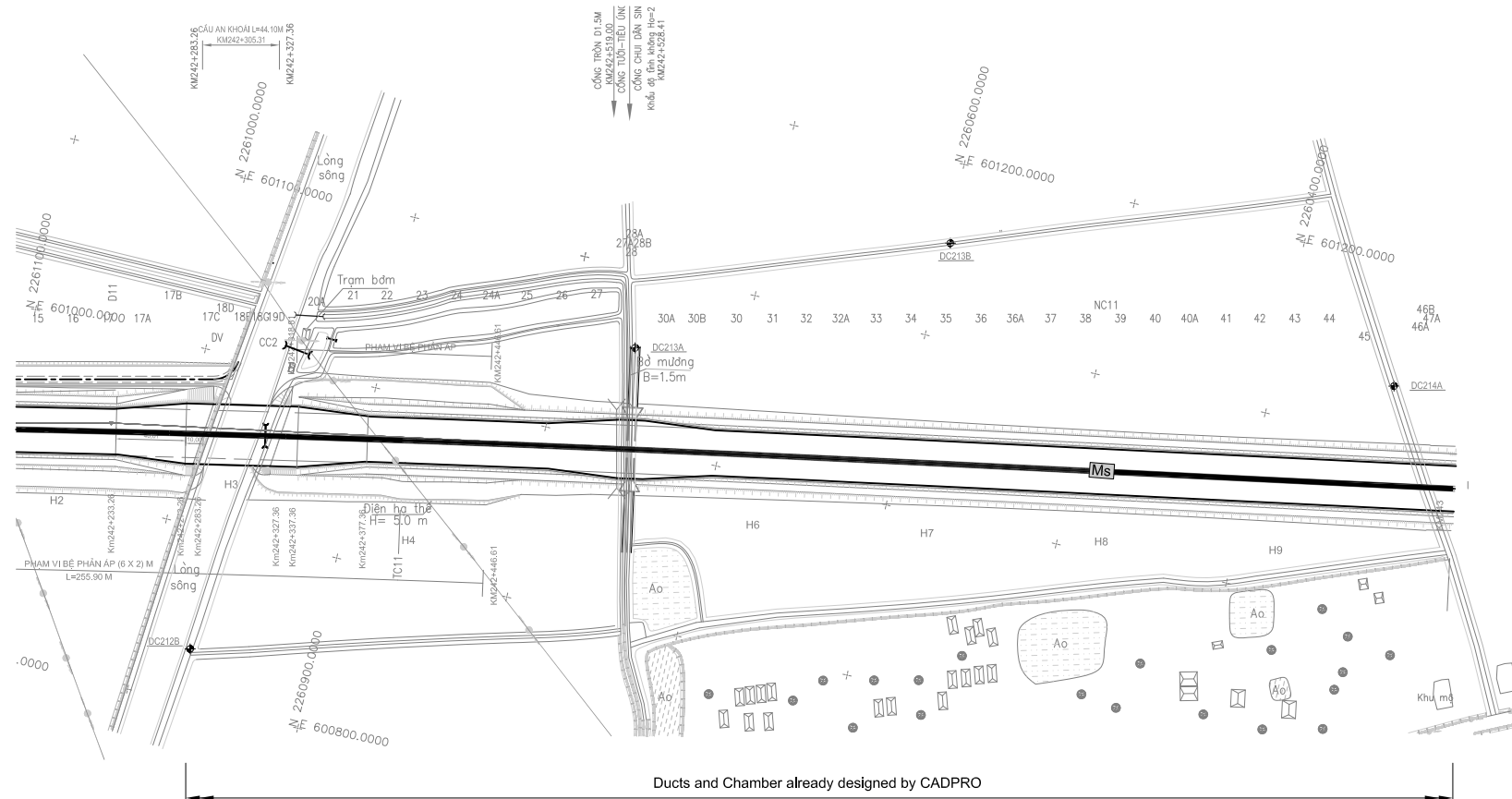


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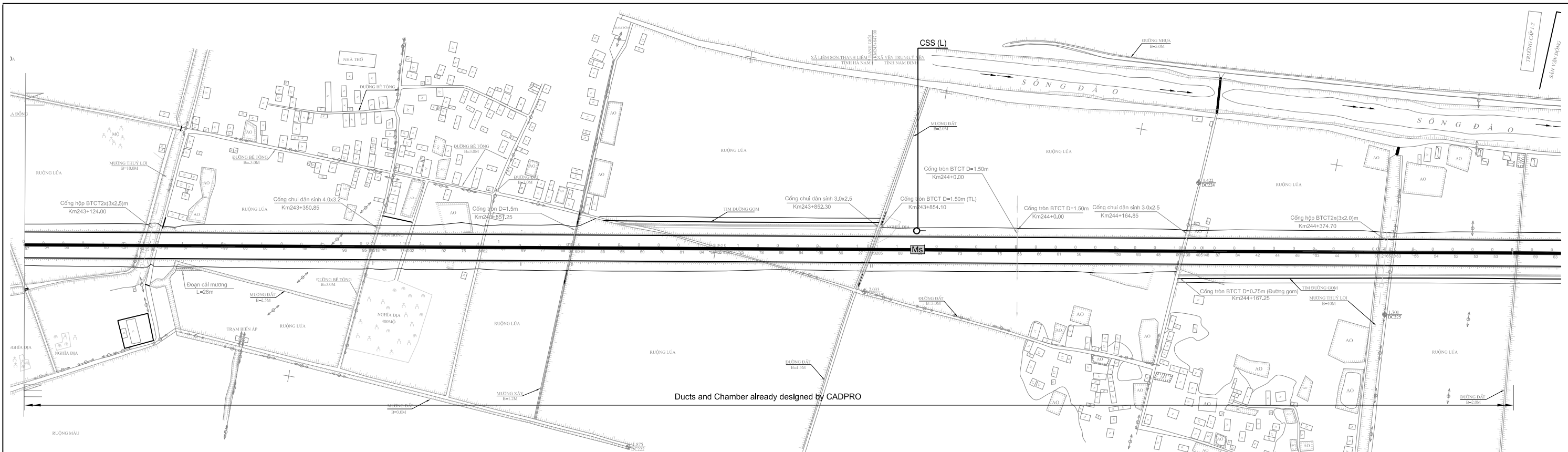
Ducts and Chamber already designed by CADPRO



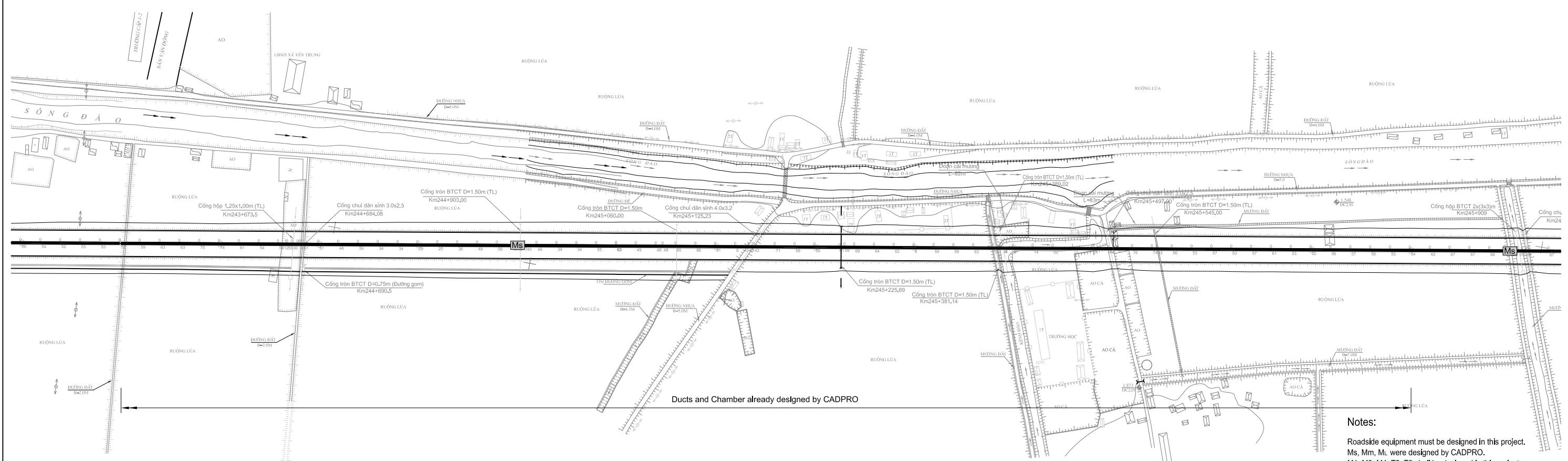
Ducts and Chamber already designed by CADPRO

Notes:
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 M1, M3, M4, T2, T3 shall be designed in this project.

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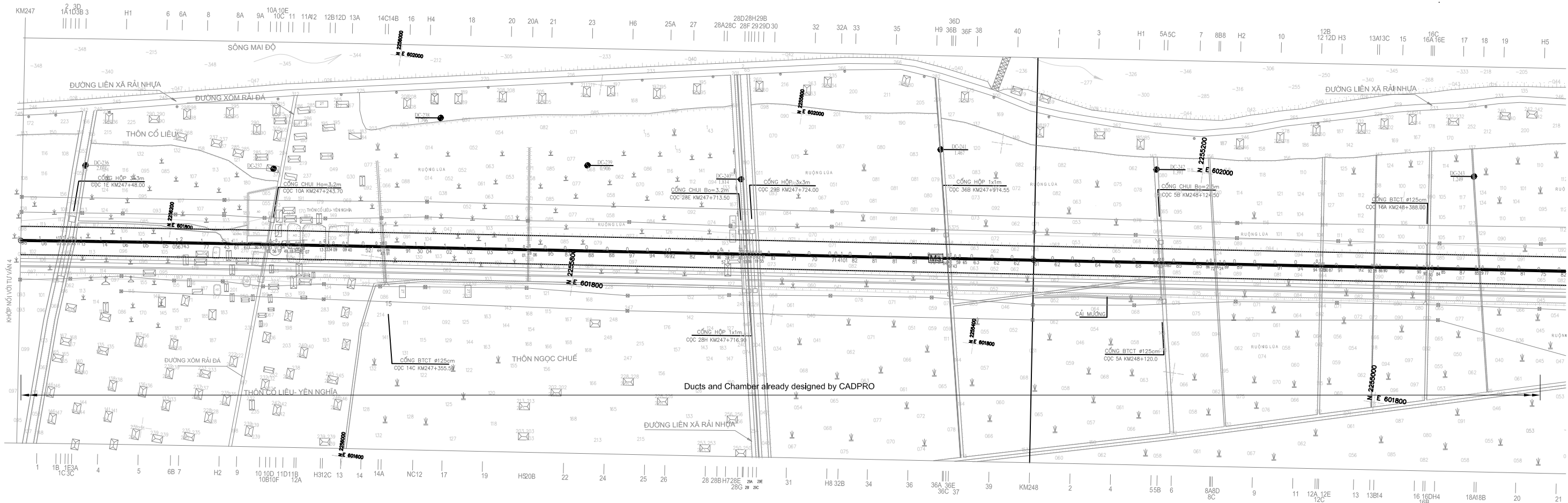
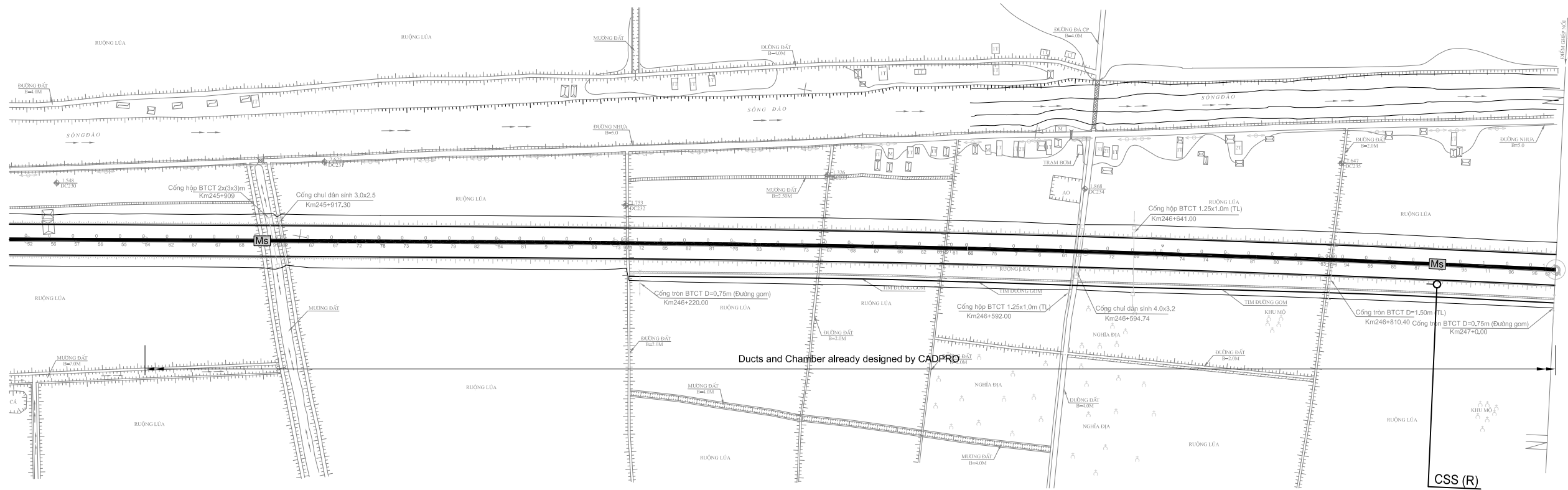
Ducts and Chamber already designed by CADPRO



Ducts and Chamber already designed by CADPRO

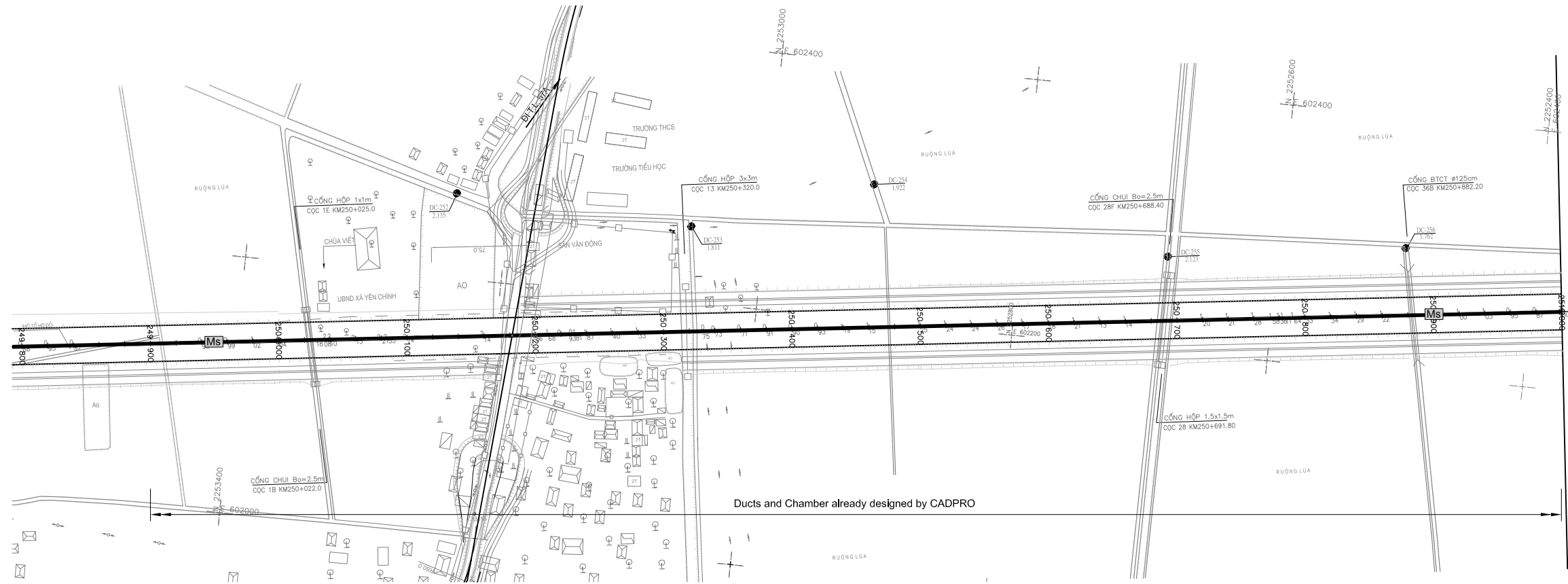
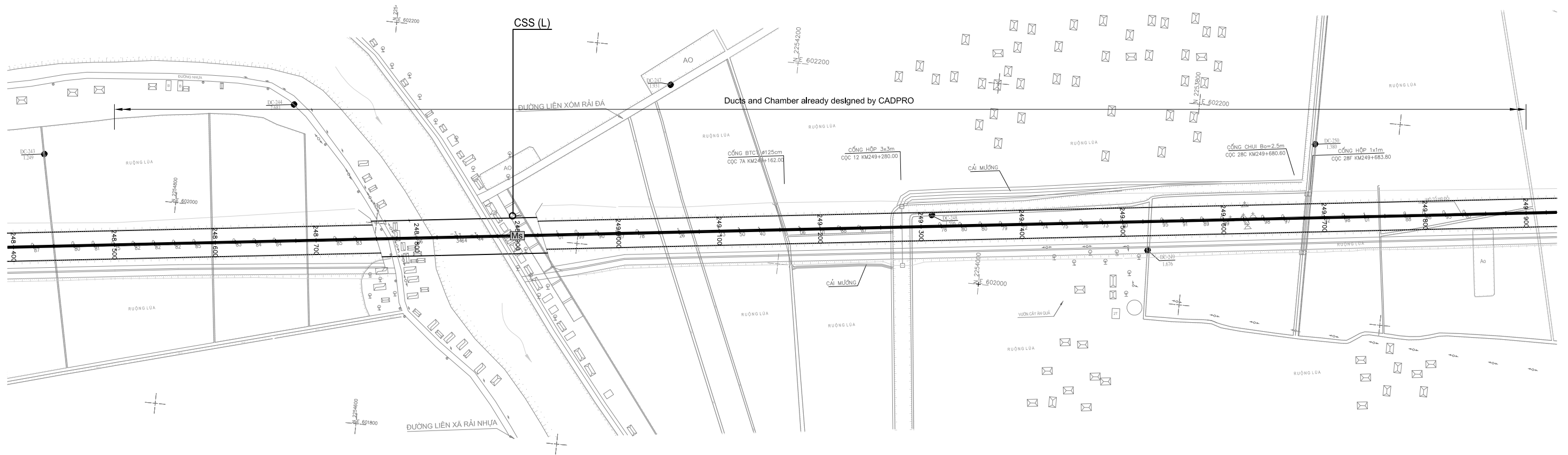
Notes:
 Roadside equipment must be designed in this project.
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 M1, M3, M4, T2, T3 shall be designed in this project.

