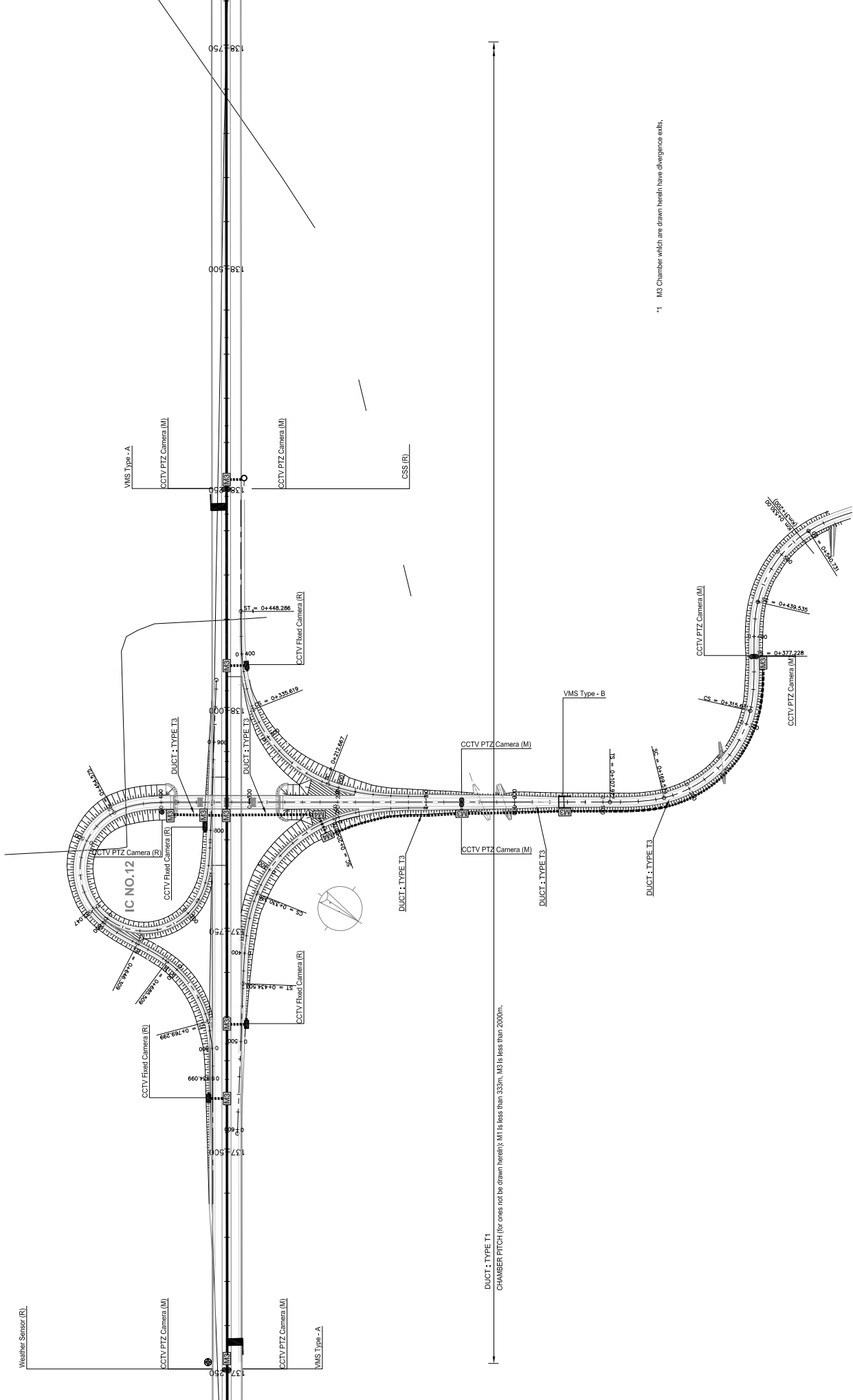


# HANOI - BAC NINH EXPRESSWAY

---

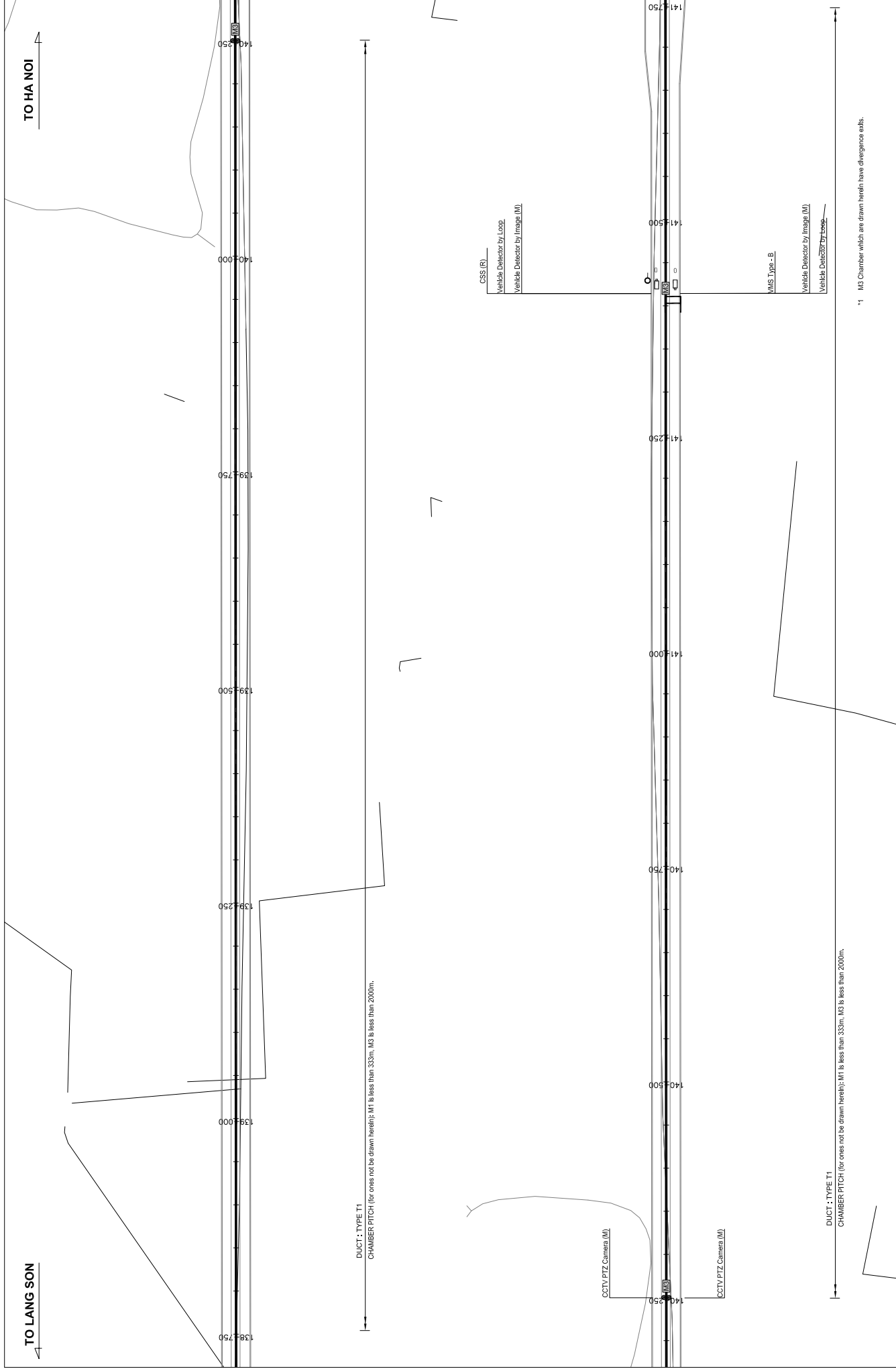
TO LANG SON

TO HA NOI



\*1 M3 Chamber which are drawn herein have divergence walls.

CONSULTANT				SOCIALIST REPUBLIC OF VIETNAM				ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM			
ORIENTAL CONSULTANTS CO., LTD				MINISTRY OF TRANSPORT				DRAWING TITLE			
NEXCO EAST ENGINEERING CO., LTD				MINISTRY OF TRANSPORT				LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT			
TRANSPORTATION RESEARCH INSTITUTE CO., LTD				MINISTRY OF TRANSPORT				(KM 137+250 - KM 138+750, HA NOI - BAC NINH EXP.)			
LANDTEC JAPAN INC.				MINISTRY OF TRANSPORT				PACKAGE			
TITLE	NAME	SIGNATURE	DATE	DRAWING No.				IX.1-01			
PREPARED BY				SHEET No.				Sheet			
CHECKED BY				of				of			
APPROVED BY				SCALE: 1/4000							



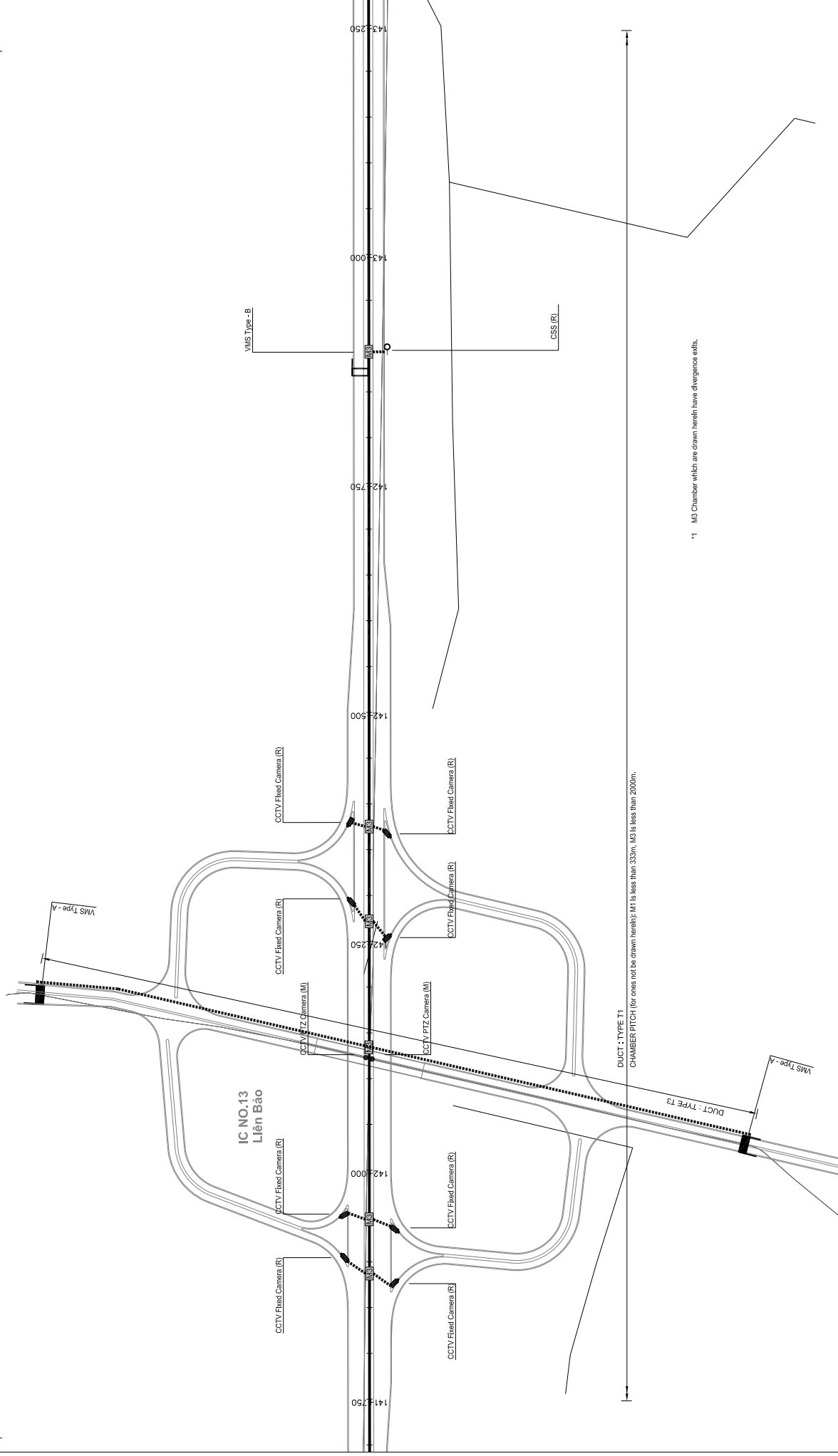
\*1 M3 Chamber which are drawn herein have divergence exits.

<b>CONSULTANT</b> ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.		<b>SOCIALIST REPUBLIC OF VIETNAM</b>  <b>MINISTRY OF TRANSPORT</b>		<b>PACKAGE</b> NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
				<b>DRAWING TITLE</b> LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 138+750 - KM 141+750, HA NOI - BAC NINH EXP.)	
TITLE	NAME	SIGNATURE	DATE	DRAWING NO.	IX.1-02 Sheet of
PREPARED BY	CHECKED BY	APPROVED BY		SHEET NO.	

SCALE: 1:4000

TO LANG SON

TO HA NOI



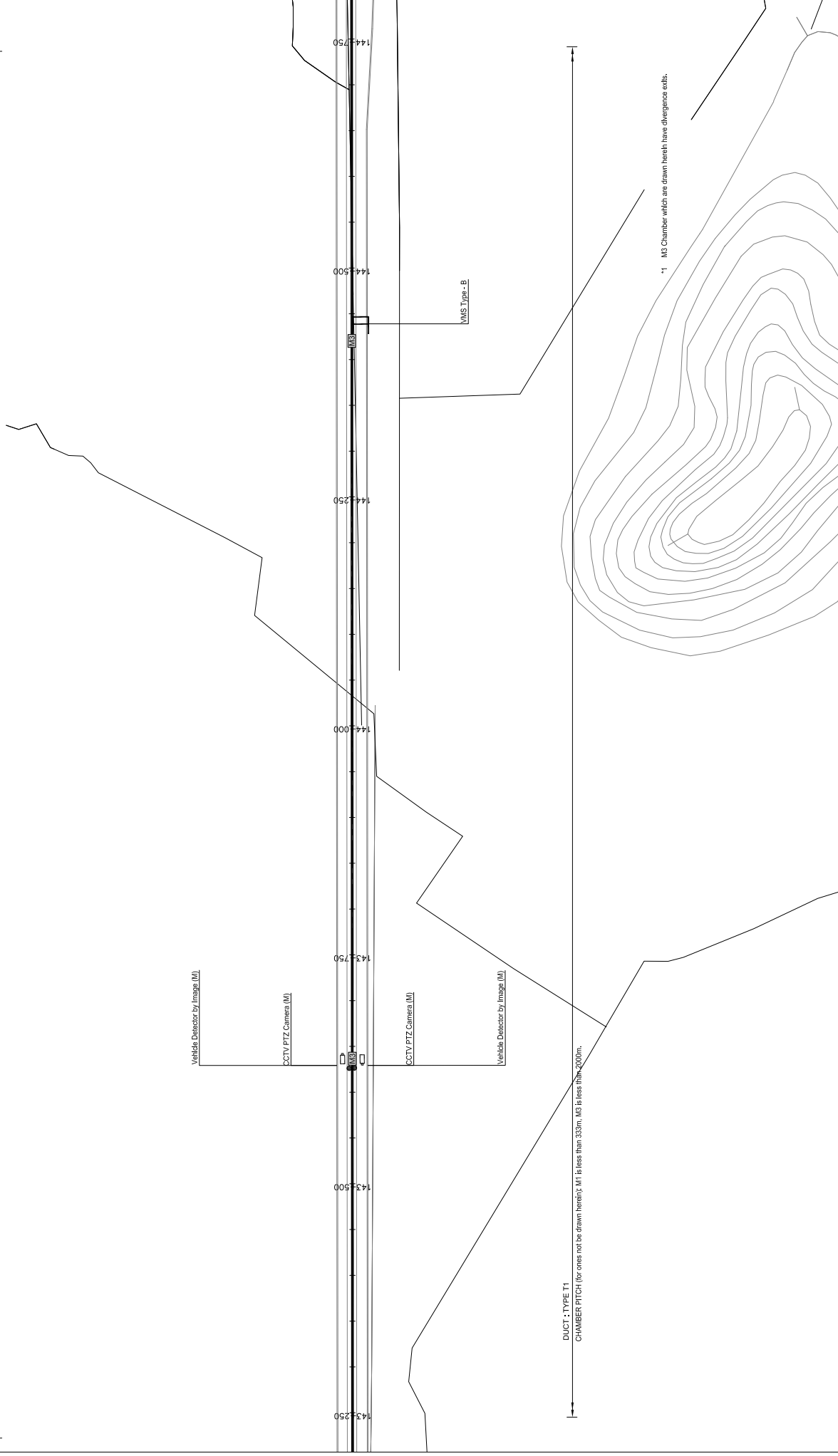
DUCT : TYPE T1  
 CHAMBER PITCH (for cones not be drawn hereinh): M1 is less than 333m, M3 is less than 2000m.