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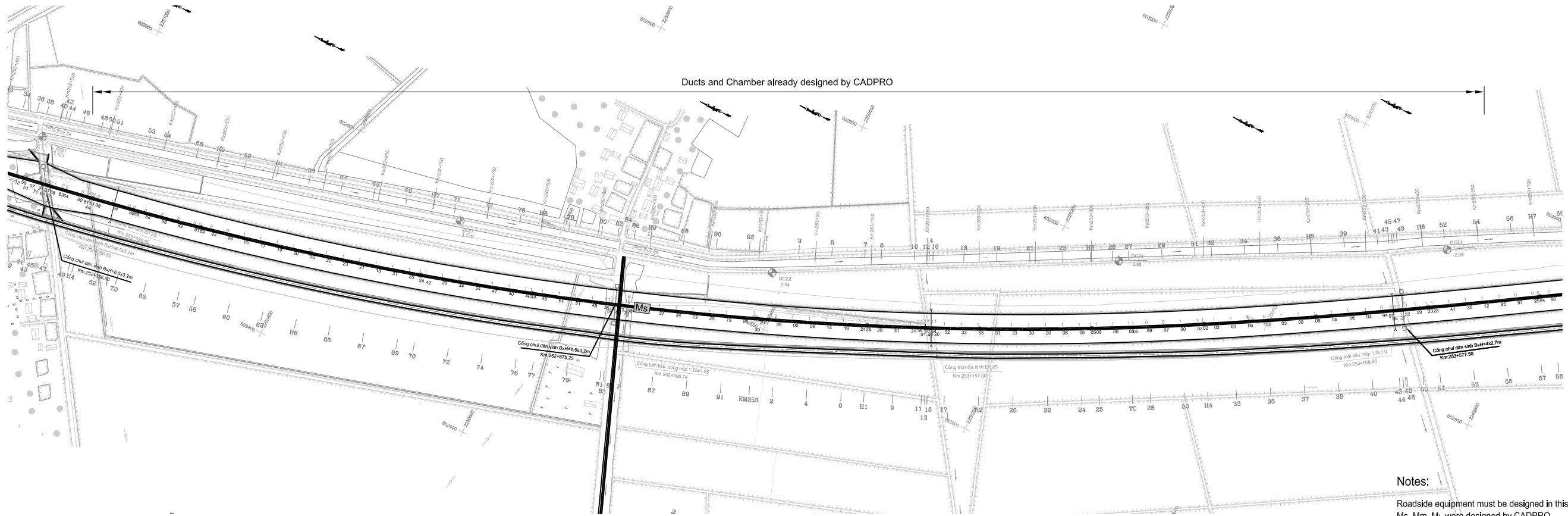
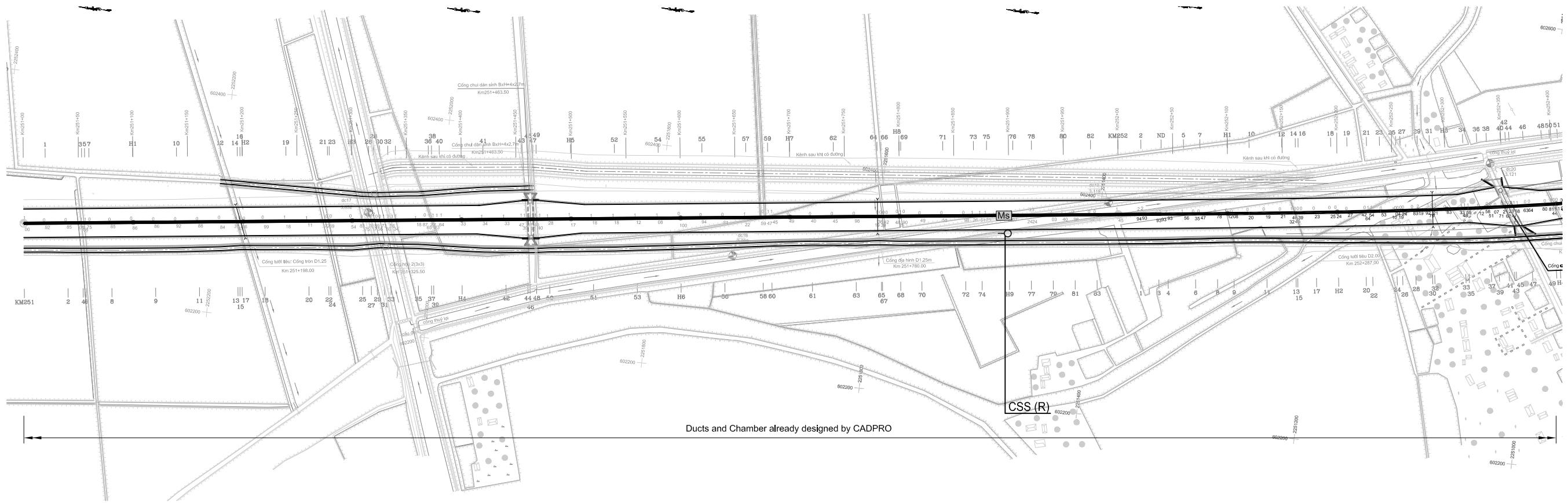
Notes:
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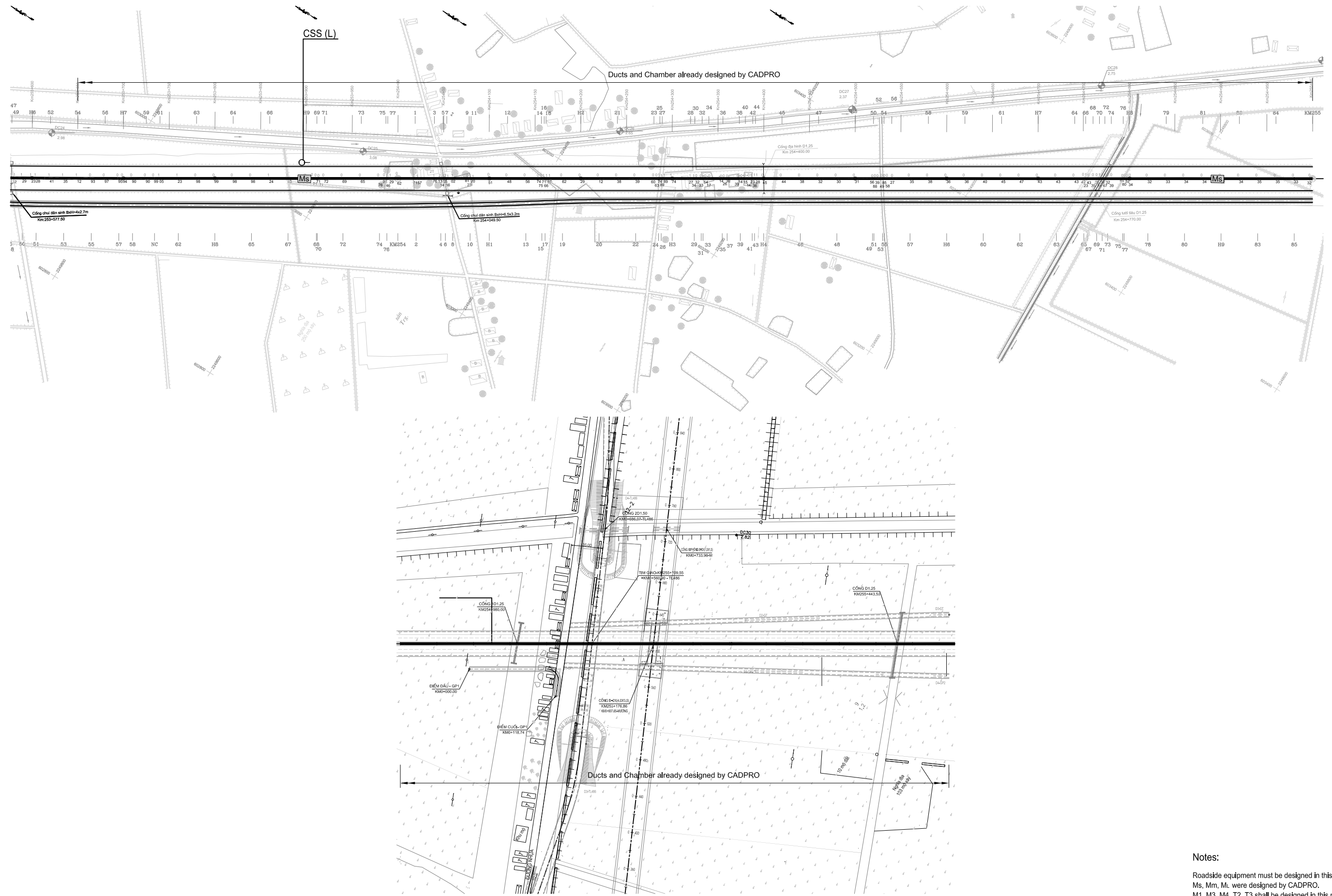
Notes:
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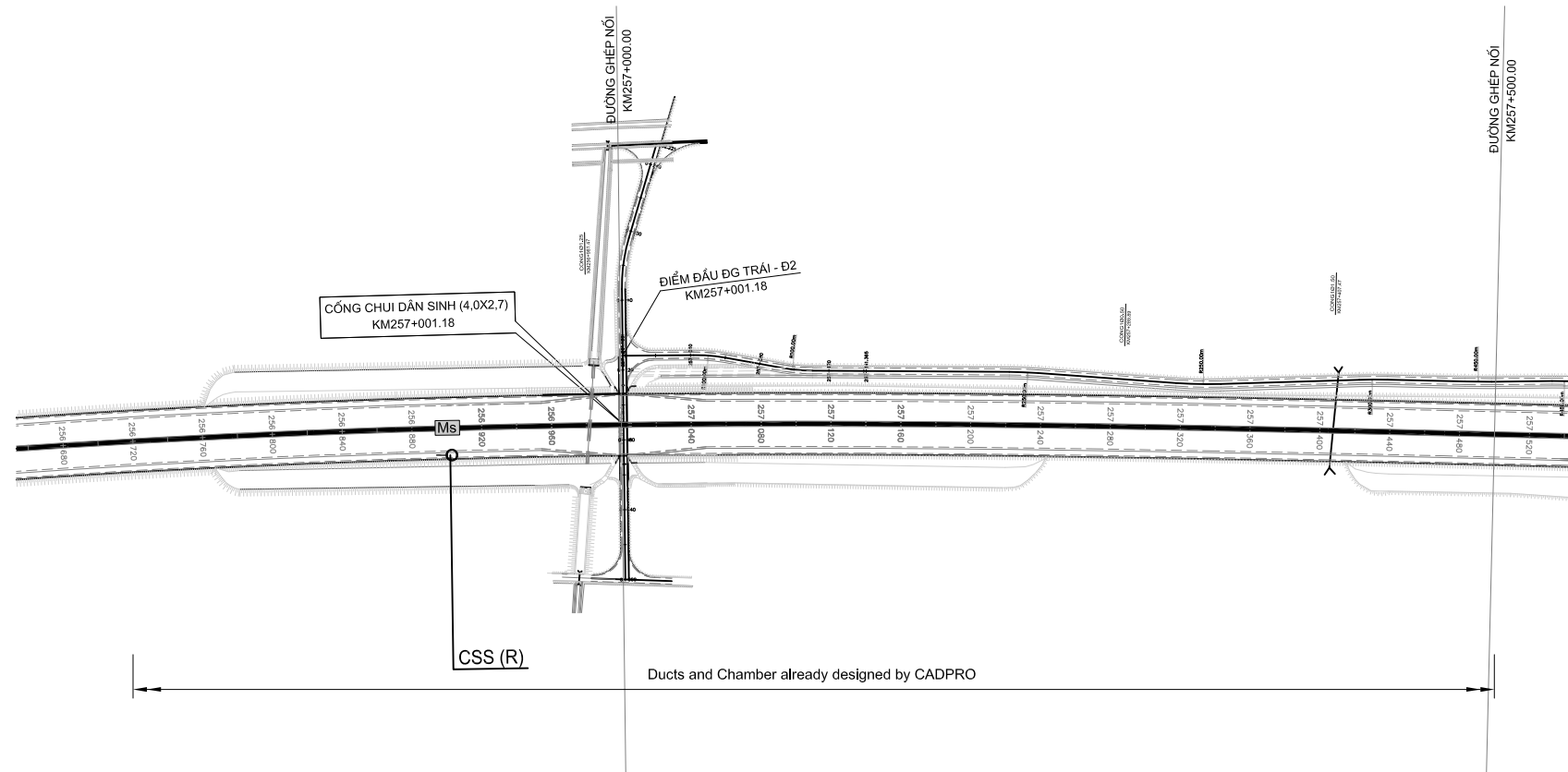
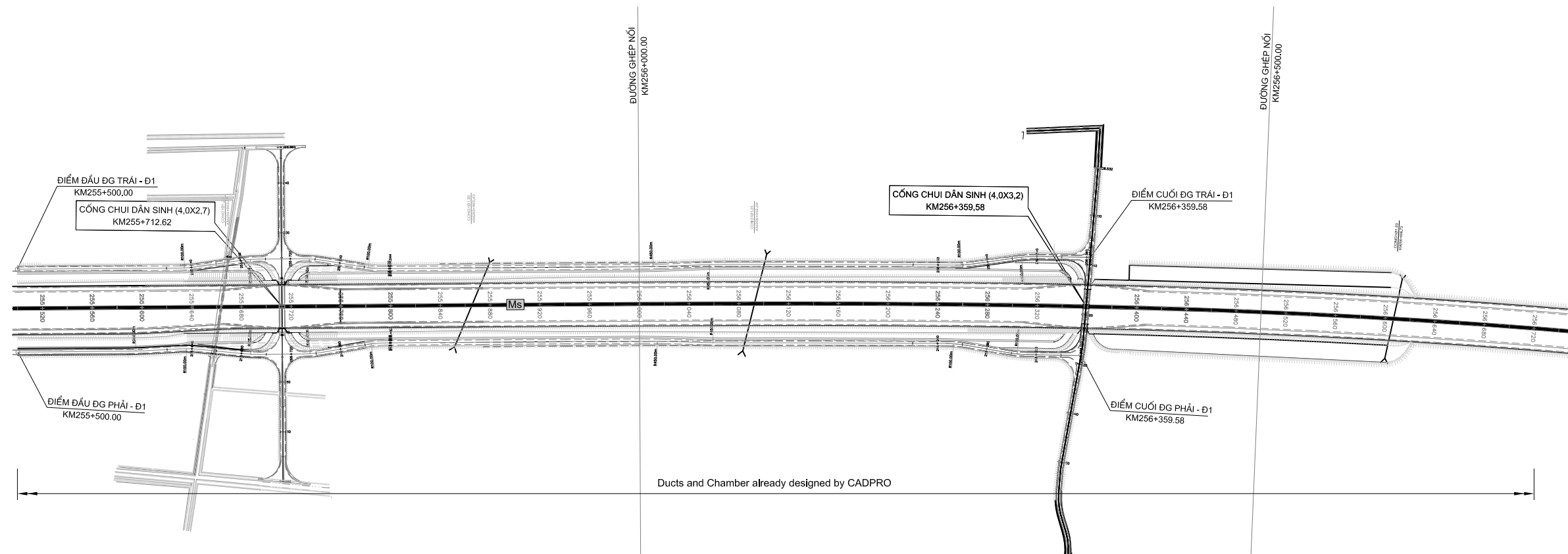
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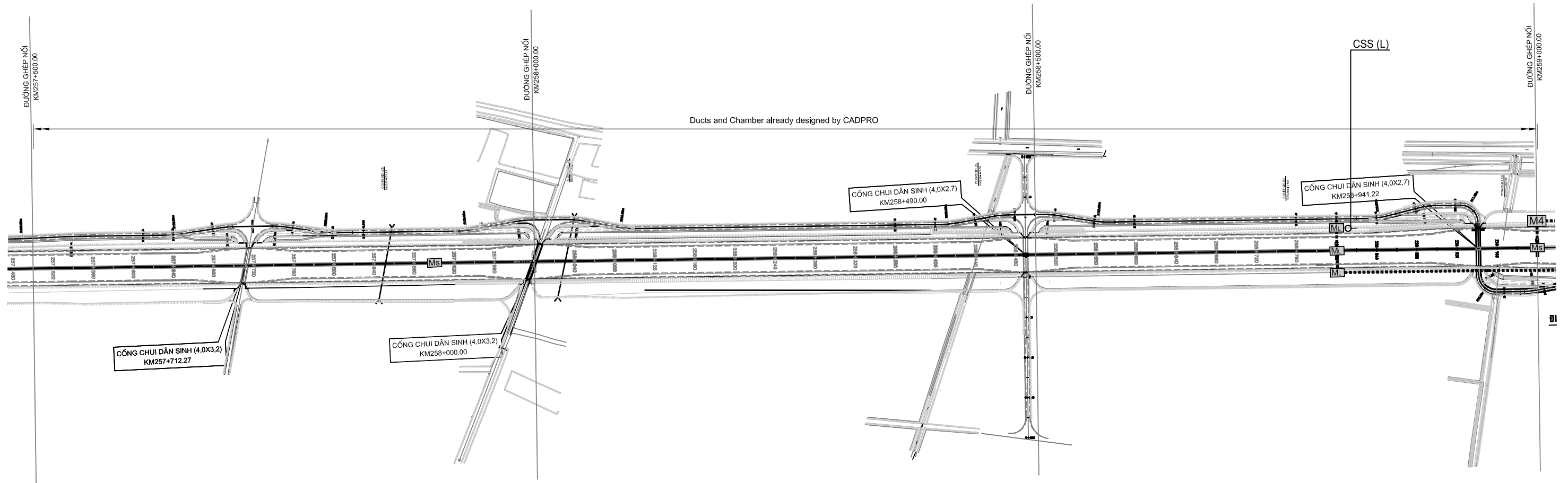
Notes:
 Roadside equipment must be designed in this project.
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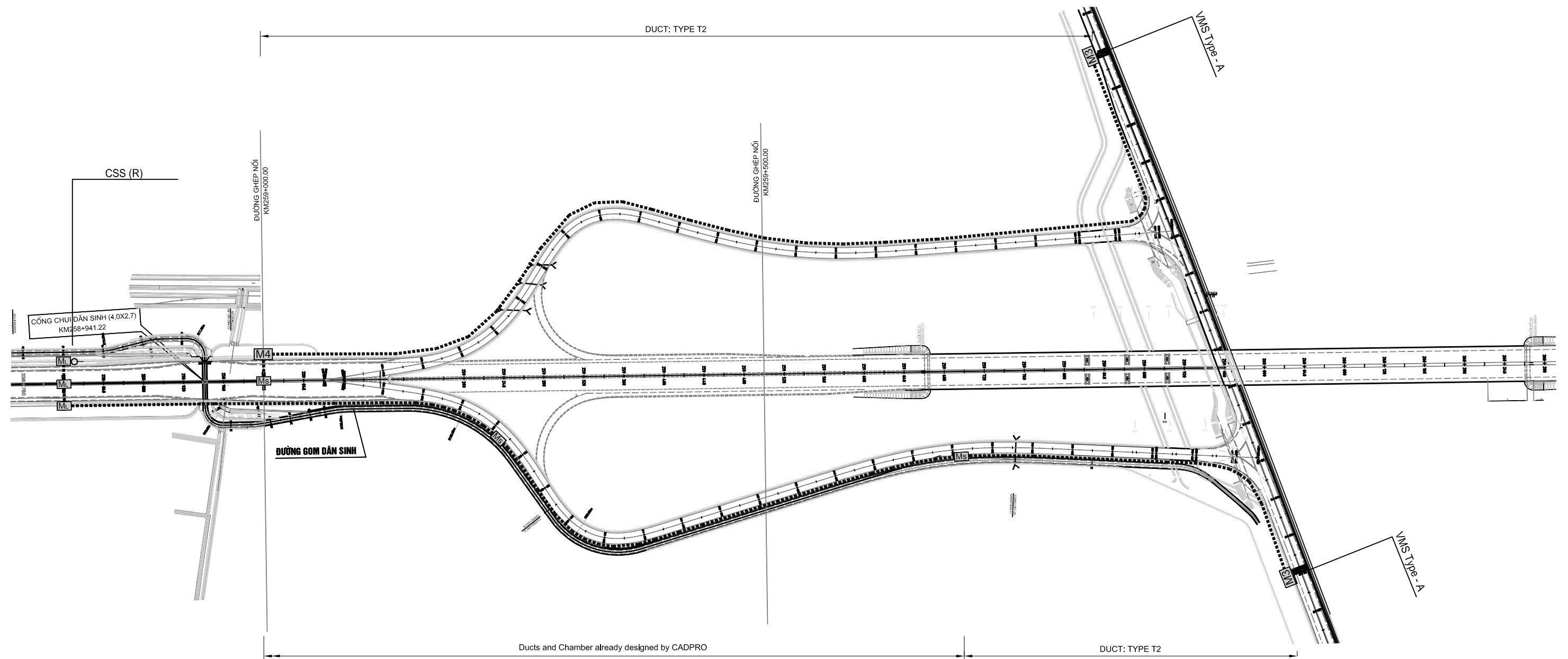
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| | PREPARED BY | | | | | | | LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT | | (KM 255+500 ~ KM 257+500 , GIE - NINH BINH EXP.) | | VII.1-21 |
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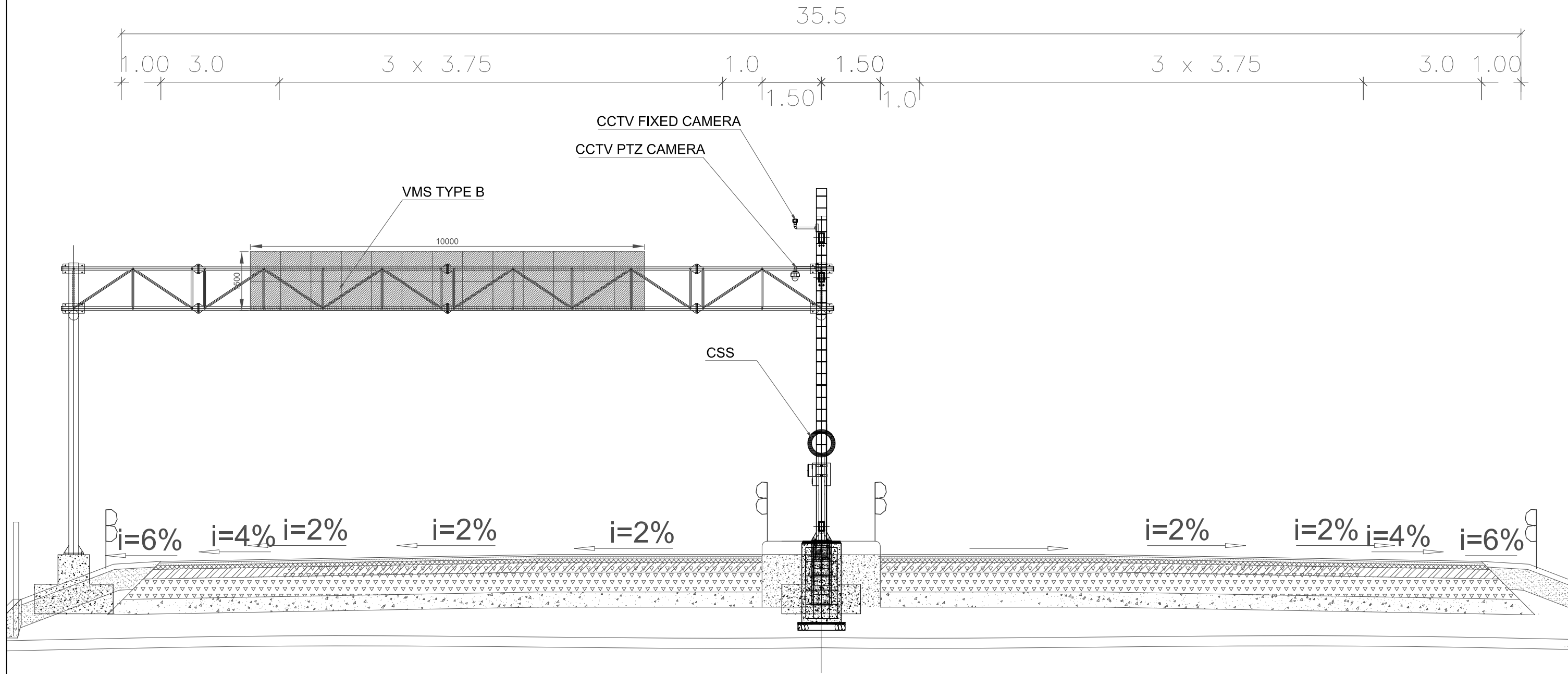
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| SCALE: 1:4000 | | | | | | | | | | | | | | | | |



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TYPICAL CROSS SECTION



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| CONSULTANT | | | | | SOCIALIST REPUBLIC OF VIETNAM | | | ITS INTEGRATION PROJECT IN NORTHERN AREA OF VIETNAM | | PACKAGE: |
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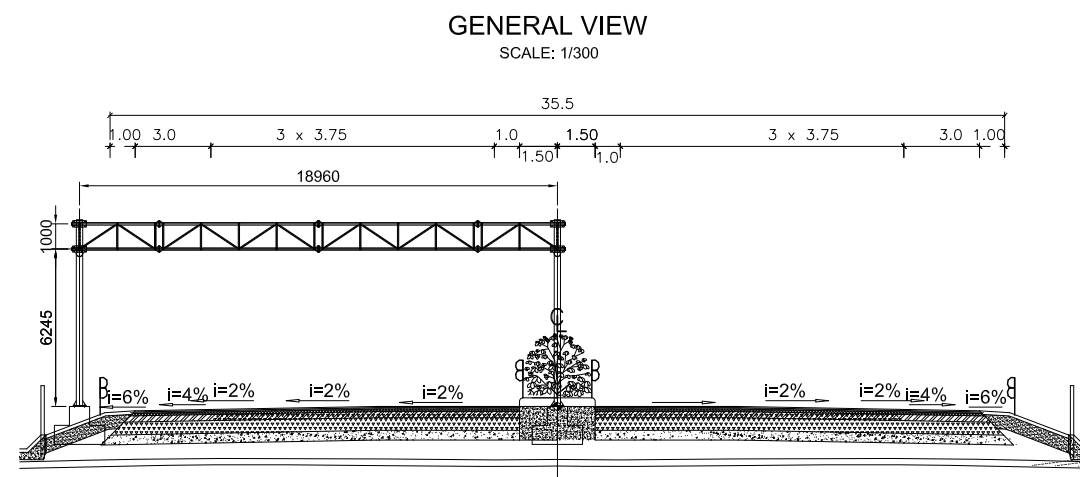
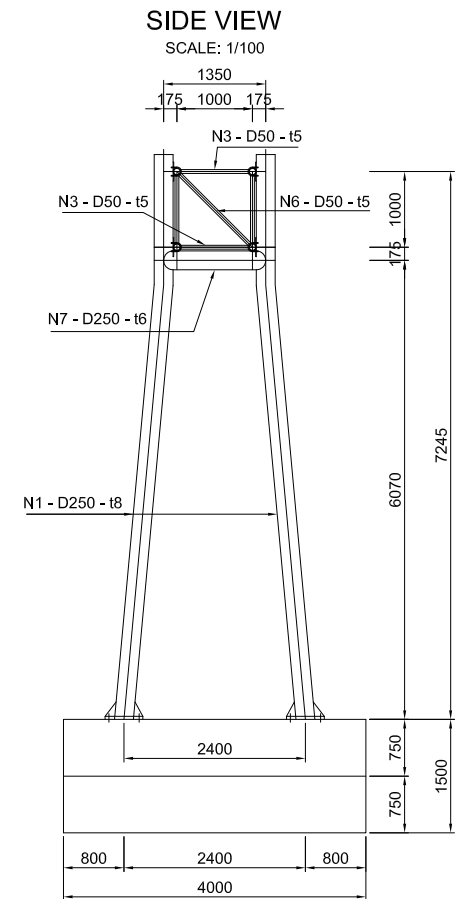
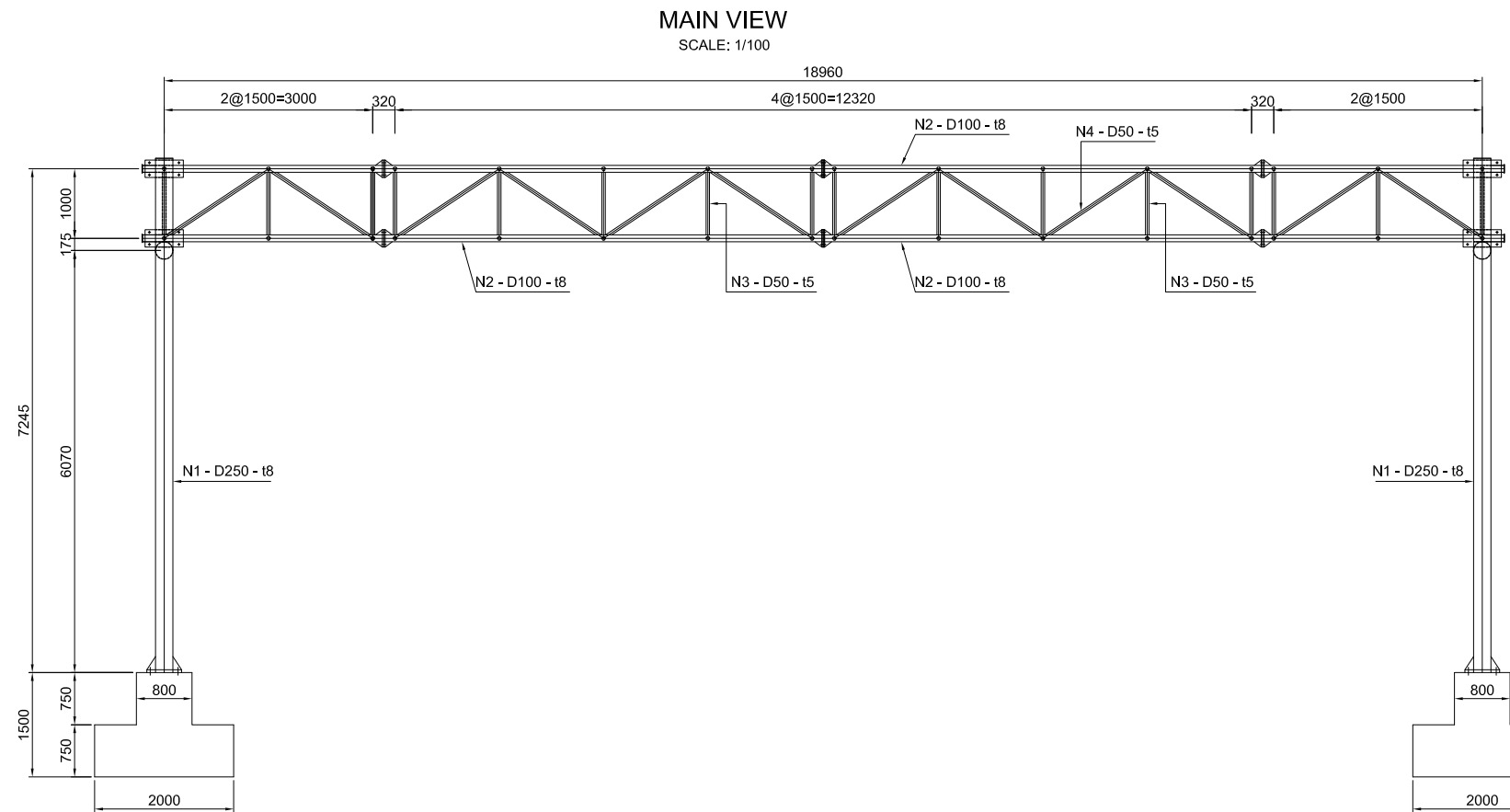


TABLE OF QUANTITY

| Element | Type | Weight | Number | Total | Notes |
|--------------------|-----------------------|--------------|------------|---------------------|--------------------------|
| | | of 1 element | of element | weight | |
| | (mm) | (kg) | (items) | (kg) | |
| N1 | Tube D250 t=8 L=7494 | 357.80 | 4 | 1431.19 | Main column (upper part) |
| N2 | Tube D100 t=8 L=19590 | 355.58 | 4 | 1422.30 | Top chord, Bottom chord |
| N3 | Tube D50 t=5 L=1000 | 5.55 | 64 | 355.13 | Vertical web bar |
| N4 | Tube D50 t=5 L=1803 | 10.00 | 48 | 480.22 | Diagonal web bar |
| N6 | Tube D50 t=5 L=1414 | 7.85 | 16 | 125.54 | Diaphragm |
| N7 | Tube D250 t=6 L=1350 | 48.74 | 2 | 97.48 | Diaphragm |
| Total steel | | | | 3911.86 | |
| Concrete M200 | | | | 16.80m ³ | Assumed |

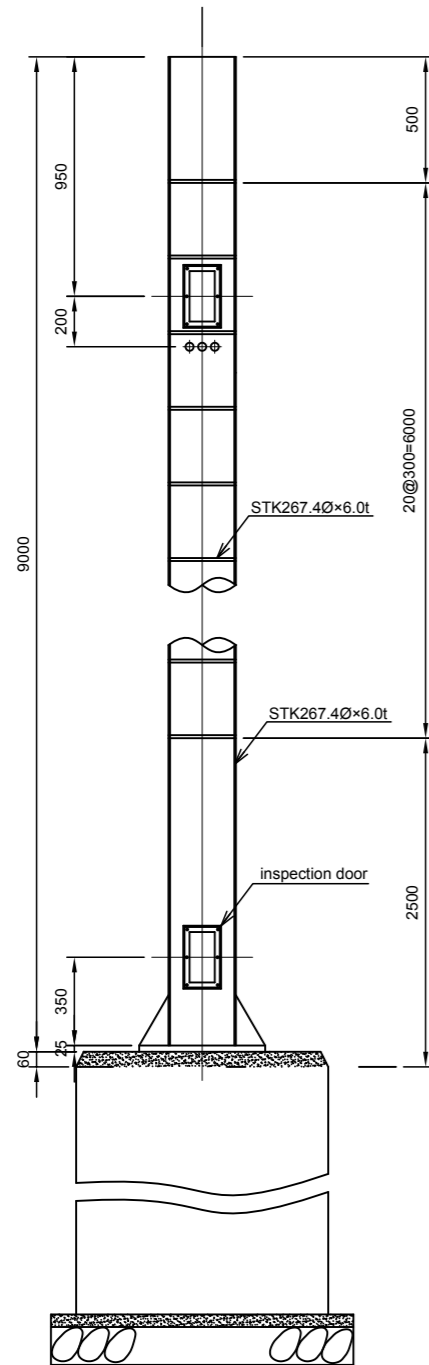
NOTES:

- Dimensions are in millimeter.
- Structural steel conforms ASTM A-709M Grade 250 or equivalence with:
Yield strength: $F_y = 250$ MPa
Tensile strength: $F_u = 400$ MPa
- Concrete structure equivalence with:
Concrete strength: $F_c' = 18$ Mpa
Reinforcing Bar (CB300-II) : Yield strength: $F_y = 300$ MPa
Tensile strength: $F_u = 450$ MPa
- The depth of foundation is just an estimated value.
The final depth of foundation shall be based on the real soil condition.
These structure should be redesigned to meet site condition.
- In case without any recommendation about zincing in details
all metal member exposed to weather or soil must be zinced
with amouth of 500g/m²

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| | APPROVED BY | | | | | | SCALE: varies | | | |

SUPPORT POLE FOR CAMERA

SUPPORT POLE FOR CAMERA scale:1/30



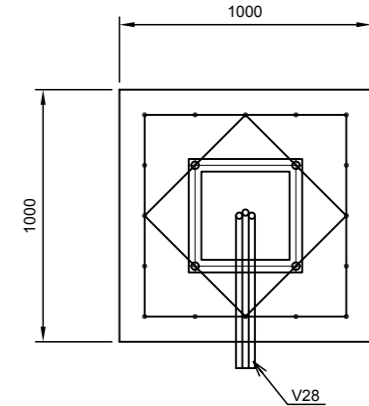
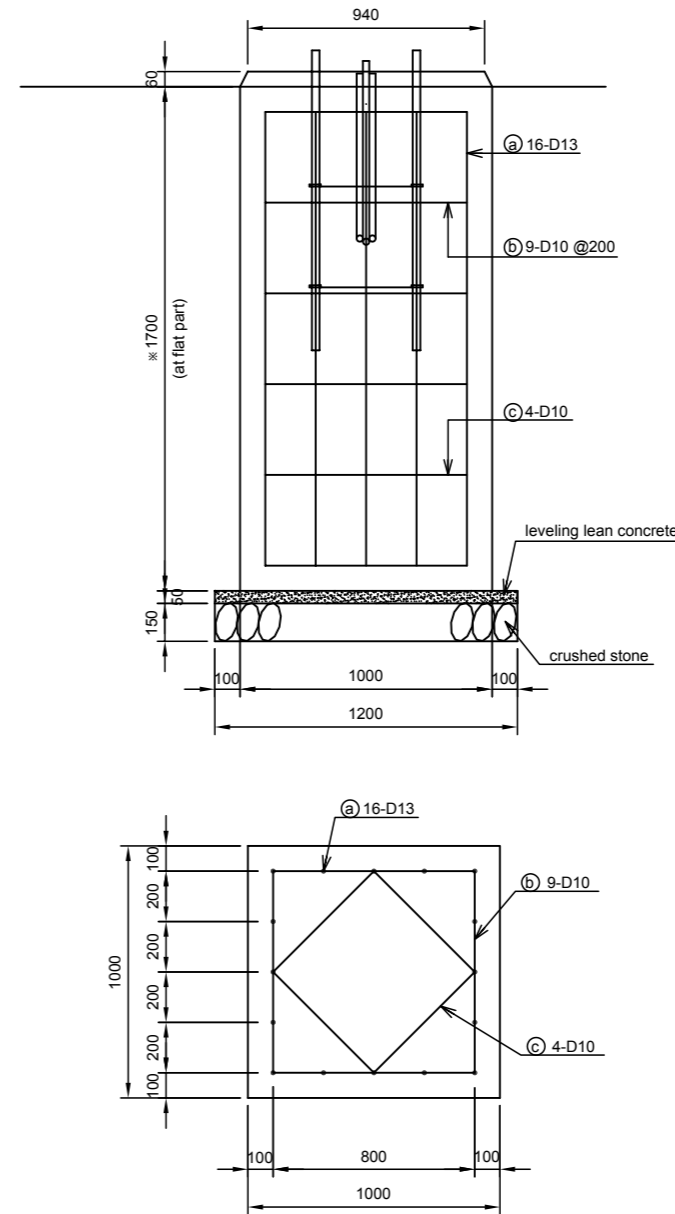
Volume table of support pole

| | Material | Dimension | Weight (kg) |
|--------------|----------|-----------|-------------|
| Pole | Steel | 267.4Φ×6t | 348.3 |
| Step | Steel | RB13Φ | 9.4 |
| Base | Steel | 25t | 49.2 |
| Base | Steel | 12t | 9.0 |
| Total weight | | | 416 |

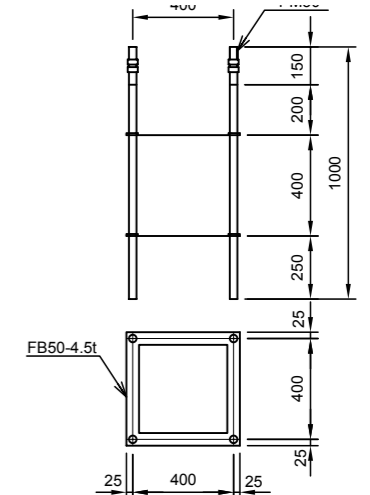
Volume table of foundation

| items | class | unit | volume | | remarks |
|------------------------|-------------|----------------|--------------|---------------|---------|
| | | | at flat part | at embankment | |
| concrete | M200 | m ³ | 1.700 | 2.200 | |
| formwork | | m ² | 6.800 | 8.800 | |
| rebar | D13 | kg | 28.66 | 36.62 | |
| rebar | D10 | " | 22.87 | 26.71 | |
| anchor bolt | M30x1000lx4 | set | 1 | 1 | |
| normal bend | VE28 | m | 4.5 | 4.5 | 1.5mx3 |
| crushed stone | | m ³ | 0.216 | 0.216 | |
| leveling lean concrete | | m ³ | 0.072 | 0.072 | |
| excavation | | m ³ | 7.600 | 8.491 | |
| backfill | | m ³ | 5.612 | 6.220 | |
| disposal of waste soil | | m ³ | 1.988 | 2.272 | |

FOUNDATION scale:1/30



ANCHOR BOLT scale:1/30



Volume table of rebar at flat part

| type | shape | length (m) | volume | weight (kg) |
|------|-------|------------|--------|-------------|
| a | — D13 | 1.80 | 16 | 28.66 |
| b | □ D10 | 3.43 | 9 | 17.29 |
| c | ◇ D10 | 2.49 | 4 | 5.58 |

Volume table of rebar at embankment part

| type | shape | length (m) | volume | weight (kg) |
|------|-------|------------|--------|-------------|
| a | — D13 | 2.30 | 16 | 36.62 |
| b | □ D10 | 3.43 | 11 | 21.13 |
| c | ◇ D10 | 2.49 | 4 | 5.58 |

*1 Structural steel conforms ASTM A-709M Grade 250 or equivalence with:
Yield strength: Fy = 250 MPa
Tensile strength: Fu = 400 MPa

*2 Concrete structure equivalence with:
Concrete strength: Fc' = 18Mpa
Reinforcing Bar (CB300-II) : Yield strength: Fy = 300 MPa
Tensile strength: Fu = 450 MPa

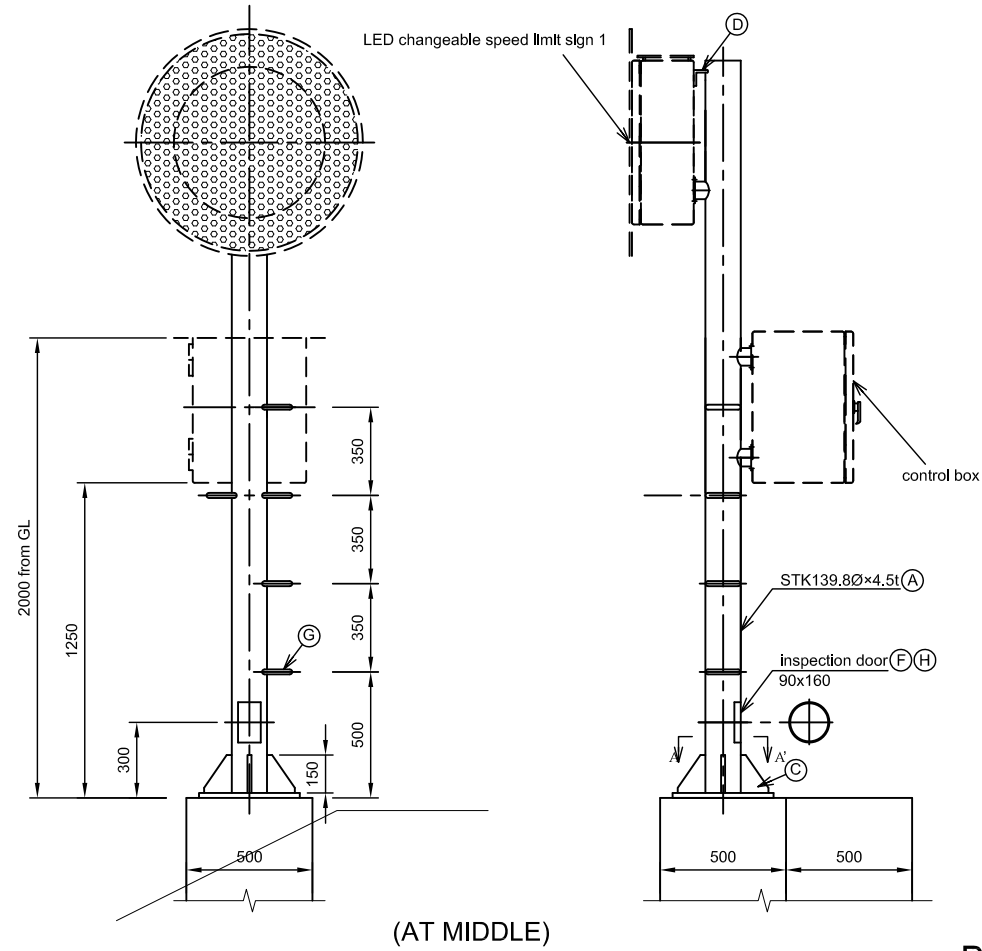
*3 In case without any recommendation about zincing in details, all metal members exposed to weather or soil must be zined with amount of 550g/m².