\*1 MS Chamber which are drawn hereinh have divergence adds.

CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM				PACKAGE	
		MINISTRY OF TRANSPORT				NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.		TITLE	NAME	SIGNATURE	DATE	DRAWING TITLE	
PREPARED BY		CHECKED BY	APPROVED BY			LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 141+750 - KM 143+250), HA NOI - BAC NINH EXP.)	
						DRAWING No.: IX.1-03	
						SHEET No.: _____ of _____	
						SCALE: 1:4000	

TO LANG SON

TO HA NOI

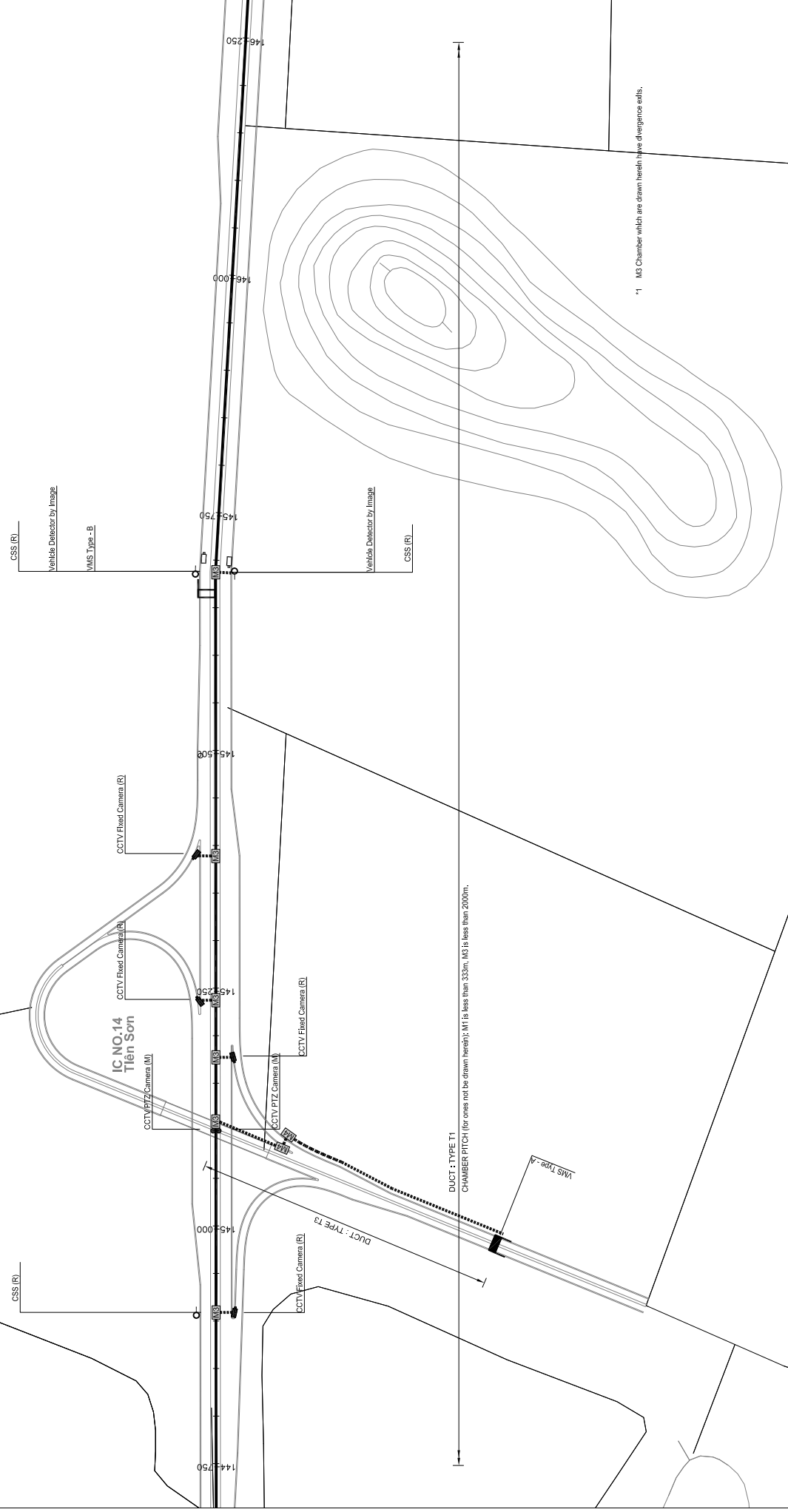


<b>CONSULTANT</b> ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.		<b>SOCIALIST REPUBLIC OF VIETNAM</b>  <b>MINISTRY OF TRANSPORT</b>		<b>ITS INTEGRATION PROJECT ON</b> <b>NEW NATIONAL HIGHWAY NO.3 &amp; NORTHERN AREA OF VIETNAM</b>		PACKAGE
				DRAWING TITLE <b>LAYOUT PLAN OF ROADSIDE EQUIPMENT &amp; COMMUNICATION DUCT</b> (KM 143+250 - KM 144+750, HA NOI - BAC NINH EXP.)		DRAWING NO. IX.1-04
TITLE	NAME	SIGNATURE	DATE	SHEET NO.	Sheet	of
PREPARED BY						
CHECKED BY						
APPROVED BY						

SCALE: 1:4000

TO LANG SON

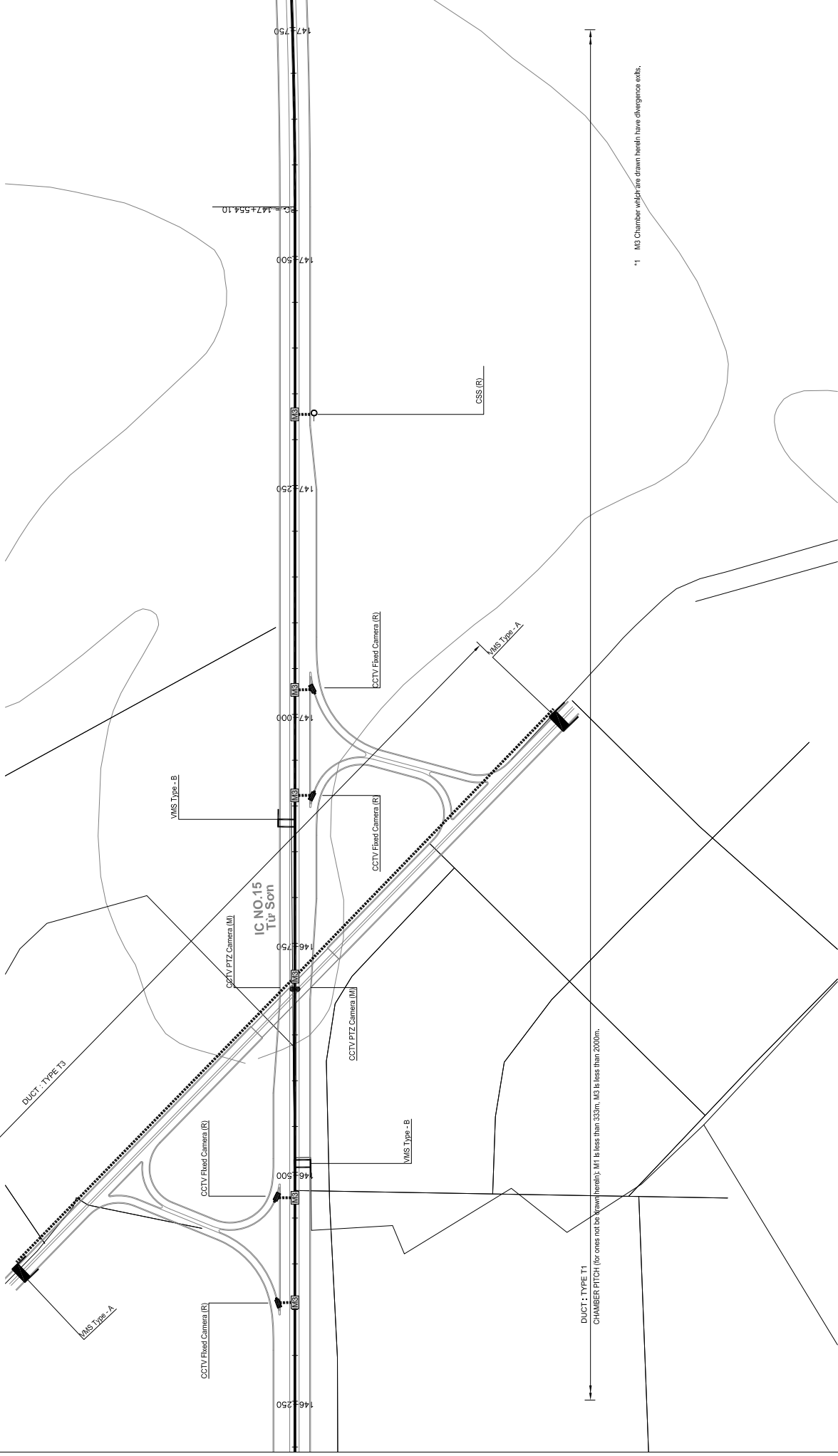
TO HA NOI



<b>CONSULTANT</b> ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.		<b>SOCIALIST REPUBLIC OF VIETNAM</b>  <b>MINISTRY OF TRANSPORT</b>		<b>ITS INTEGRATION PROJECT ON</b> <b>NEW NATIONAL HIGHWAY NO.3 &amp; NORTHERN AREA OF VIETNAM</b>				PACKAGE
				TITLE LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 144+750 - KM 146+250, HA NOI - BAC NINH EXP.)	DRAWING NO. IX.1.05	SHEET NO. Sheet	of	DRAWING TITLE LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 144+750 - KM 146+250, HA NOI - BAC NINH EXP.)

TO LANG SON

TO HA NOI



\*1 MS Chamber which are drawn herein have divergence walls.

CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM			
		MINISTRY OF TRANSPORT			
ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.		ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM			
TITLE		DRAWING TITLE			
PREPARED BY	NAME	SIGNATURE		DATE	
CHECKED BY					
APPROVED BY					
		PACKAGE		DRAWING No. IX.1-06	
				SHEET No. Sheet of	
				SCALE: 1:4000	

TO LANG SON

TO HA NOI



<b>CONSULTANT</b> ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.		<b>SOCIALIST REPUBLIC OF VIETNAM</b>  <b>MINISTRY OF TRANSPORT</b>		PACKAGE NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
				DRAWING TITLE LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 147+750 - KM 149+000, HA NOI - BAC NINH EXP.)	
TITLE	NAME	SIGNATURE	DATE	DRAWING NO.	Sheet
PREPARED BY				IX.1-07	of
CHECKED BY					
APPROVED BY					