*4 This drawing be based on NEXCO(Japan) drawings.
*5 These structures should be redesigned to meet site condition.

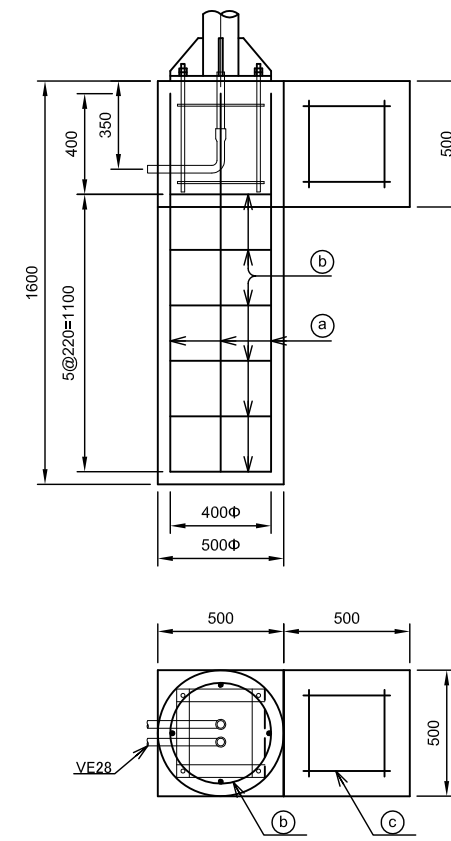
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| | PREPARED BY | | | | | | GIE-NINH BINH EXPRESSWAY - SUPPORT POLE FOR CAMERA | | VII.2-03 | |
| | CHECKED BY | | | | | | SCALE: 1/30 | | SHEET No.: | Rev. |
| | APPROVED BY | | | | | | Sheet of | | | |

SUPPORT POLE FOR CHANGEABLE SPEED LIMIT SIGN

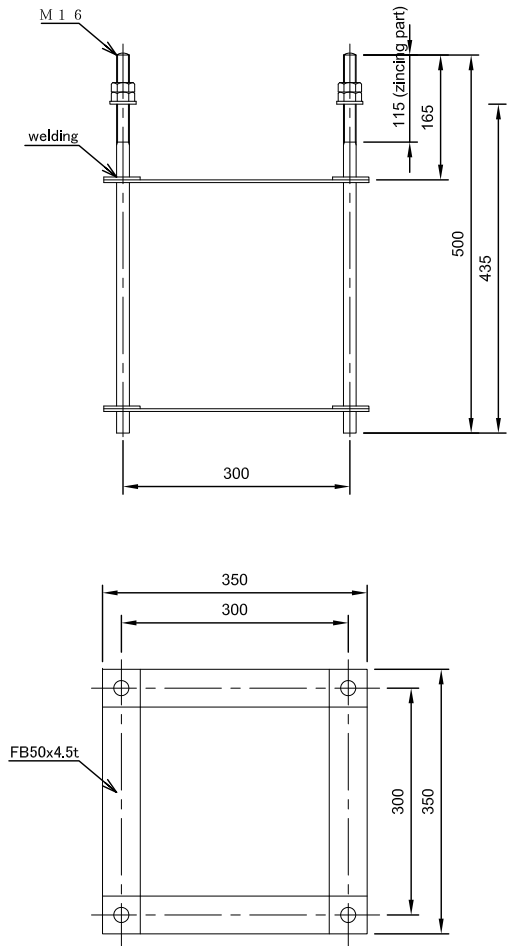
SUPPORT POLE FOR CHANGEABLE SPEED LIMIT SIGN (CSS) scale:1/30
(AT ENDS)



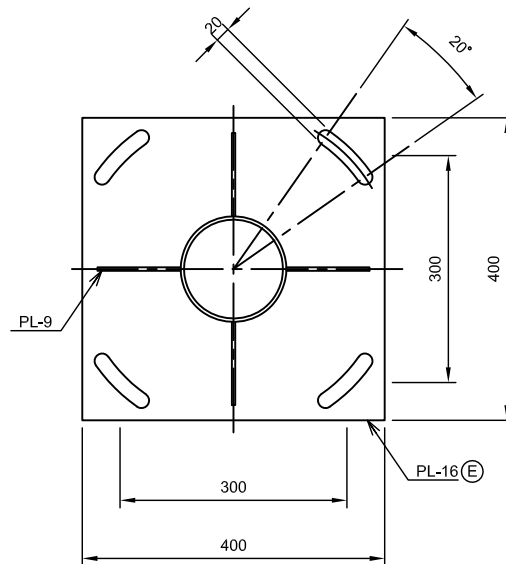
FOUNDATION scale:1/30



ANCHOR BOLT scale:1/10



BASE PLATE SCALE:1/10



Rebar processing table of foundation

| type | shape | volume | |
|------|-------|---------------|--|
| | | at embankment | |
| a | D13 | 4 | |
| b | D10 | 6 | |
| c | D13 | 12 | |

*c is used for maintenance.

Volume table of foundation

| items | class | unit | volume |
|------------------------|------------|----------------|---------------|
| | | | at embankment |
| concrete | | m ³ | 0.466 |
| rebar | D13 | kg | 9.719 |
| rebar | D10 | " | 5.860 |
| formwork | | m ² | 1.5 |
| disposal of waste soil | | m ³ | 0.316 |
| anchor bolt | 16Φx500lx4 | set | 1 |
| normal bend | VE28 | pipe | 2 |

Volume table of support pole

| | Material | Dimension | Weight (kg) | |
|-----|----------|--------------|-------------|-----------|
| | | | at ends | at middle |
| (A) | Steel | 139.8Φx4.5t | 47.0 | 42.0 |
| (C) | Steel | 9t | 18.0 | 16.0 |
| (D) | Steel | 6t | 1.4 | 1.4 |
| (E) | Steel | 16t | 20.0 | 20.0 |
| (F) | Steel | 3.2t | 1.4 | 1.4 |
| (G) | Steel | RB13Φ | 4.0 | 4.0 |
| (H) | Steel | FB50x6t | 1.0 | 1.0 |
| | | Total weight | 95 | 87 |

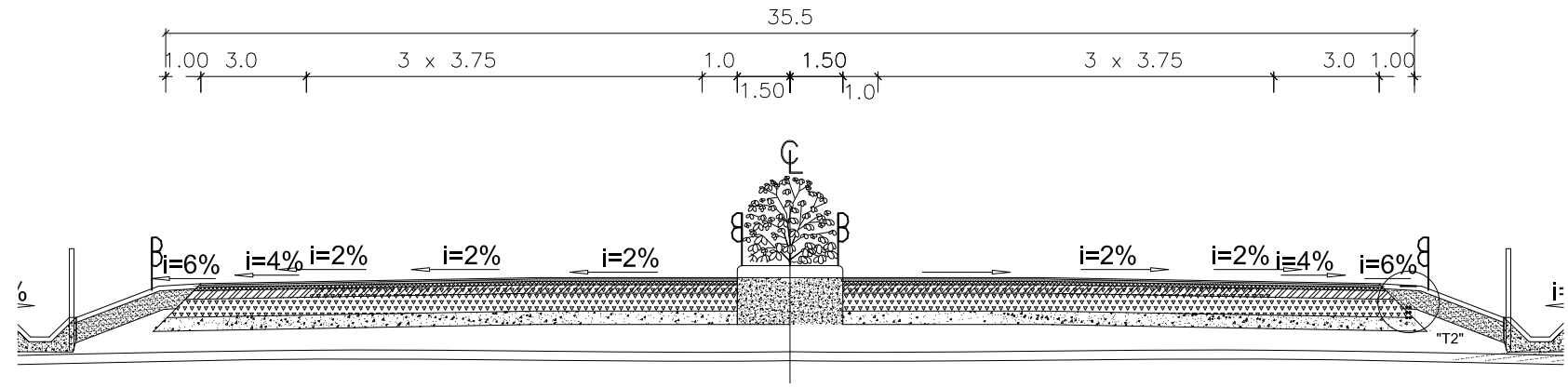
*1 Structural steel conforms ASTM A-709M Grade 250 or equivalence with:
Yield strength: F_y = 250 MPa
Tensile strength: F_u = 400 MPa
*2 Concrete structure equivalence with:
Concrete strength: F_c' = 18Mpa
Reinforcing Bar (CB300-II) : Yield strength: F_y = 300 MPa
Tensile strength: F_u = 450 MPa

*3 In case without any recommendation about zincing in details, all metal members exposed to weather or soil must be zincing with amount of 550g/m².
*4 This drawing be based on NEXCO(Japan) drawings.
*5 These structures should be redesigned to meet site condition.

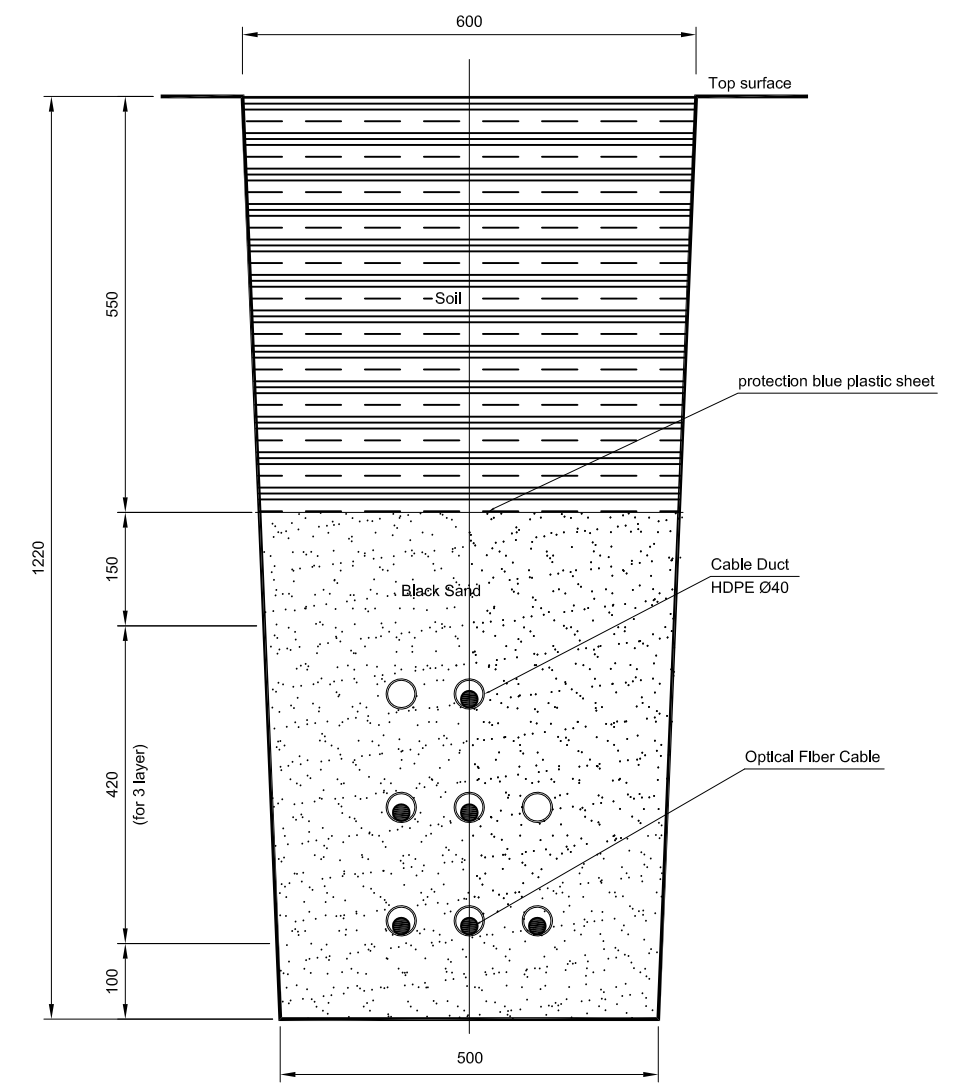
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| | | | | | | | | SCALE: Varies | | | | | | | |

TYPICAL CROSS SECTION OF COMMUNICATION DUCT(TYPE T2,T3) IN EARTHWORK SECTION

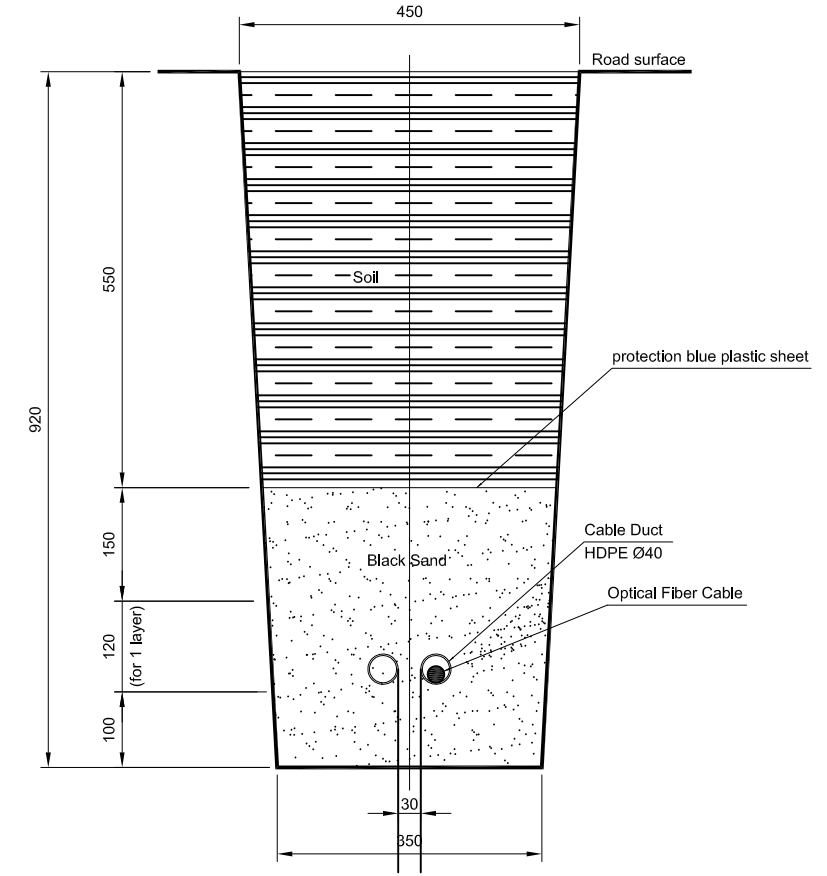
ARRANGEMENT OF COMMUNICATION DUCT IN SHOULDER (T2 TYPE)
(WHEN MEDIAN WIDTH BE LESS THAN 2.0M)



T2 DETAIL scale:1/10



COMMUNICATION DUCT TYPE T3 DETAIL scale:1/10
(USE FOR COMMUNICATION DUCT SPREAD FOR ROADSIDE EQUIPMENT)



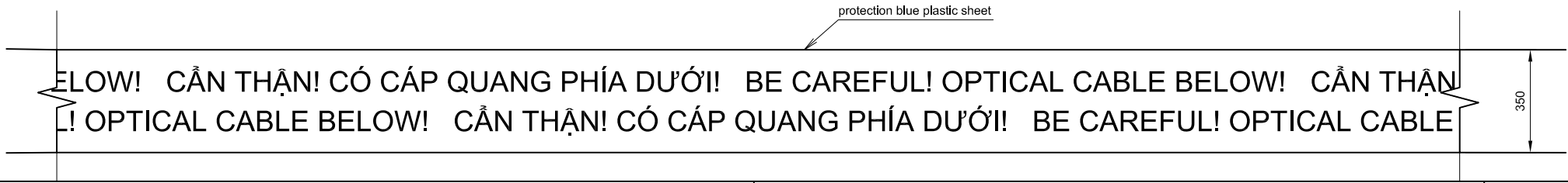
Volume table of T2 Duct (for 1 kilometer in length)

| | Volume |
|-------------------------------|--------------------|
| Disposal soil | 671 m ³ |
| Black sand | 353 m ³ |
| Backfill soil | 318 m ³ |
| Protection blue plastic sheet | 500 m ² |

Volume table of T3 Duct (for 1 kilometer in length)

| | Volume |
|-------------------------------|--------------------|
| Disposal soil | 368 m ³ |
| Black sand | 137 m ³ |
| Backfill soil | 231 m ³ |
| Protection blue plastic sheet | 350 m ² |

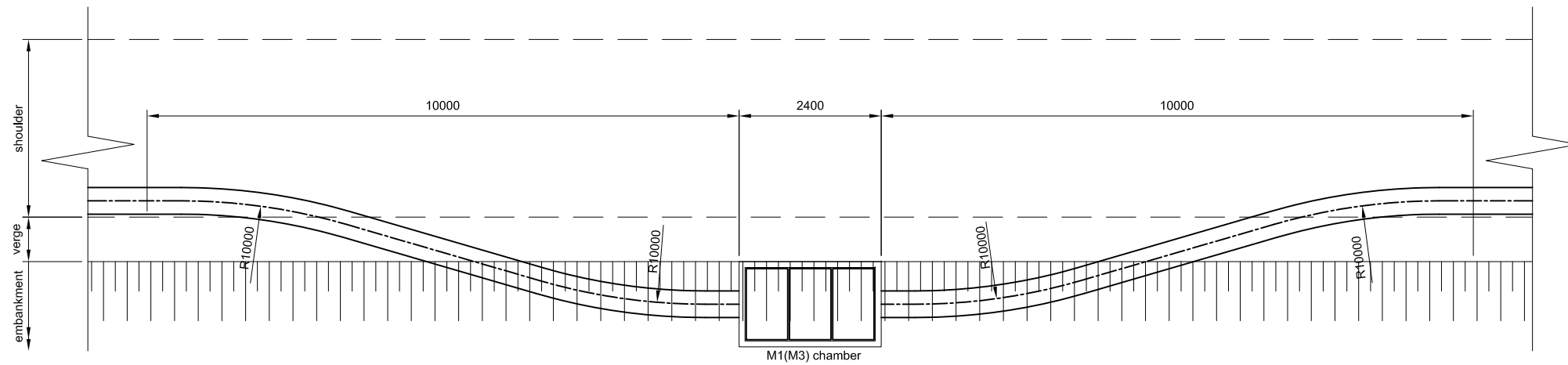
PROTECTION BLUE PLASTIC SHEET scale:1/20