SCALE: 1:4000

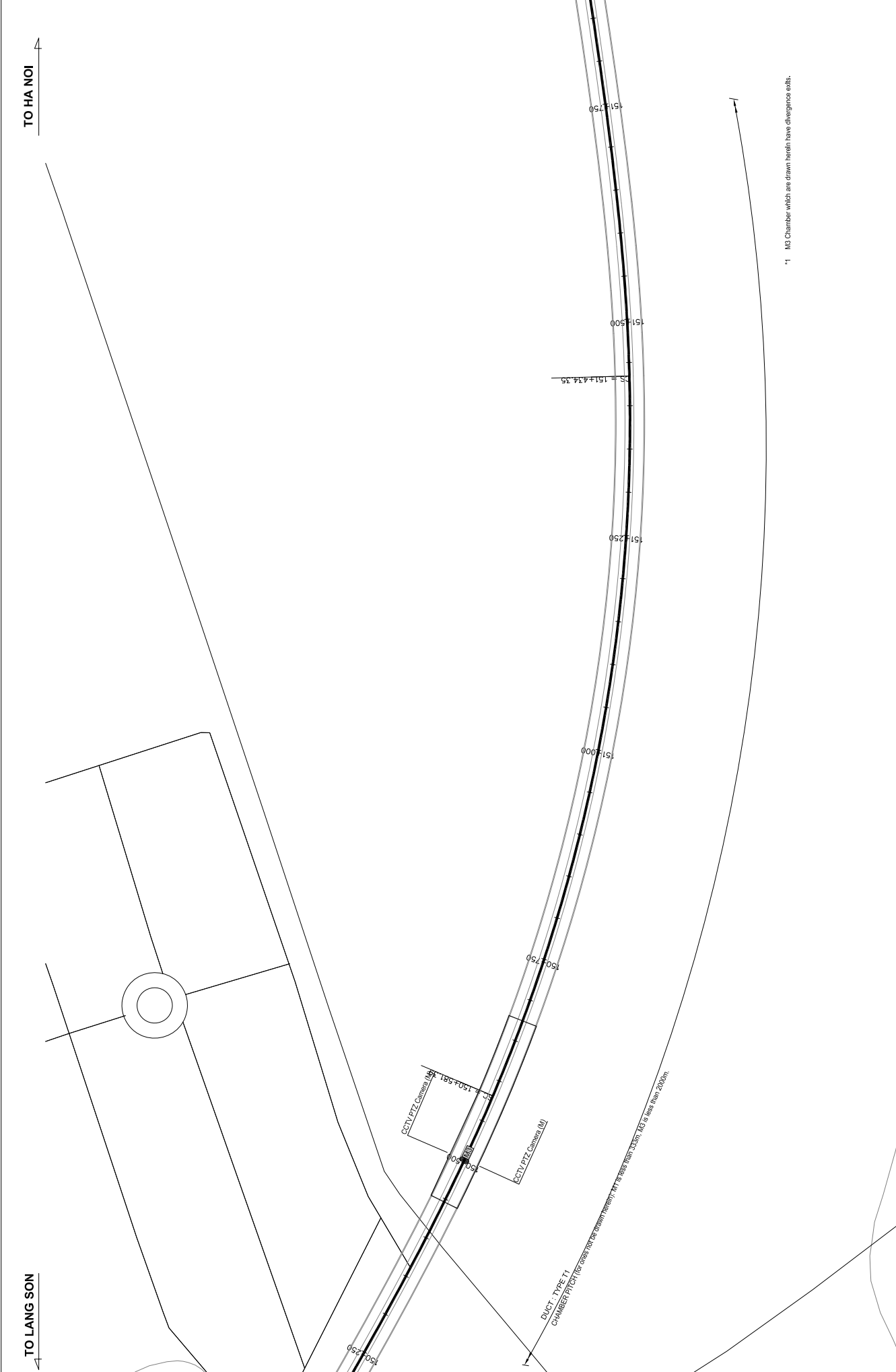


TO LANG SON

TO HA NOI



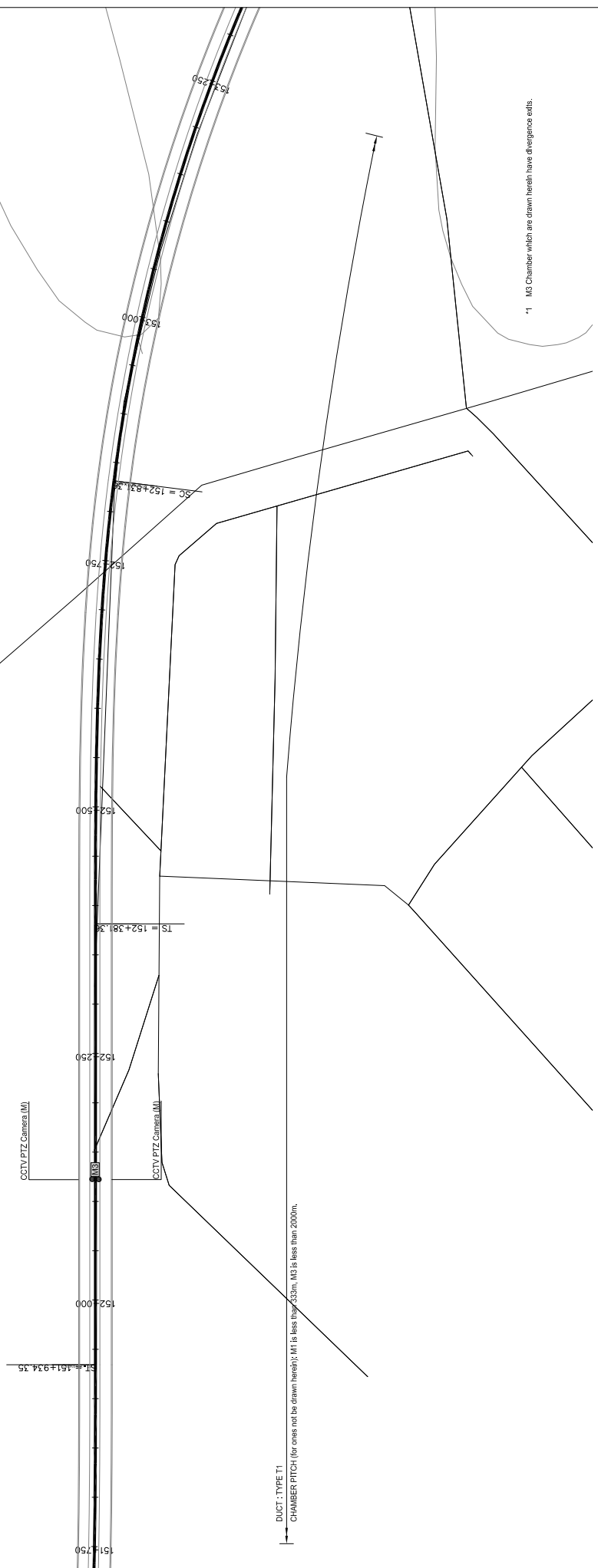
<b>CONSULTANT</b> ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.		SOCIALIST REPUBLIC OF VIETNAM  MINISTRY OF TRANSPORT		ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM  DRAWING TITLE: LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 149+000 - KM 150+250), HA NOI - BAC NINH EXP.)	
		TITLE PREPARED BY CHECKED BY APPROVED BY	NAME    	SIGNATURE    	DATE    



SOCIALIST REPUBLIC OF VIETNAM  MINISTRY OF TRANSPORT		CONSULTANT		PACKAGE	
		ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.	ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	DRAWING NO.: IX.1-09 SHEET NO.: Scale: 1:4000	DRAWING NO.: IX.1-09 SHEET NO.: Scale: 1:4000
TITLE PREPARED BY CHECKED BY APPROVED BY		NAME SIGNATURE DATE		DRAWING TITLE LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 150+250 - KM 151+750, HA NOI - BAC NINH EXP.)	

TO LANG SON

TO HA NOI



DUCT: TYPE T1  
 CHAMBER PITCH: (for ones not be drawn herein): M1 is less than 330m, M3 is less than 200m.

CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM		ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
		MINISTRY OF TRANSPORT		DRAWING TITLE: LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT (KM 151+750 - KM 153+250, HA NOI - BAC NINH EXP.)	
ORIENTAL CONSULTANTS CO., LTD		TITLE	NAME	SIGNATURE	DATE
NEXCO EAST ENGINEERING CO., LTD		PREPARED BY			
TRANSPORTATION RESEARCH INSTITUTE CO., LTD		CHECKED BY			
LANDTEC JAPAN INC.		APPROVED BY			
		PACKAGE:		DRAWING No.: IX.1-10	
				SHEET No.: Sheet of	
				SCALE: 1:4000	

TO LANG SON

TO HA NOI

CCTV PTZ Camera (M)

CCTV PTZ Camera (M)

153+250 153+500 153+750 154+000 154+250 154+500 154+750

CS = 153+496.27 1500

ST = 153+946.27

DUCT : TYPE T1  
CHAMBER PITCH (for ones not be drawn hereafter): M1 is less than 333m, M3 is less than 2000m.

Vehicle Detector by Image

DUCT : TYPE T1  
CHAMBER PITCH (for ones not be drawn hereafter): M1 is less than 333m, M3 is less than 2000m.

DUCT : TYPE B2  
CHAMBER PITCH (for ones not be drawn hereafter): M3 (without closure) is less than 100m.

Vehicle Detector by Image

\*1 M3 Chamber which are drawn hereafter have divergence points.

CONSULTANT

ORIENTAL CONSULTANTS CO., LTD  
NEXCO EAST ENGINEERING CO., LTD  
NIPPON KOEI CO., LTD  
TRANSPORTATION RESEARCH INSTITUTE CO., LTD  
LANDTEC JAPAN INC.

SOCIALIST REPUBLIC OF VIETNAM

MINISTRY OF TRANSPORT

ITS INTEGRATION PROJECT ON  
NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM

LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT  
(KM 153+250 - KM 156+250, HA NOI - BAC NINH EXP.)

PACKAGE:

DRAWING No.:

IX.1.11

SHEET No.:

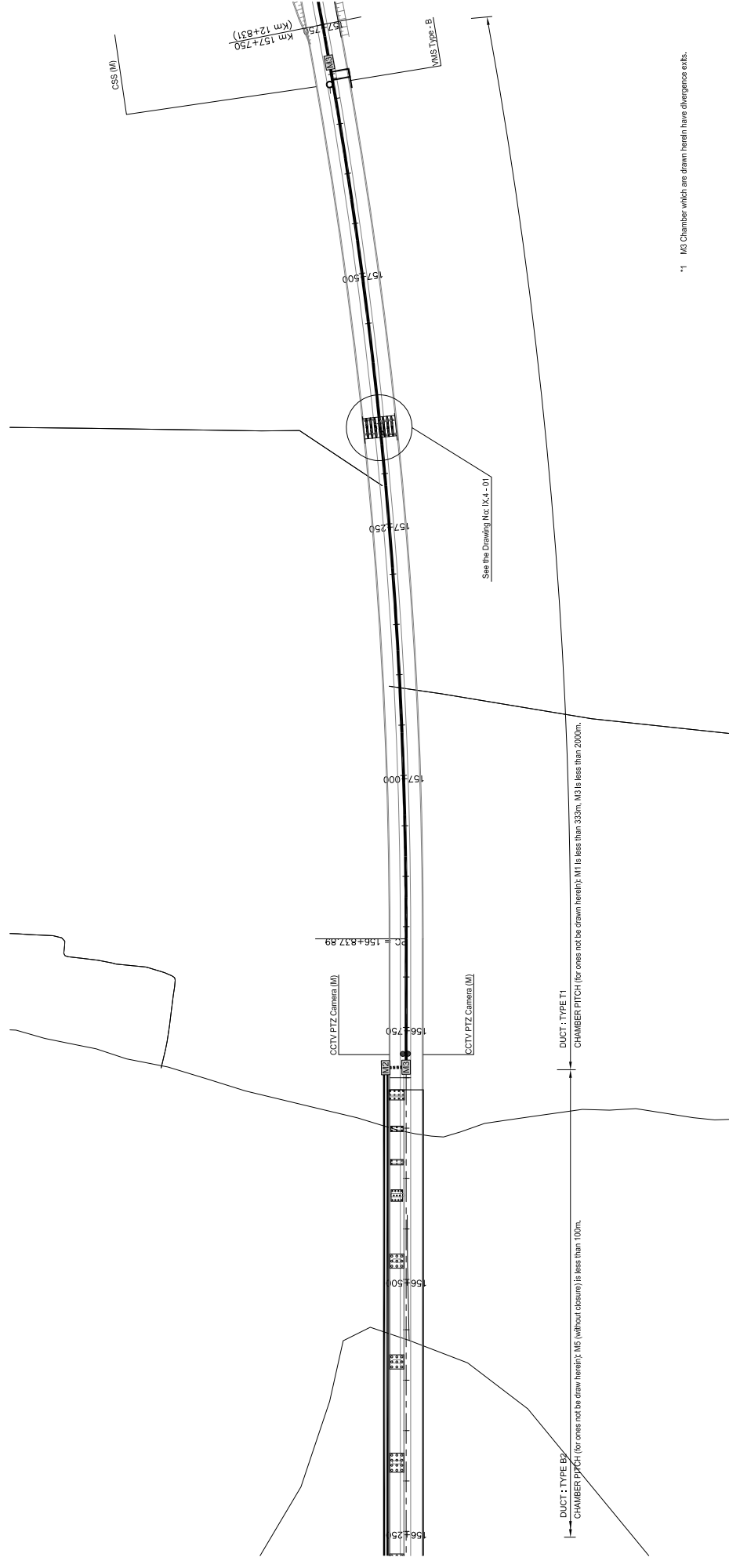
Sheet of

SCALE: 1:4000

TITLE	NAME	SIGNATURE	DATE
PREPARED BY			
CHECKED BY			
APPROVED BY			

TO LANG SON

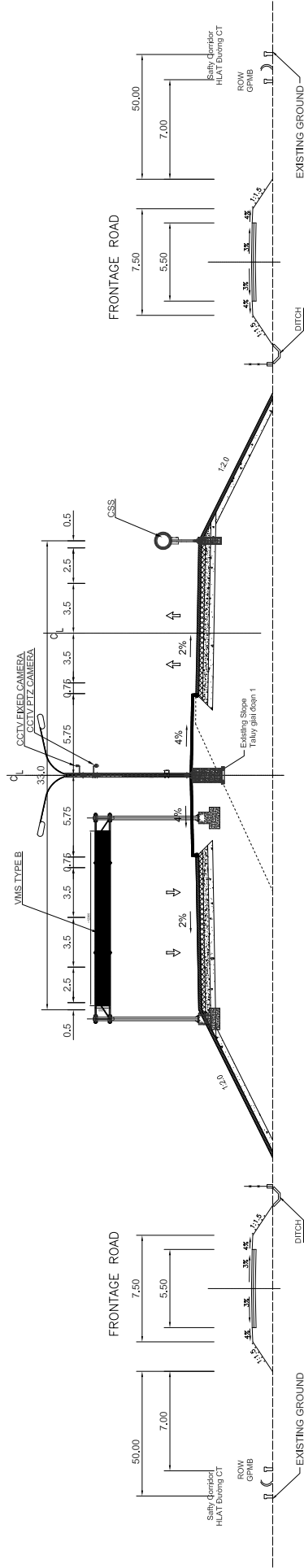
TO HA NOI



\*1 M3 Chamber which are drawn herein have divergence exits.

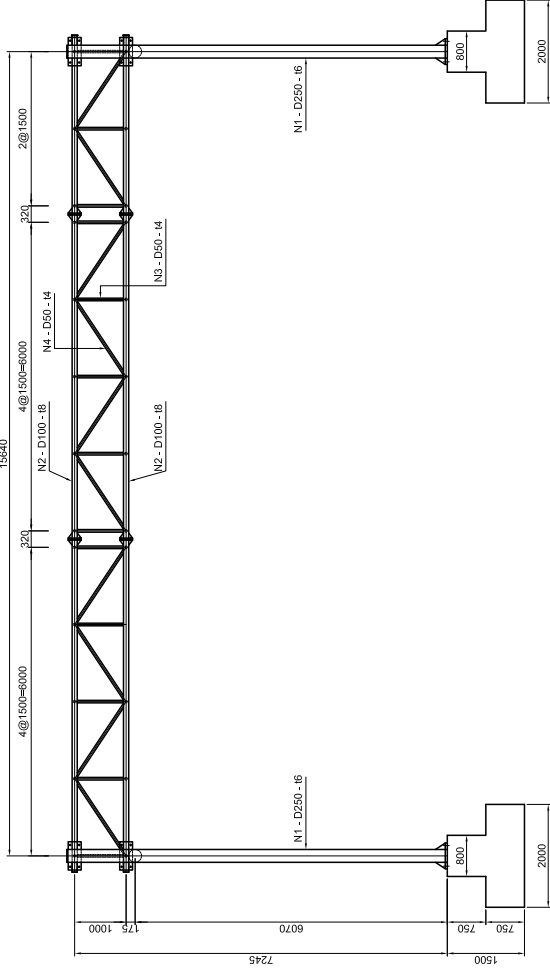
CONSULTANT				SOCIALIST REPUBLIC OF VIETNAM				ITS INTEGRATION PROJECT ON					
ORIENTAL CONSULTANTS CO., LTD		NEXCO EAST ENGINEERING CO., LTD		NIPPON KOEI CO., LTD		TRANSPORTATION RESEARCH INSTITUTE CO., LTD		NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM		DRAWING NO: IX.1-12		PACKAGE	
PREPARED BY		CHECKED BY		APPROVED BY		TITLE		DRAWING TITLE		SHEET NO.		Sheet of	
						MINISTRY OF TRANSPORT		LAYOUT PLAN OF ROADSIDE EQUIPMENT & COMMUNICATION DUCT		IX.1-12		New	
						LANDTEC JAPAN INC.		(KM 156+250 - KM 157+750, HA NOI - BAC NINH EXP.)		SCALE: 1:4000			

# TYPICAL CROSS SECTION

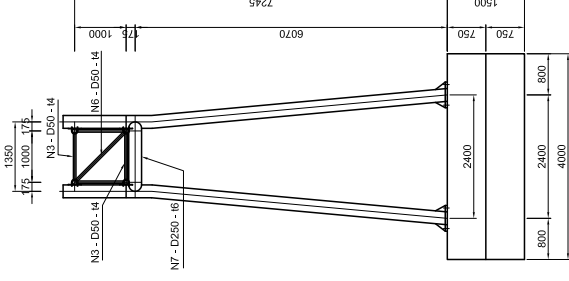


CONSULTANT		TITLE		NAME		SIGNATURE		DATE	
		ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.							
SOCIALIST REPUBLIC OF VIETNAM		NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM							
		MINISTRY OF TRANSPORT							
PACKAGE:		ITS INTEGRATION PROJECT ON							
DRAWING NO.:		TYPICAL CROSS SECTION OF EQUIPMENT ARRANGEMENT							
SHEET No.:		OF HANOI - BAC NINH EXP.							
Rev.:		SCALE: N.T.S							
		Sheet of							

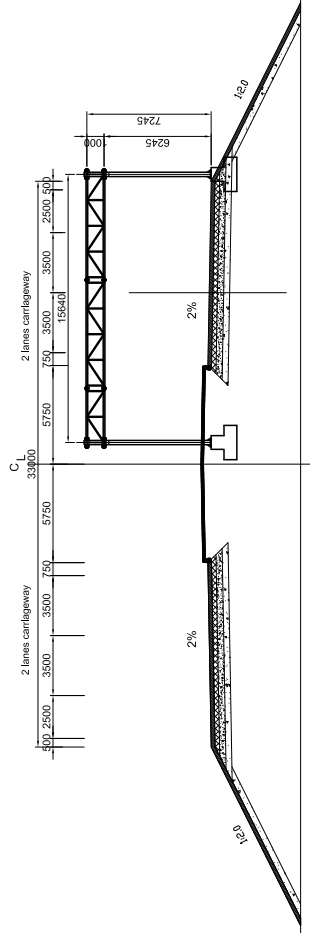
**MAIN VIEW**  
SCALE: 1/100



**SIDE VIEW**  
SCALE: 1/100



**GENERAL VIEW**  
SCALE: 1/300



**TABLE OF QUANTITY**

Element	Type	Weight of element (kg)	Number of element	Total weight (kg)	Notes
N1	Tube D250 t=6 L=7454	270.57	4	1082.27	Main column (upper part)
N2	Tube D100 t=4 L=16270	285.31	4	1181.28	Top chord, Bottom chord
N3	Tube D50 t=4 L=1000	4.54	52	235.96	Vertical web bar
N4	Tube D50 t=5 L=1803	10.00	40	400.18	Diagonal web bar
N6	Tube D50 t=5 L=1414	7.85	13	102.00	Diaphragm
N7	Tube D250 t=6 L=1350	48.74	2	97.48	Diaphragm
<b>Total steel</b>				<b>3099.15</b>	
Concrete M200				<b>16.50m<sup>3</sup></b> (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 (GB300-11) : 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 zinking in details all metal member exposed to weather or soil must be zined with amount of 500g/m<sup>2</sup>.

<b>CONSULTANT</b>		<b>SOCIALIST REPUBLIC OF VIETNAM</b>	
TITLE	NAME	SIGNATURE	DATE
ORIENTAL CONSULTANTS CO., LTD			
NEXCO EAST ENGINEERING CO., LTD			
NIPPON KOEI CO., LTD			
TRANSPORTATION RESEARCH INSTITUTE CO., LTD			
LANDTEC JAPAN INC.			

NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM  
HANOI - BAC NINH EXPRESSWAY  
DETAIL OF GANTRY AT EARTHWORK SECTION

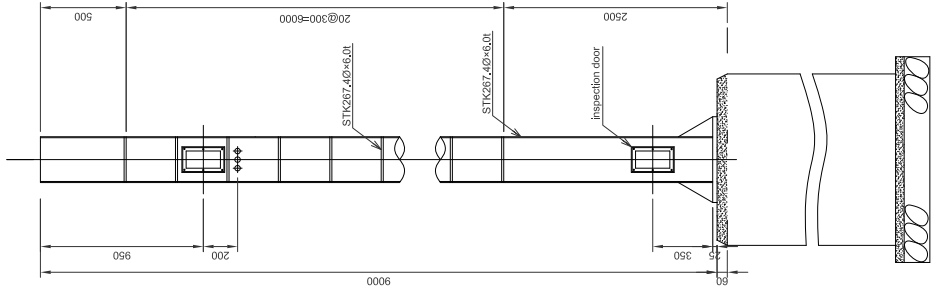
PACKAGE:  
DRAWING NO.: IX.2-02  
SHEET NO.:  
Sheet of

SCALE: varied

# SUPPORT POLE FOR CAMERA

FOUNDATION scale:1/30

SUPPORT POLE FOR CAMERA scale:1/30

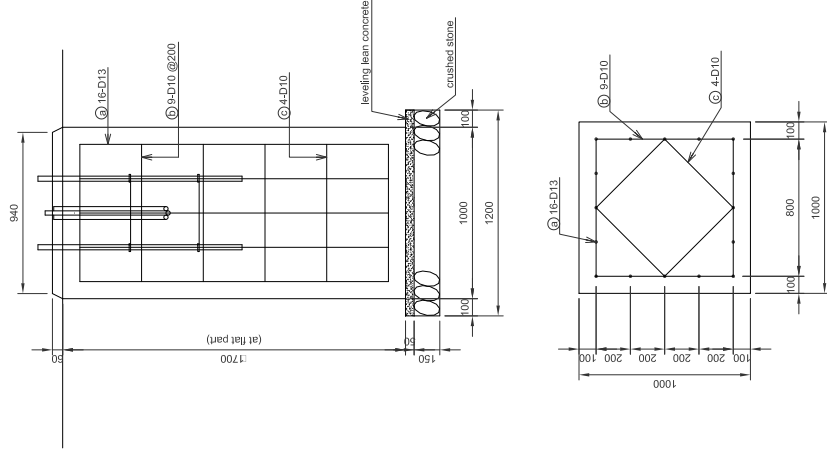


Volume table of support pole

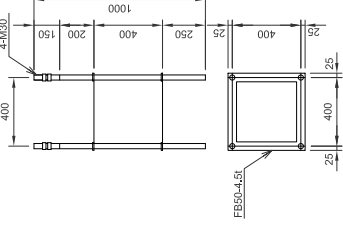
Material	Dimension	Weight (kg)
Steel	267.40x6.0	346.3
Steel	R51.30	9.4
Steel	Z81	48.2
Steel	T21	9.0
Total weight		416

Volume table of foundation

Items	class	unit	volume at flat part	volume at embankment	remarks
concrete	M200	m <sup>3</sup>	1,700	2,200	
formwork		m <sup>2</sup>	6,800	8,600	
rebar	D13	kg	28,66	36,62	
rebar	D10	°	22,87	26,71	
anchor bolt	M30x1000x4	set	1	1	
normal bend	VE28	m	4.5	4.5	1.5mx3
crushed stone		m <sup>3</sup>	0,216	0,216	
leveling lean concrete		m <sup>2</sup>	0,072	0,072	
excavation		m <sup>2</sup>	7,600	8,491	
backfill		m <sup>3</sup>	5,612	6,220	
disposal of waste soil		m <sup>3</sup>	1,388	2,272	



ANCHOR BOLT scale:1/30



Volume table of rebar at flat part

type	shape	length (m)	volume	weight (kg)
a	D13	1.50	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: F<sub>y</sub> = 250 MPa  
 Tensile strength: F<sub>t</sub> = 420 MPa  
 \*2 Concrete structure equivalence with:  
 Concrete strength: F<sub>c</sub> = 18MPa  
 Reinforcing Bar (GB300-11) : Yield strength: F<sub>y</sub> = 300 MPa  
 Tensile strength: F<sub>t</sub> = 450 MPa  
 \*3 In case without any recommendation about zhuichu in details, all metal members exposed to weather or soil must be zinc-coated with amount of 550g/m<sup>2</sup>.  
 \*4 This drawing is based on NEXCO(Japan) drawings.  
 \*5 These structures should be redesigned to meet site condition.

CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM		ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
ORIENTAL CONSULTANTS CO., LTD	TITLE	NAME	SIGNATURE	DATE	PACKAGE:
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY				DRAWING NO.:
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	CHECKED BY				HA NOI - BAC MINH EXPRESSWAY
LANDTEC JAPAN INC.	APPROVED BY				SUPPORT POLE FOR CAMERA
					SHEET No.:
					Sheet
					of
					Rev:
					SCALE: 1/30



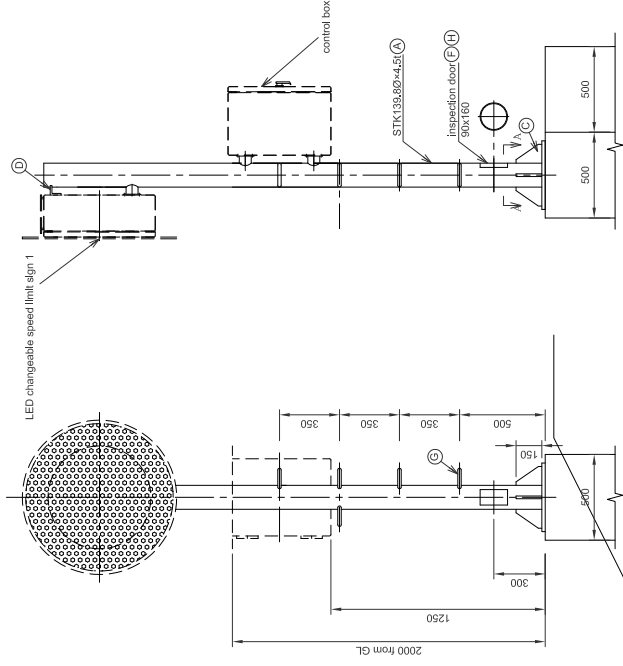
# SUPPORT POLE FOR CHANGEABLE SPEED LIMIT SIGN

SUPPORT POLE FOR CHANGEABLE SPEED LIMIT SIGN scale:1/30

FOUNDATION scale:1/30

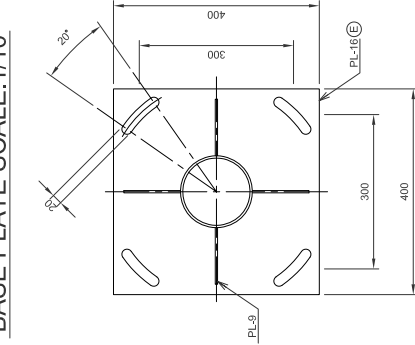
ANCHOR BOLT scale:1/10

(AT ENDS)



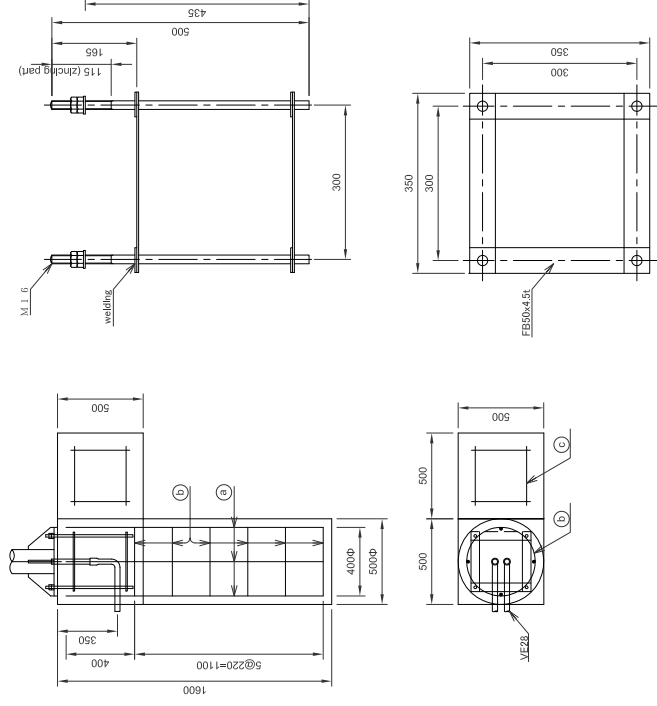
(AT MIDDLE)

BASE PLATE SCALE:1/10



Volume table of support pole

Material	Dimension	Weight (kg) at ends	Weight (kg) at middle
(A) Steel	138.80x4.51	47.0	42.0
(C) Steel	9t	16.0	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	RB300	4.0	4.0
(H) Steel	FB50x6t	1.0	1.0
Total weight		95	87



Rebar processing table of foundation

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

\* is used for maintenance.