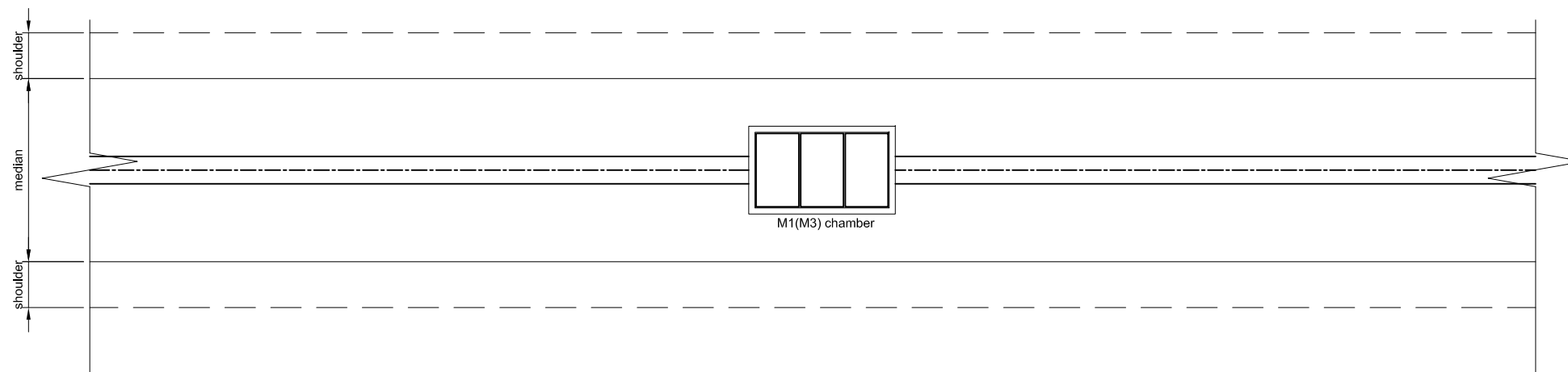
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| | | | | | | | | | | | | | VII.3-01 | | |
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| | | | | | SCALE:varies | | | | | Sheet | of | | | | |

ARRANGEMENT OF COMMUNICATION DUCT AT CHAMBER (1)

CHAMBER FOR COMMUNICATION DUCT ON ROAD scale: 1/100



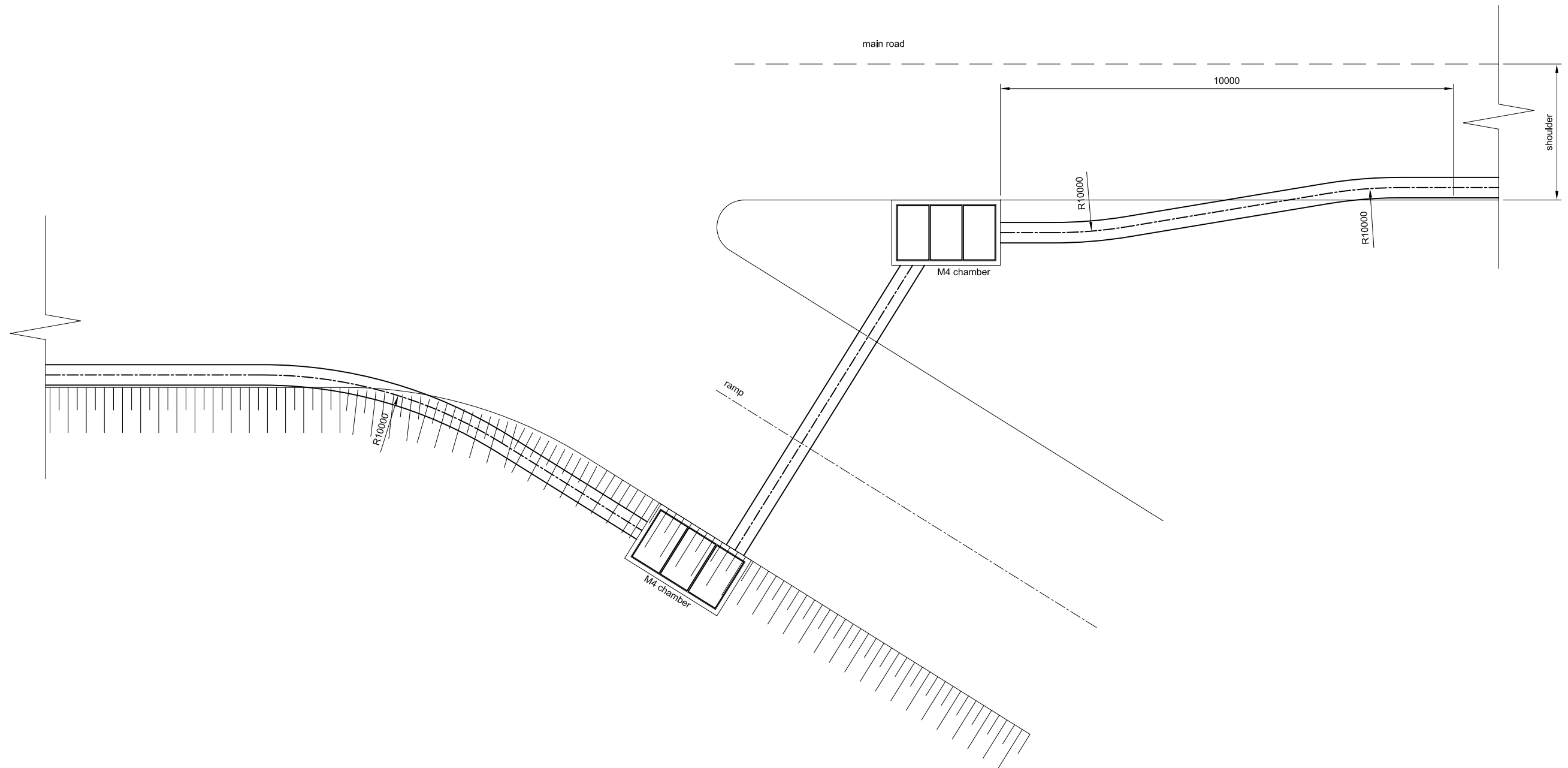
CHAMBER FOR COMMUNICATION DUCT ON MEDIAN scale: 1/100



| | | | | | | | | | | |
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| | PREPARED BY | | | | | GIE - NINH BINH EXPRESSWAY ARRANGEMENT OF COMMUNICATION DUCT AT CHAMBER (1) | | VII.3-02 | | |
| | CHECKED BY | | | | | SCALE: 1/100 | | SHEET No.: | Rev: | |
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ARRANGEMENT OF COMMUNICATION DUCT AT CHAMBER (2)

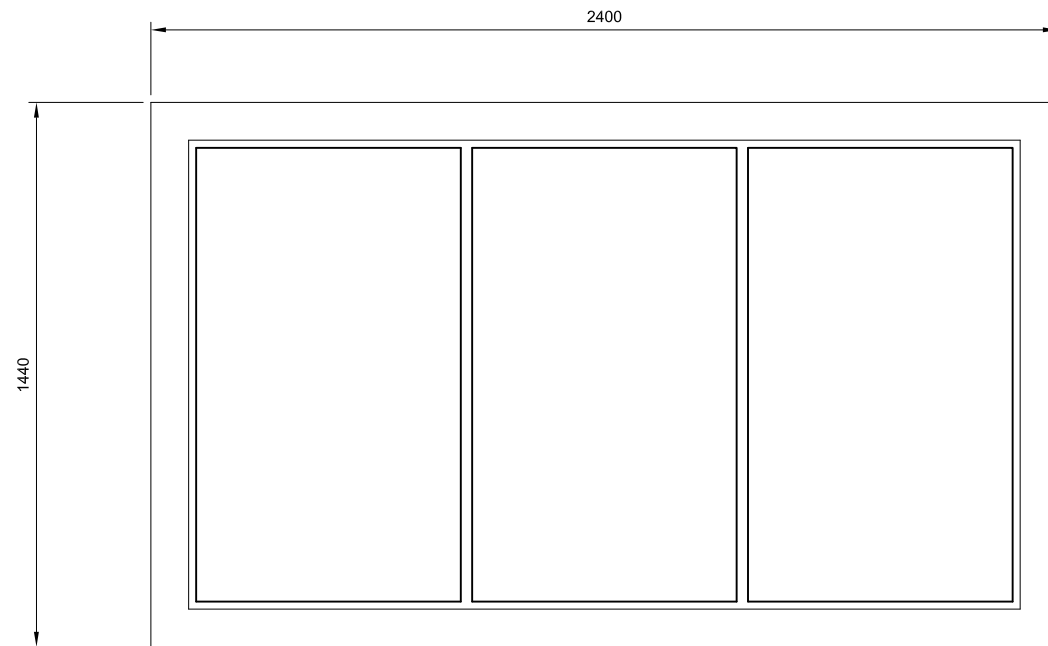
CHAMBER FOR CHANGING DIRECTION OF COMMUNICATION DUCT ON ROAD scale: 1/100



| | | | | | | | | | | |
|--|-------------|------|-----------|------|-------------------------------|--|--|--|------|----------|
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| | PREPARED BY | | | | | GIE - NINH BINH EXPRESSWAY ARRANGEMENT OF COMMUNICATION DUCT AT CHAMBER (2) | | VII.3-03 | | |
| | CHECKED BY | | | | | SCALE: 1/100 | | SHEET No.: | Rev: | |
| | APPROVED BY | | | | | Sheet of | | | | |

DETAIL OF COMMUNICATION DUCT CHAMBER (TYPE M1)

(INSTALL AT MEDIAN or ON EMBANKMENT; WITH PITCH LESS THAN 333m)

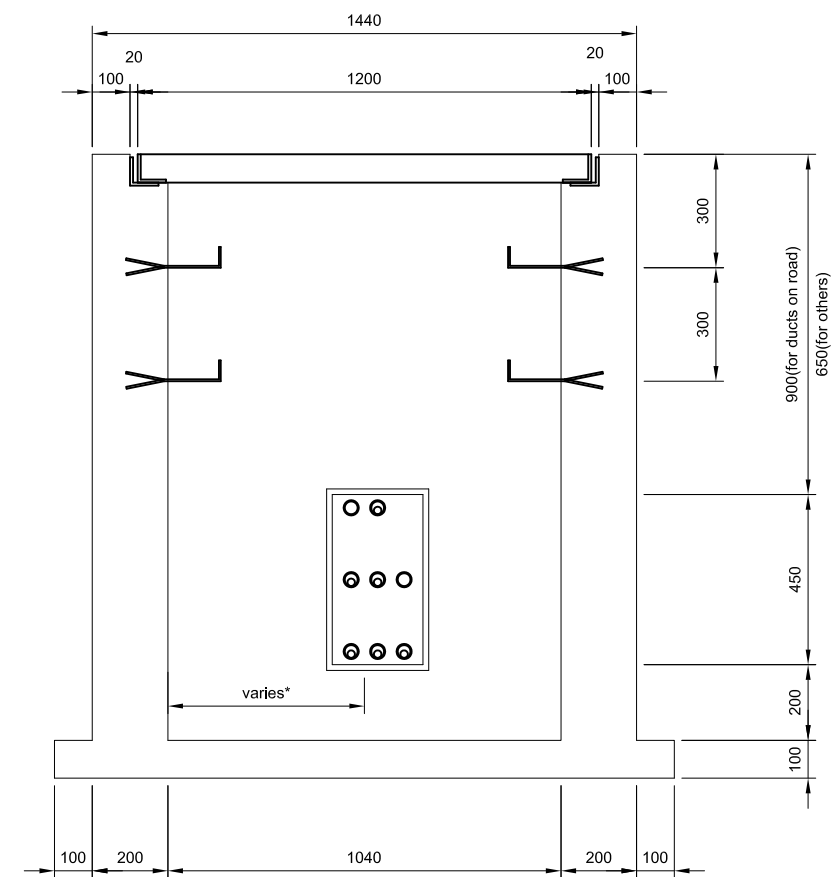
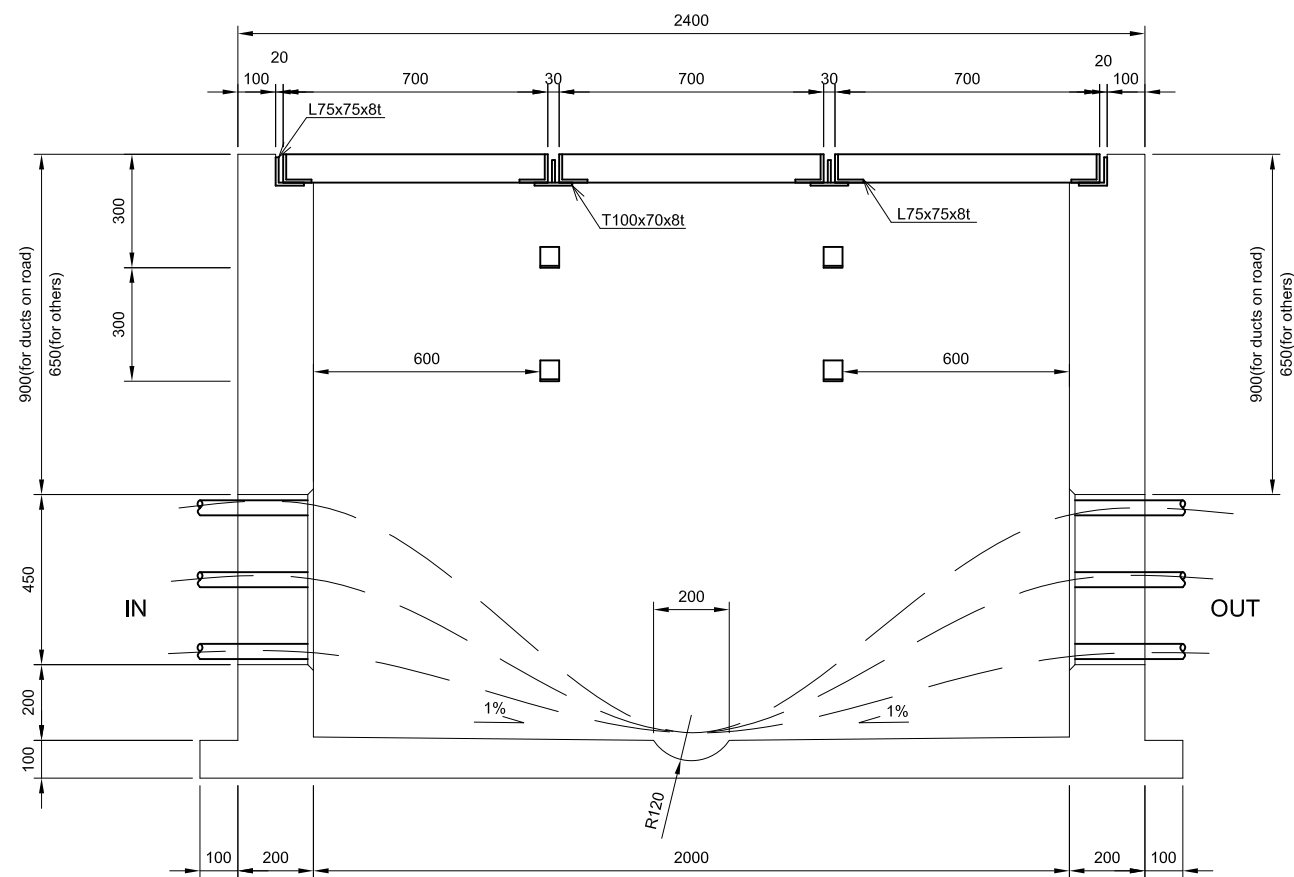


Volume table of chamber for ducts on road

| | Volume |
|---------------|--------------------|
| L75x75x8t | 183 kg |
| PL80x8t | 10 kg |
| T100x70x8t | 26 kg |
| Concrete M300 | 1.9 m ³ |

Volume table of chamber for others

| | Volume |
|---------------|--------------------|
| L75x75x8t | 183 kg |
| PL80x8t | 10 kg |
| T100x70x8t | 26 kg |
| Concrete M300 | 1.7 m ³ |



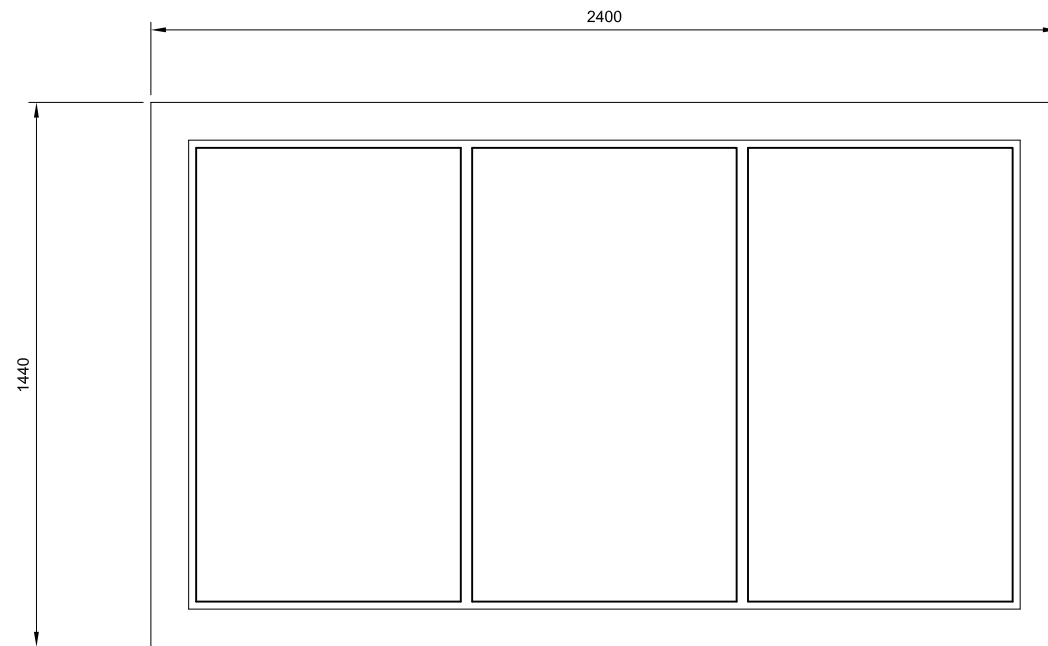
* Depending to duct arrangement.

*1 Concrete structure equivalence with:
 Concrete strength: F_c = 18 MPa;
 Reinforcing Bar (CB300-II): Yield strength: F_y = 300 MPa;
 Tensile strength: F_u = 450 MPa;

| | | | | | | | | | | | | | | | | | | | | | | |
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| SCALE: 1/20 | | | | | | | | | | | | | | | | | | | | | | |

DETAIL OF COMMUNICATION DUCT CHAMBER (TYPE M3)

(INSTALL AT MEDIAN or EMBANKMENT; WITH PITCH LESS THAN 2000M)

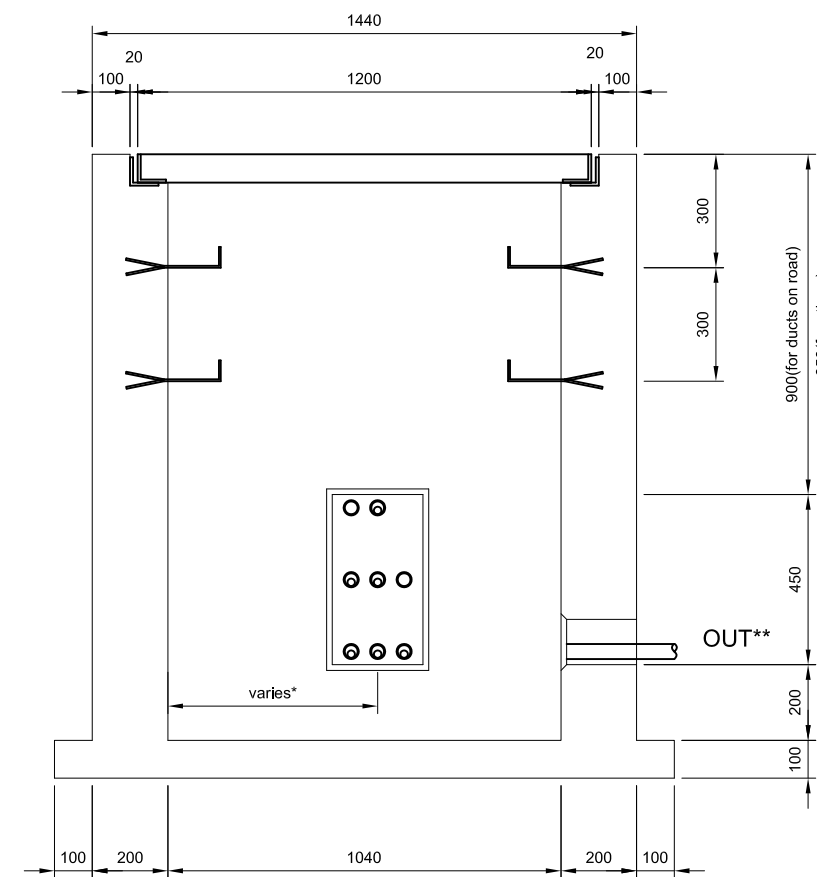
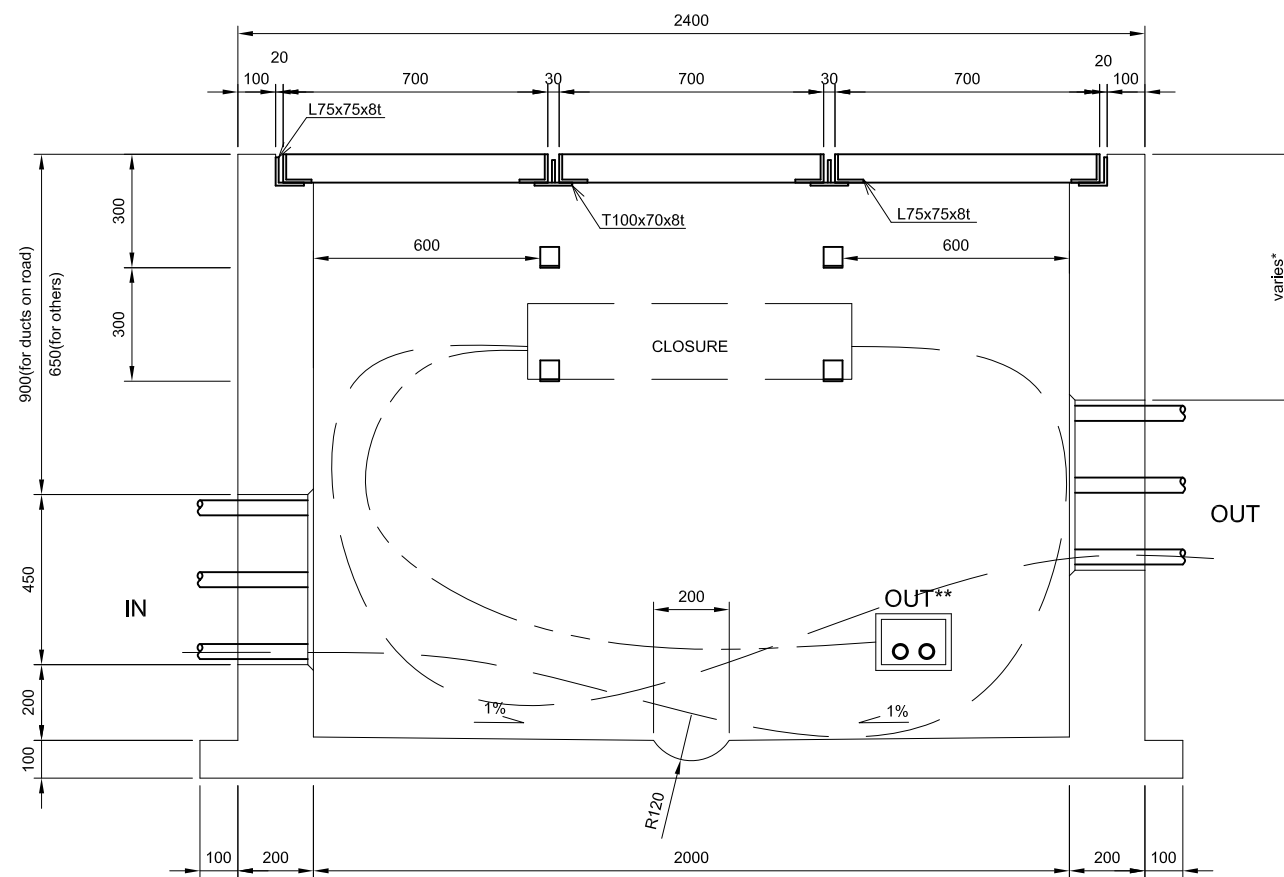


Volume table of chamber for ducts on road

| | Volume |
|---------------|--------------------|
| L75x75x8t | 183 kg |
| PL80x8t | 10 kg |
| T100x70x8t | 26 kg |
| Concrete M300 | 1.9 m ³ |

Volume table of chamber for others

| | Volume |
|---------------|--------------------|
| L75x75x8t | 183 kg |
| PL80x8t | 10 kg |
| T100x70x8t | 26 kg |
| Concrete M300 | 1.7 m ³ |



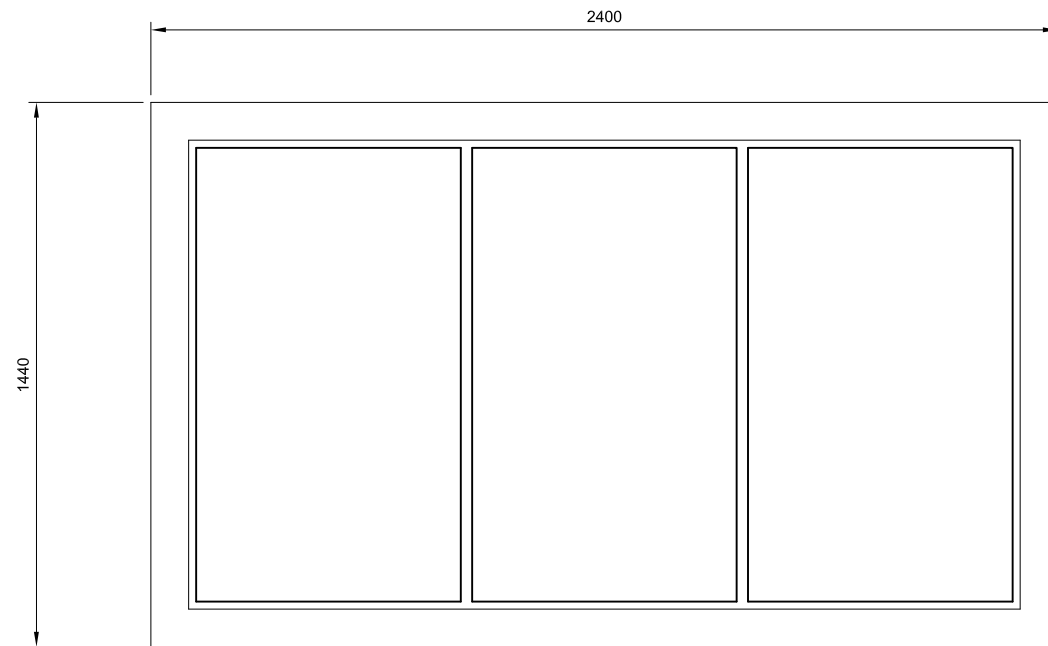
* Depending to duct arrangement.
 ** Divergence exits be used for roadside equipments.

*1 Concrete structure equivalence with:
 Concrete strength: F_c = 18 MPa;
 Reinforcing Bar (CB300-II): Yield strength: F_y = 300 MPa;
 Tensile strength: F_u = 450 MPa;

| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | VII.3-05 | |
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DETAIL OF COMMUNICATION DUCT CHAMBER (TYPE M4)

(INSTALL AT MEDIAN or EMBANKMENT ; FOR CHANGING DUCT DIRECTION)

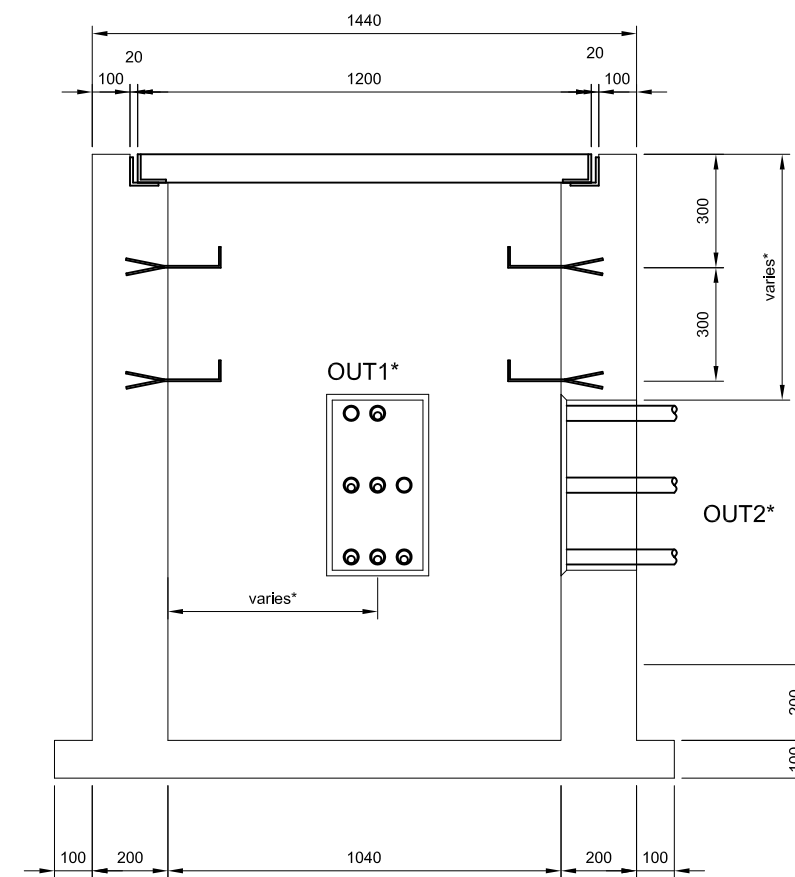
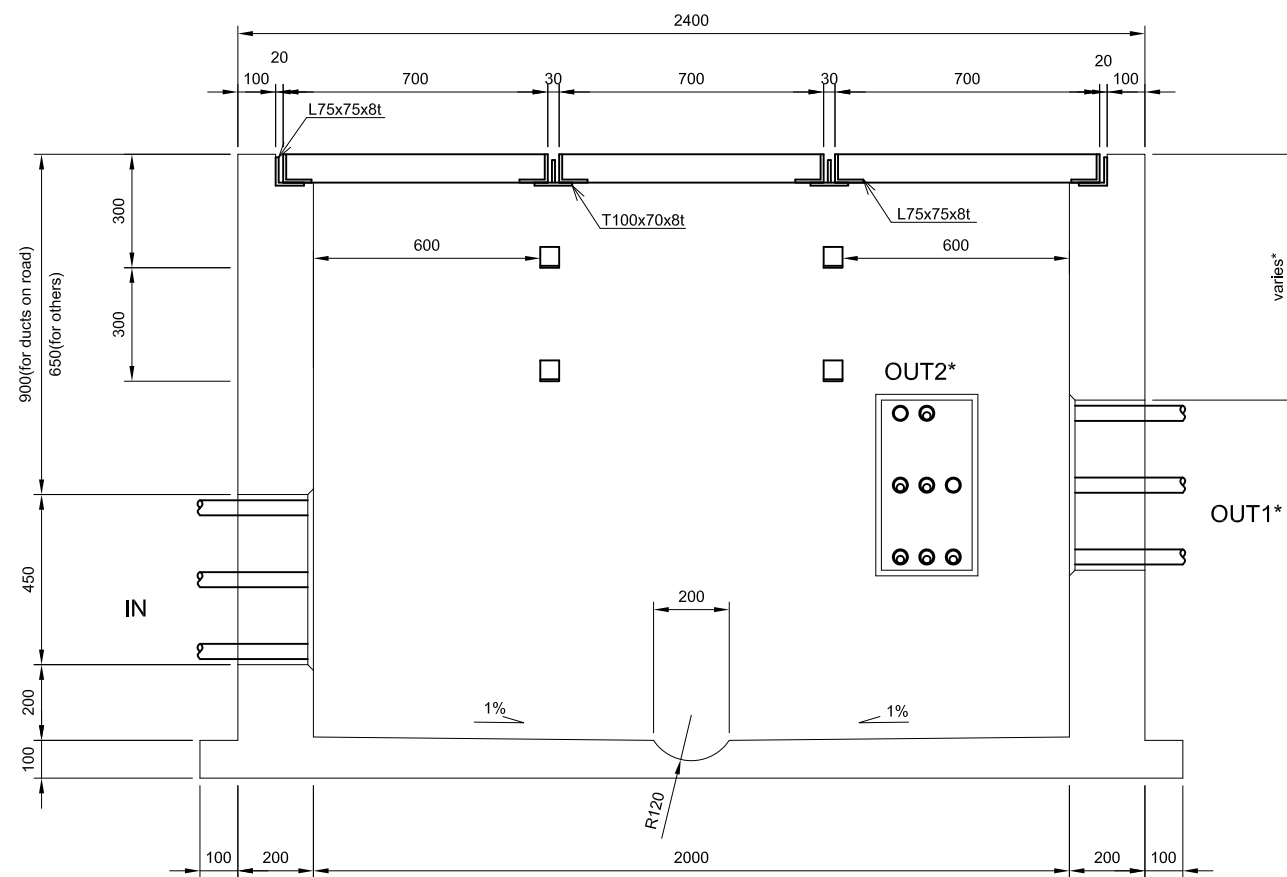


Volume table of chamber for ducts on road

| | Volume |
|---------------|--------------------|
| L75x75x8t | 183 kg |
| PL80x8t | 10 kg |
| T100x70x8t | 26 kg |
| Concrete M300 | 1.9 m ³ |

Volume table of chamber for others

| | Volume |
|---------------|--------------------|
| L75x75x8t | 183 kg |
| PL80x8t | 10 kg |
| T100x70x8t | 26 kg |
| Concrete M300 | 1.7 m ³ |



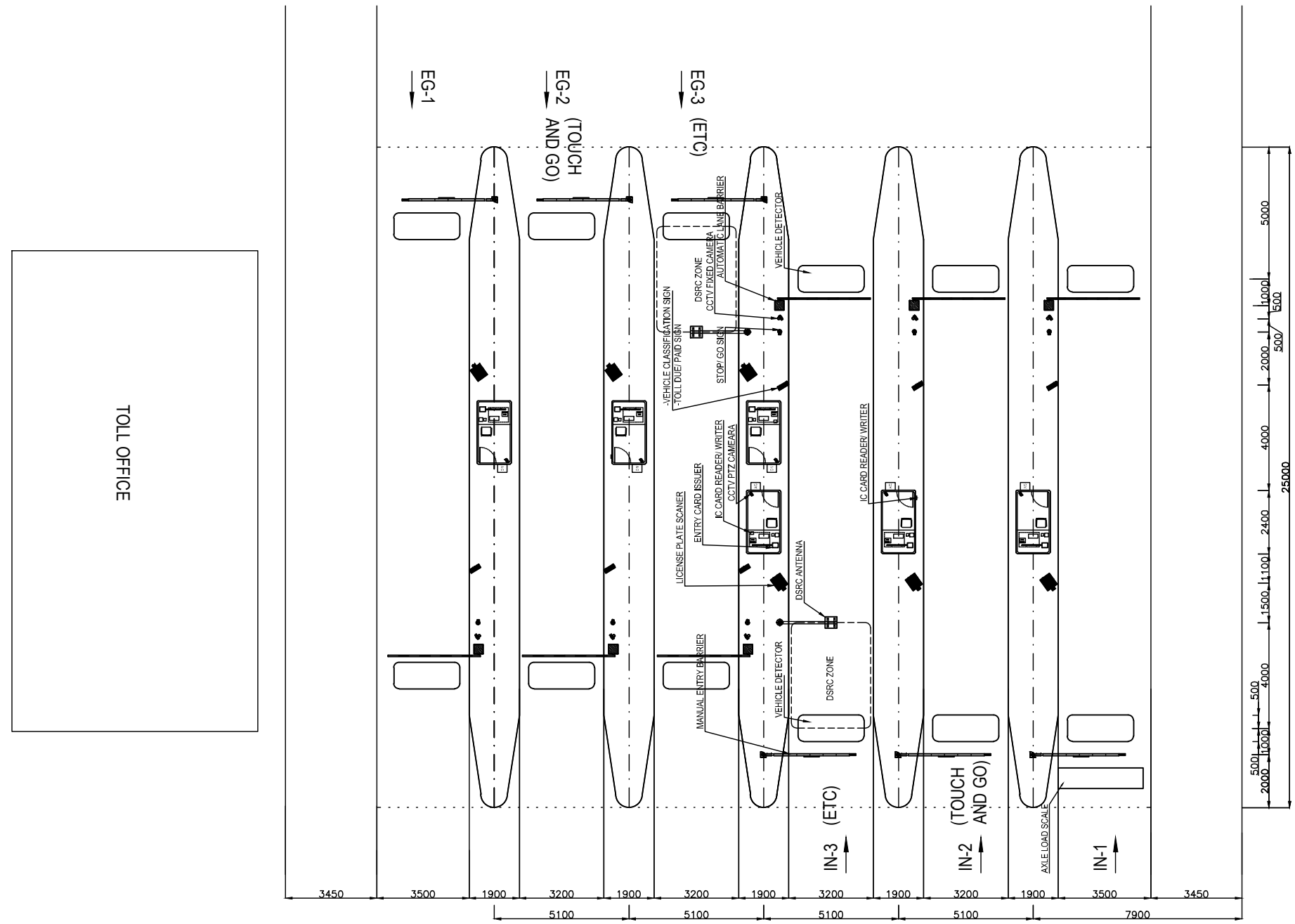
* Depending to duct arrangement.

*1 Concrete structure equivalence with:
 Concrete strength: F_c = 18 MPa;
 Reinforcing Bar (CB300-II): Yield strength: F_y = 300 MPa;
 Tensile strength: F_u = 450 MPa;

| | | | | | | | | | | | | | | |
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TYPICAL LAYOUT OF TOLL EQUIPMENT FOR 3 LANES

[FOR REFERENCE]

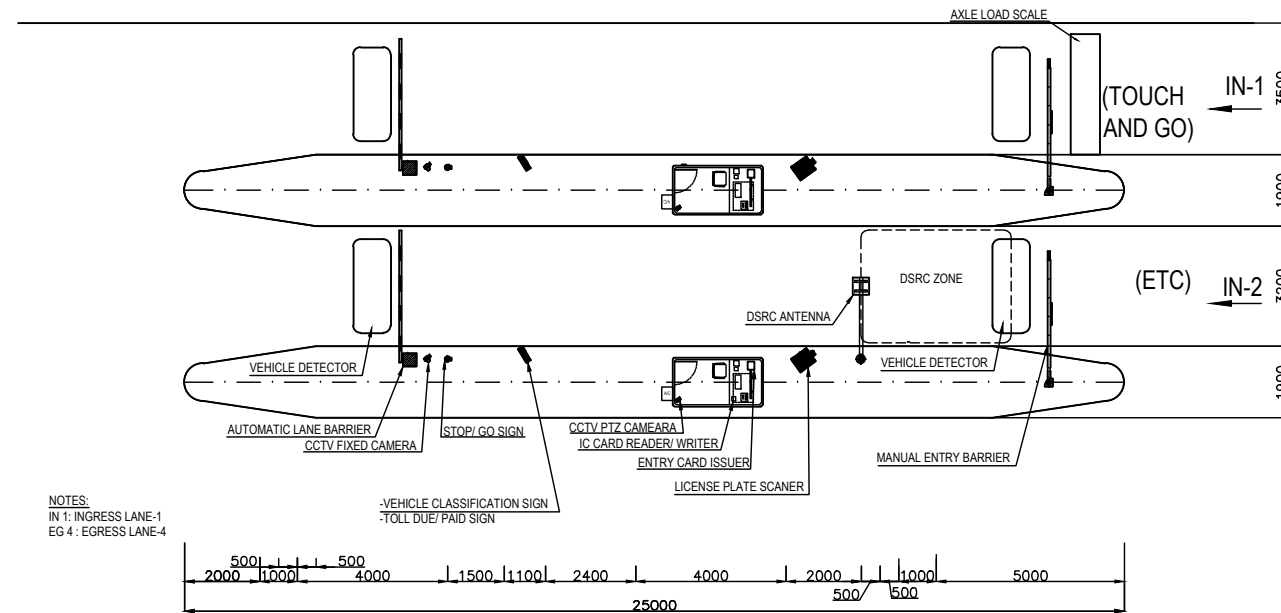


NOTES:
 IN 3: INGRESS LANE-3
 EG 1: EGRESS LANE-1

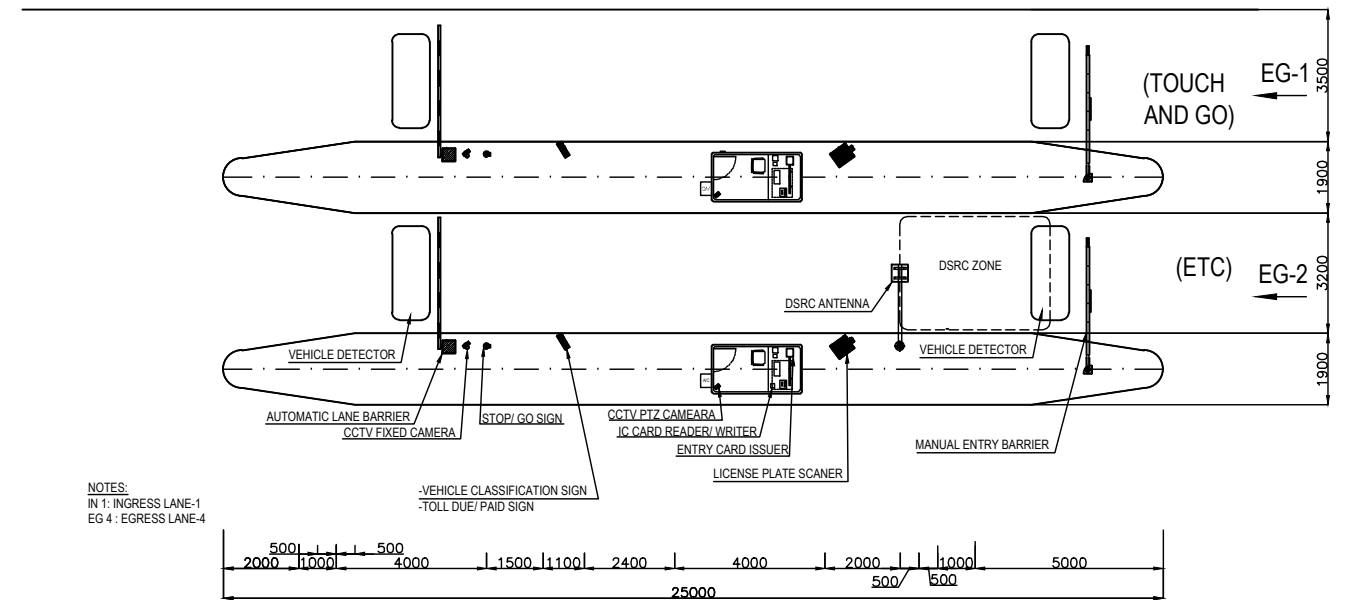
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| PREPARED BY | | DATE | | TITLE | | NAME | | SIGNATURE | | DATE | | | | | | | | |
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TYPICAL LAYOUT OF TOLL EQUIPMENT FOR 2 LANES

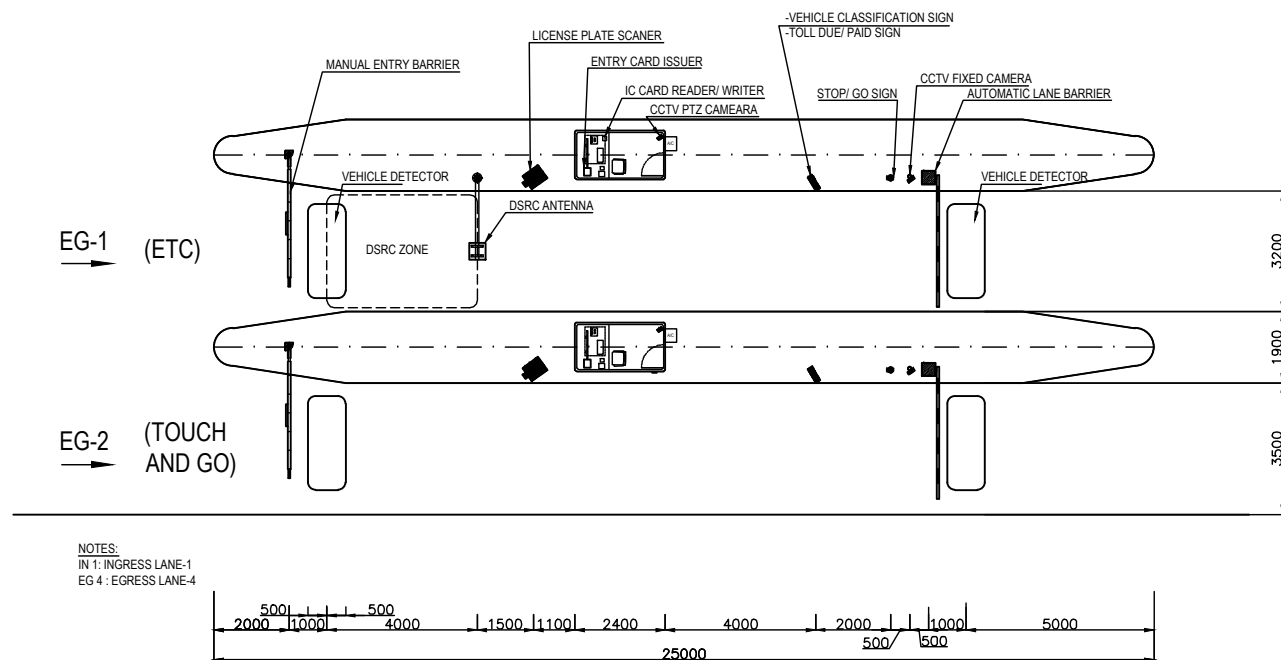
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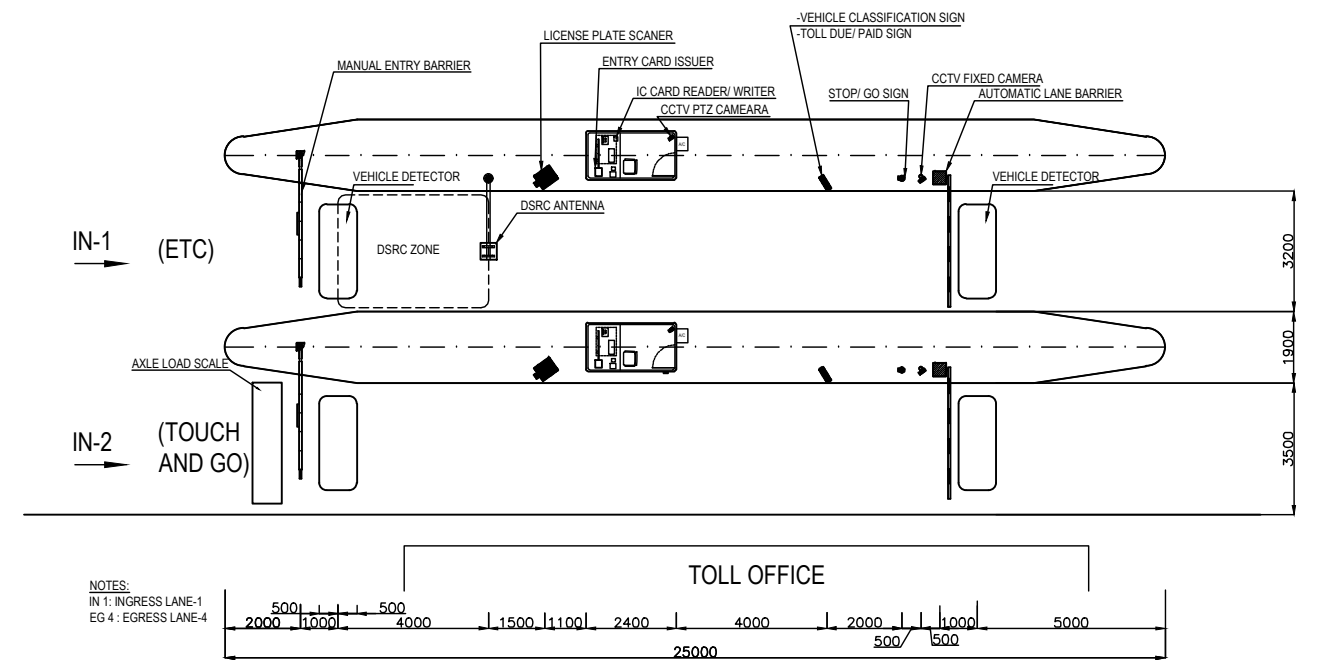
NOTES:
IN 1: INGRESS LANE-1
EG 4: EGRESS LANE-4



NOTES:
IN 1: INGRESS LANE-1
EG 4: EGRESS LANE-4



NOTES:
IN 1: INGRESS LANE-1
EG 4: EGRESS LANE-4

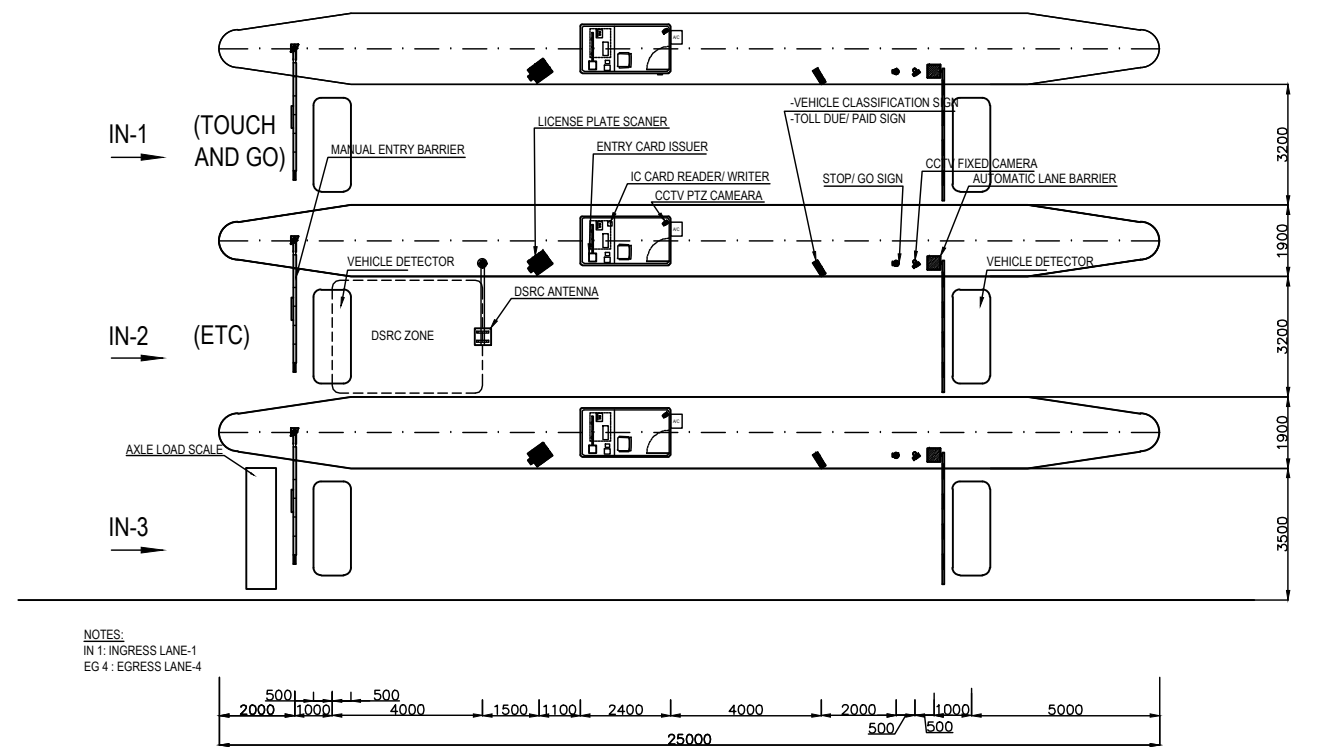
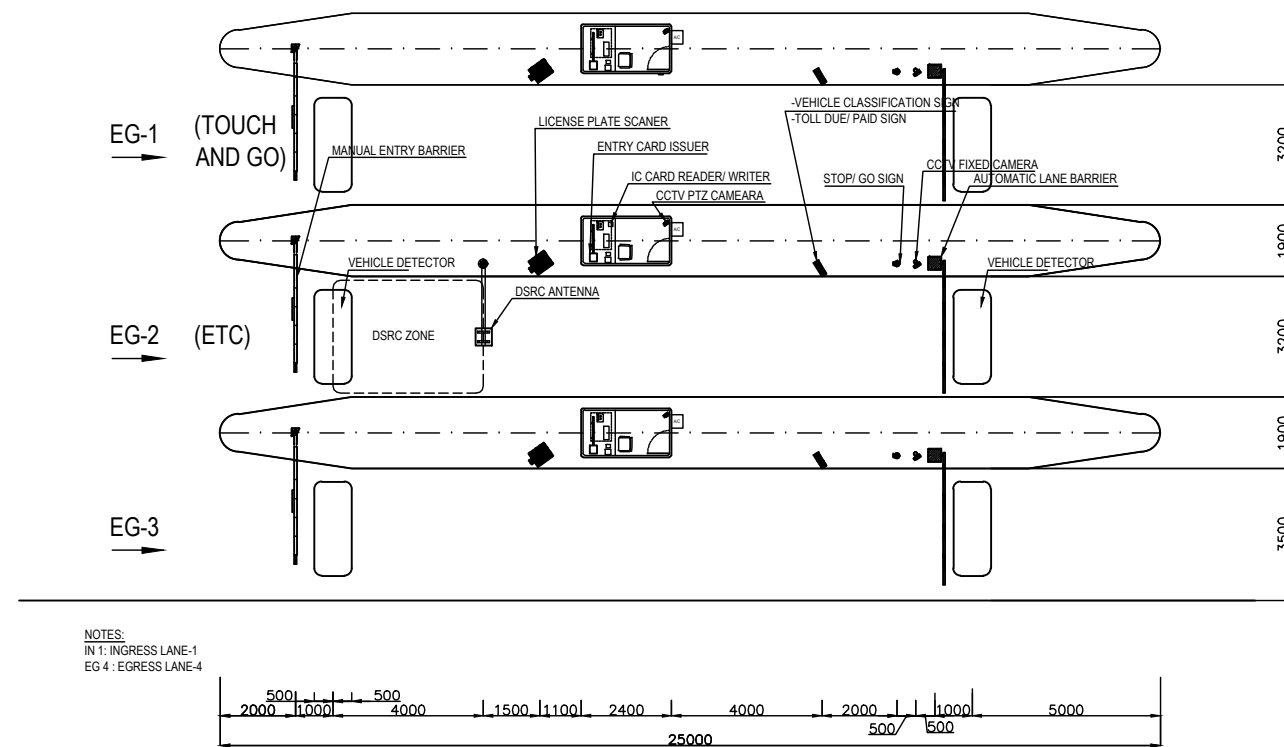
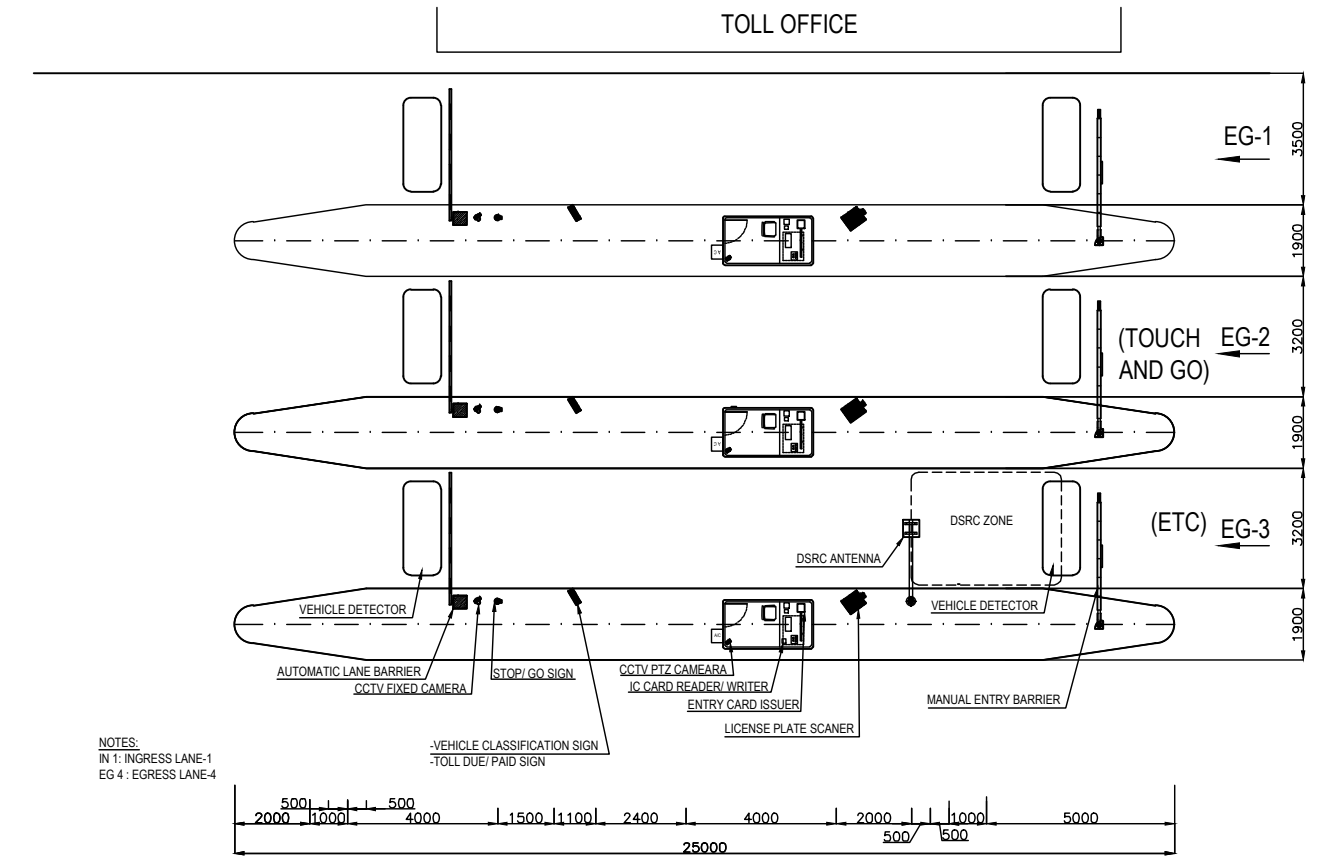
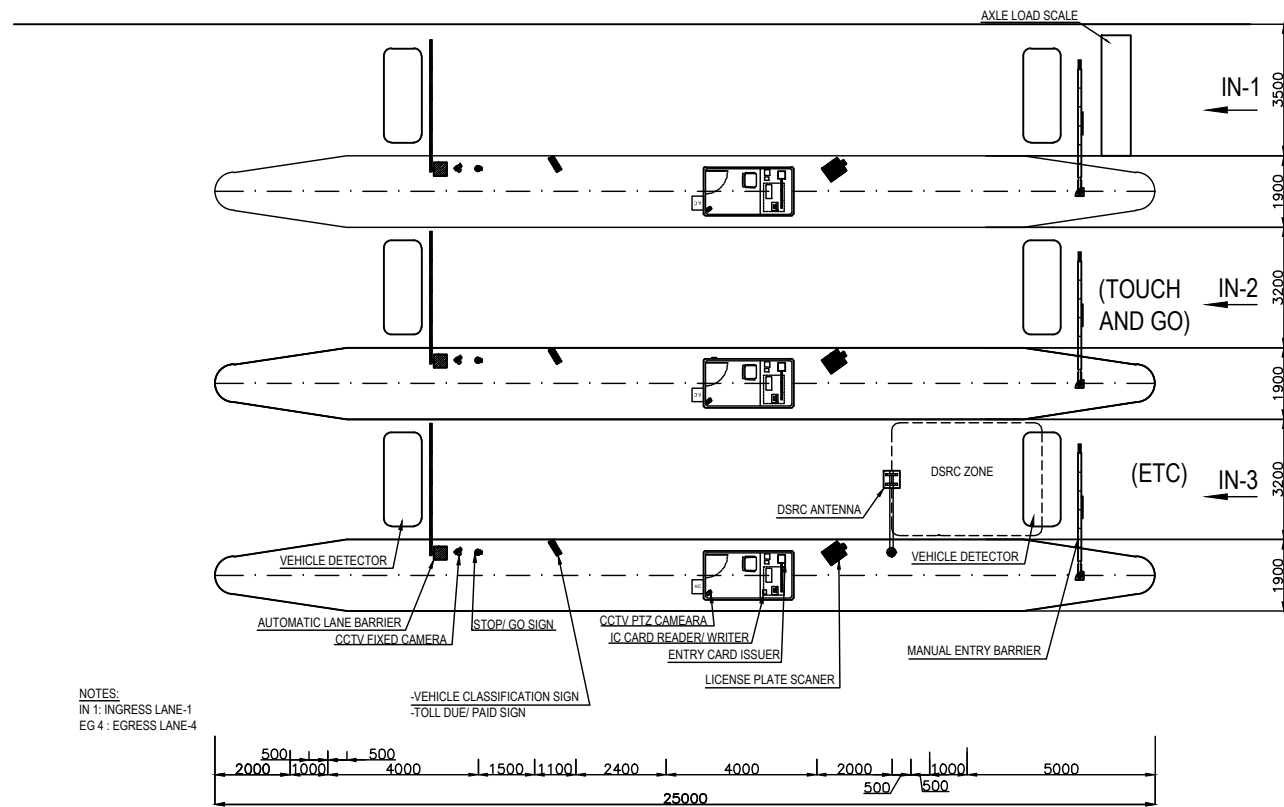


NOTES:
IN 1: INGRESS LANE-1
EG 4: EGRESS LANE-4

| | | | | | | | | | | | | | | | |
|--|------|-----------|------|--|-------------------------------|--|--|--|--|--|--|--|--------------------------|--|------|
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| TITLE | NAME | SIGNATURE | DATE | | | | | | | SCALE: 1/200 | | | SHEET No.: | | Rev: |
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TYPICAL LAYOUT OF TOLL EQUIPMENT FOR 3 LANES

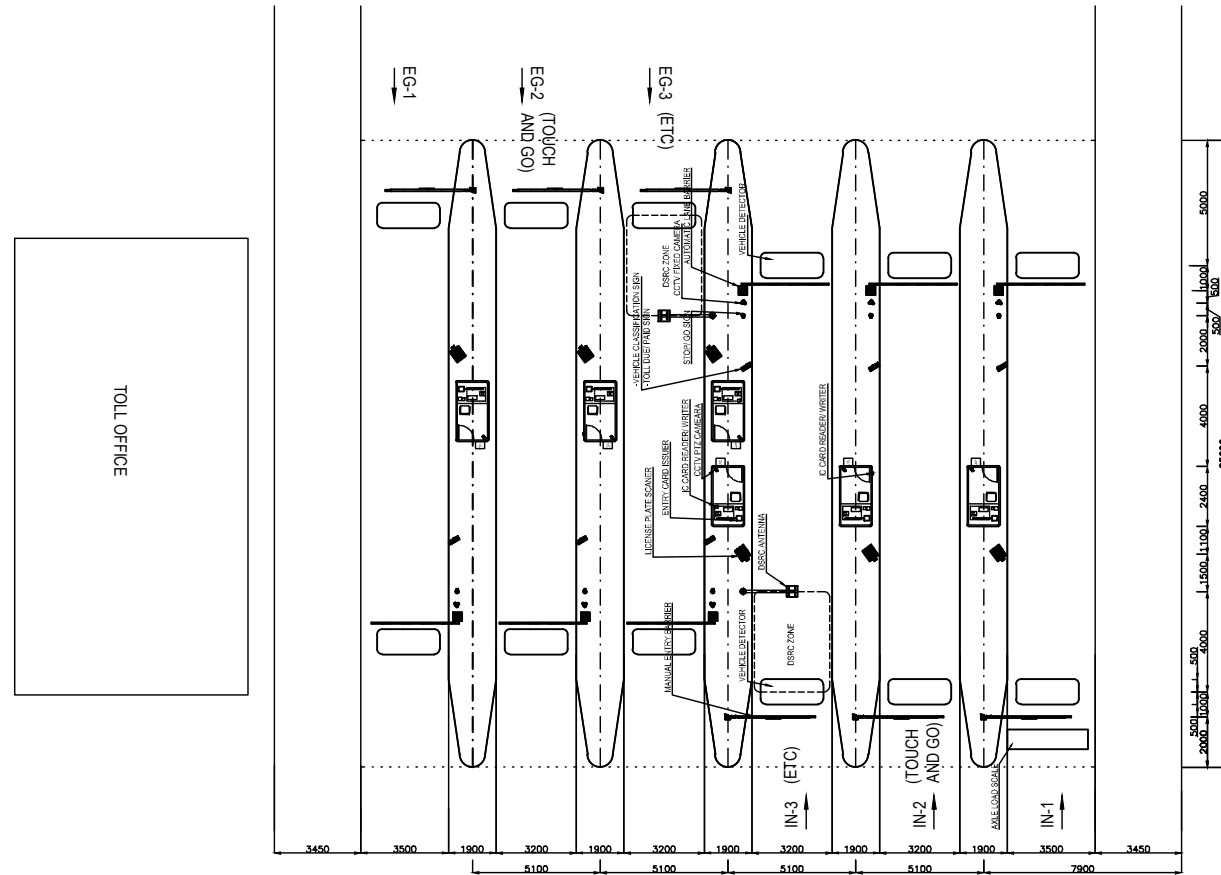
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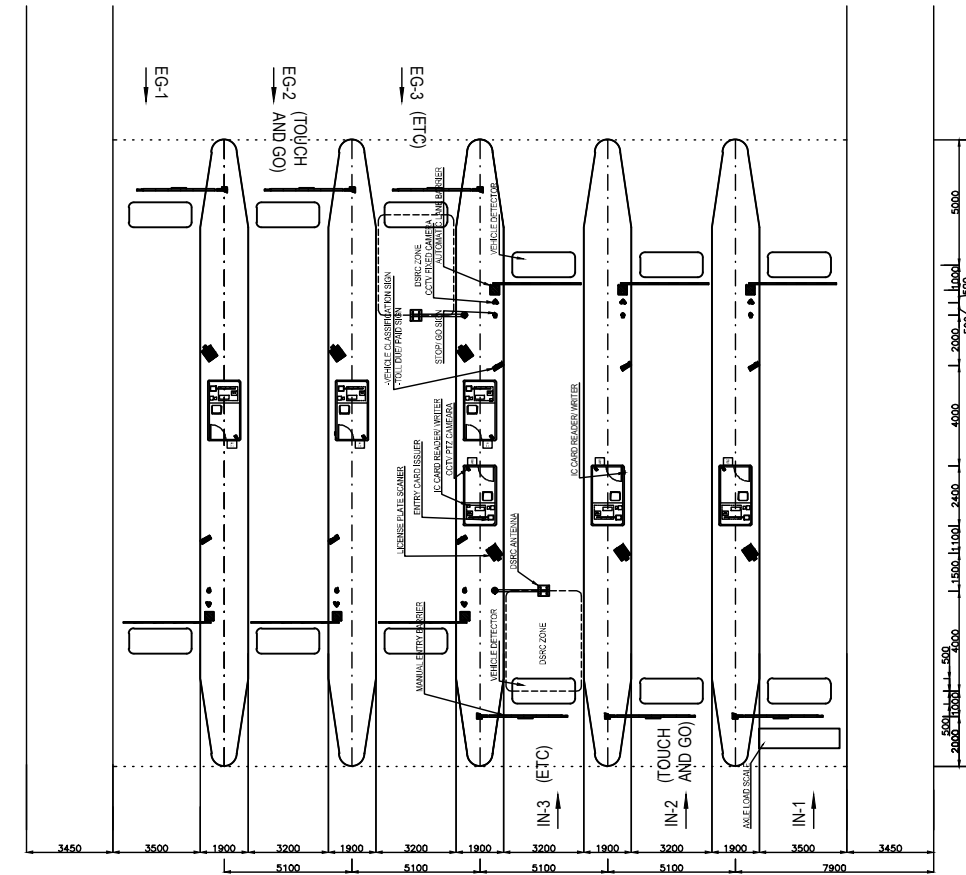
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TYPICAL LAYOUT OF TOLL EQUIPMENT FOR 3 LANES

[FOR REFERENCE]



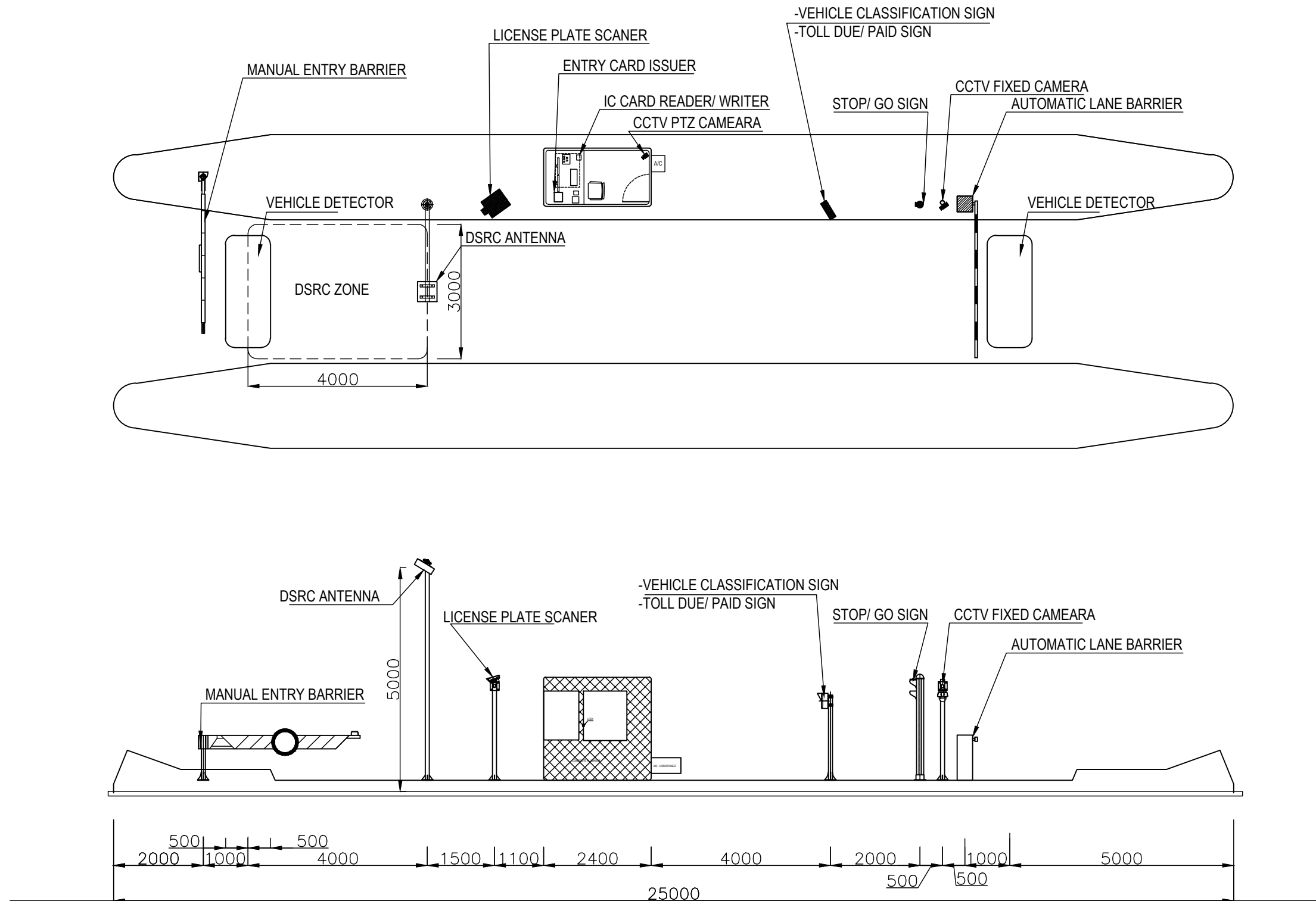
NOTES:
IN 3: INGRESS LANE 3
EG 1: EGRESS LANE 1



NOTES:
IN 3: INGRESS LANE 3
EG 1: EGRESS LANE 1

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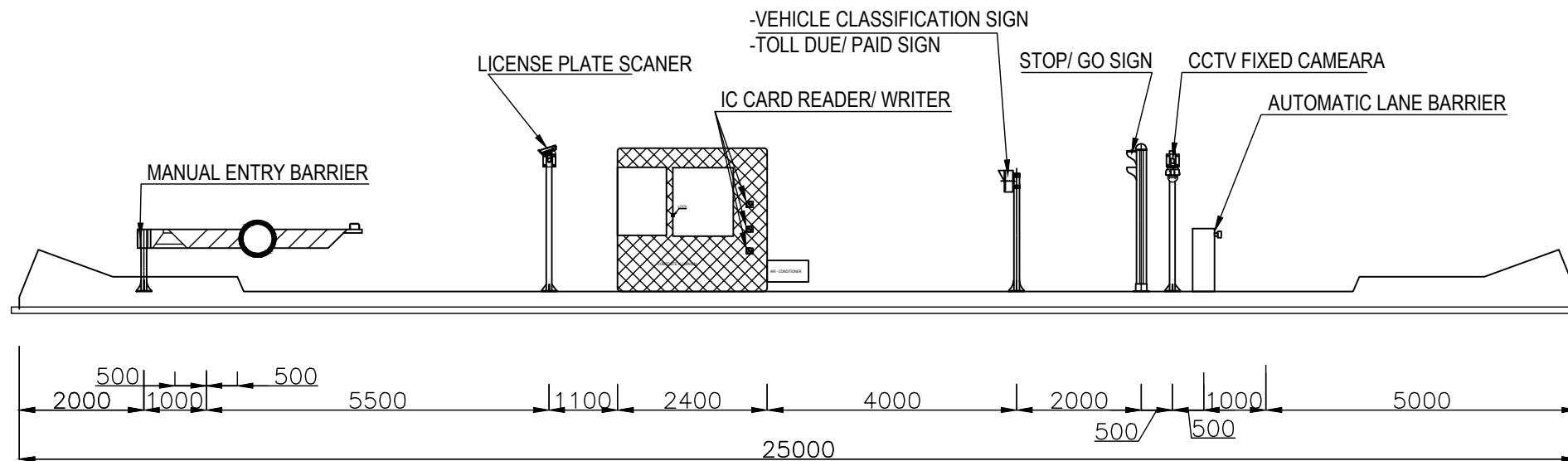
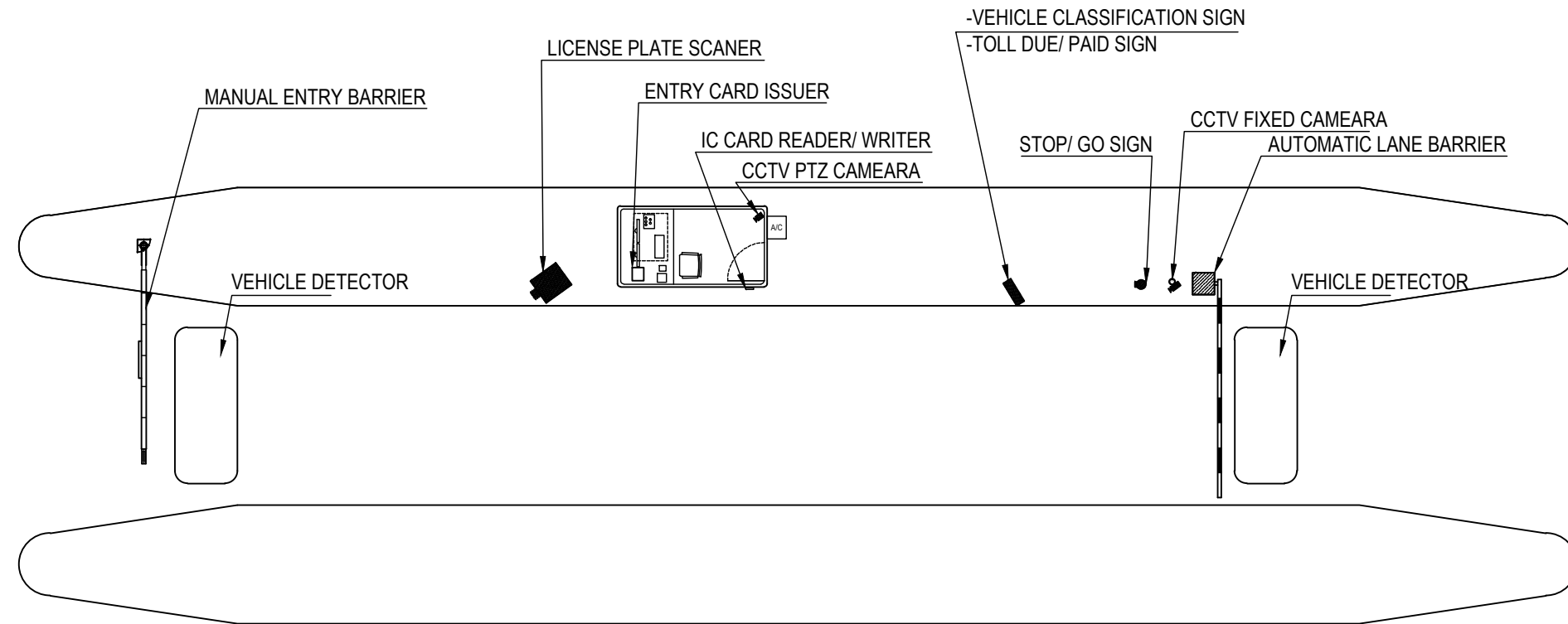
EQUIPMENT ARRANGEMENT PROFILE AT TOLLGATE FOR ETC LANE FOR REFERENCE



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EQUIPMENT ARRANGEMENT PROFILE AT TOLLGATE FOR TOUCH&GO/MANUAL LANE

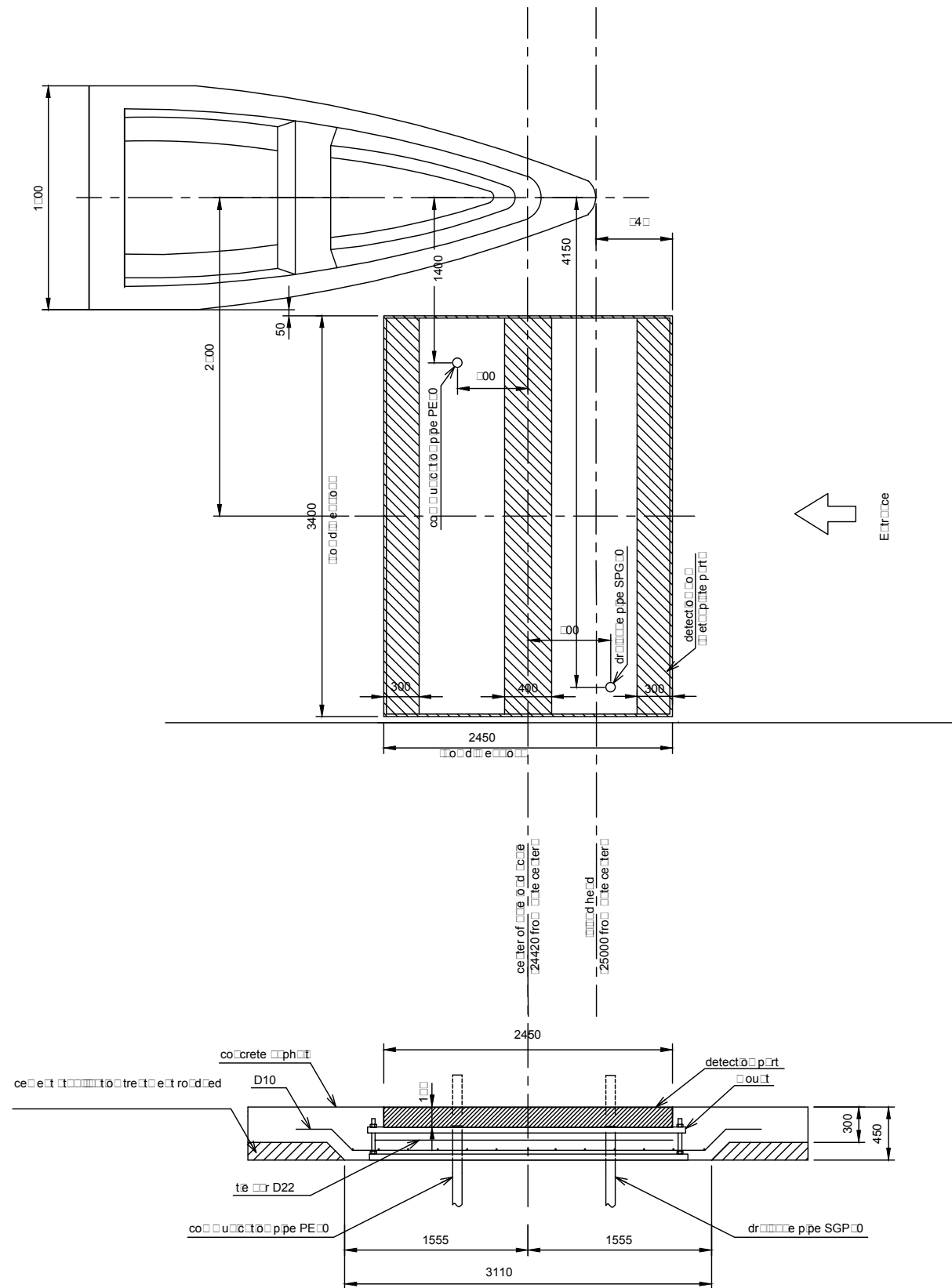
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BASE STRUCTURE FOR AXLE LOAD SCALE

[FOR REFERENCE]



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