Volume table of foundation

items	class	unit	volume at embankment
concrete	D13	m <sup>3</sup>	0.400
rebar	D13	kg	87.79
rebar	D10	m <sup>2</sup>	1.260
formwork		m <sup>2</sup>	0.316
disposal of waste soil	160x500x4	set	2
anchor Bolt	VEZ8	pipe	2
Normal Bend			

- \*1 Structural steel conforms ASTM A-700M Grade 250 or equivalence with: Yield strength Fy = 250 MPa
- \*2 Concrete structure equivalence with: Concrete strength Fc = 18Mpa Reinforcing Bar (CB300-1) : Yield strength Fy = 300 MPa Tensile strength Fu = 450 MPa
- \*3 In case without any recommendation about zhuichu details, all metal members exposed to weather or soil must be zinc-coated with amount of 550g/m<sup>2</sup>.
- \*4 This drawing be based on NEXCO(Japan) drawings.
- \*5 These structures should be redesigned to meet site condition.

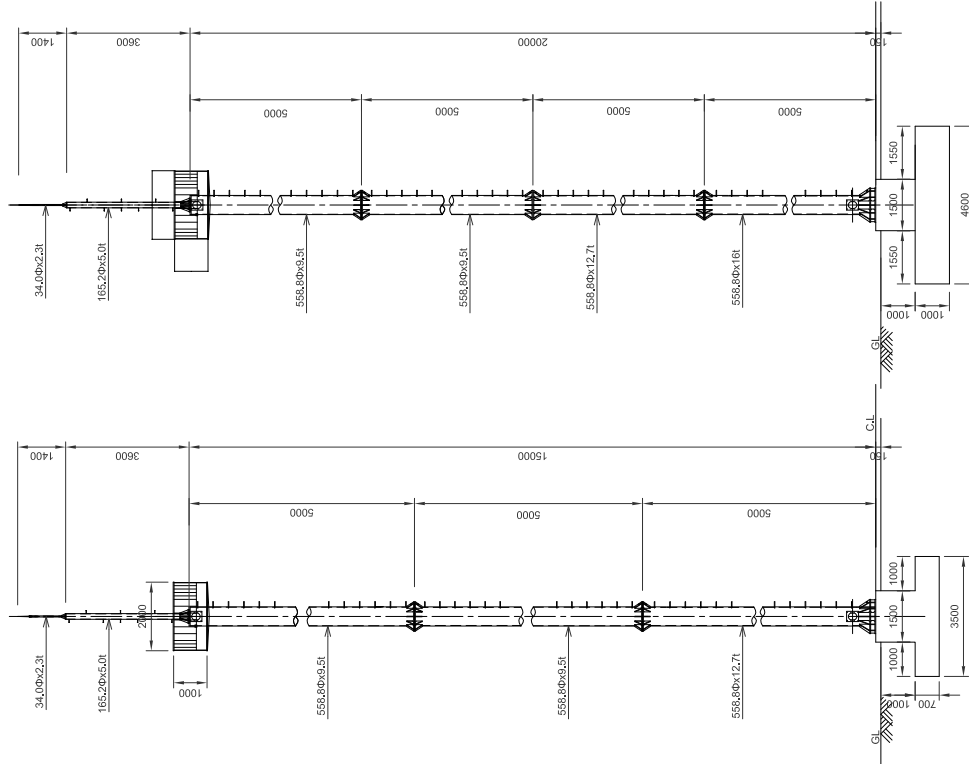
CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM	
TITLE	NAME	SIGNATURE	DATE
ORIENTAL CONSULTANTS CO., LTD			
NEXCO EAST ENGINEERING CO., LTD			
TRANSPORTATION RESEARCH INSTITUTE CO., LTD			
LANDTEC JAPAN INC.			
DRAWING TITLE		PACKAGE:	
MINISTRY OF TRANSPORT		NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
SUPPORT POLE FOR CHANGEABLE SPEED LIMIT SIGN		DRAWING NO. IX.2-04	
SCALE: Various		SHEET No. of	

# RADIO COMMUNICATION ANTENNA TOWER

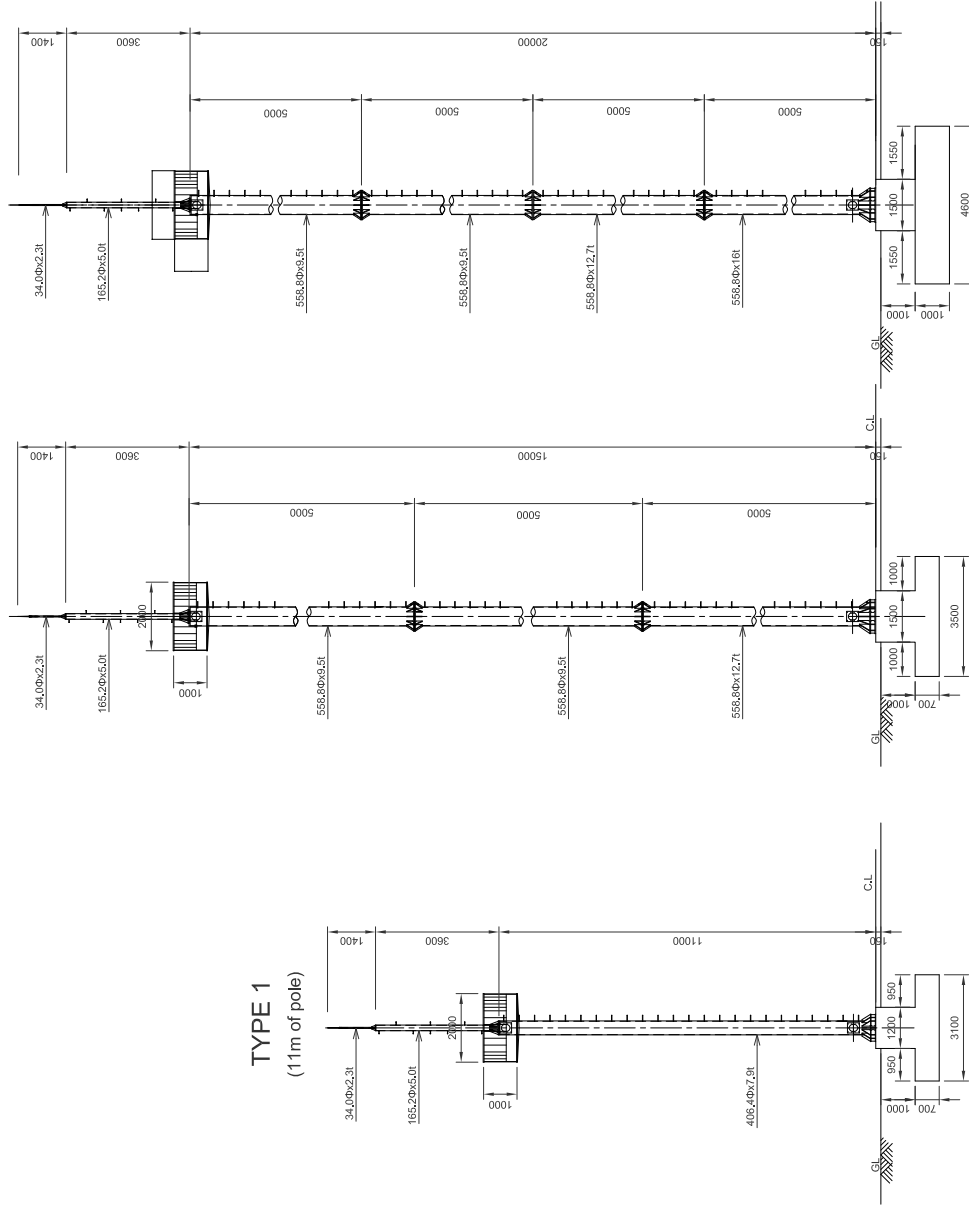
RADIO COMMUNICATION TOWER scale:1/150

SUPPORT FOR ANTENNA scale:1/150

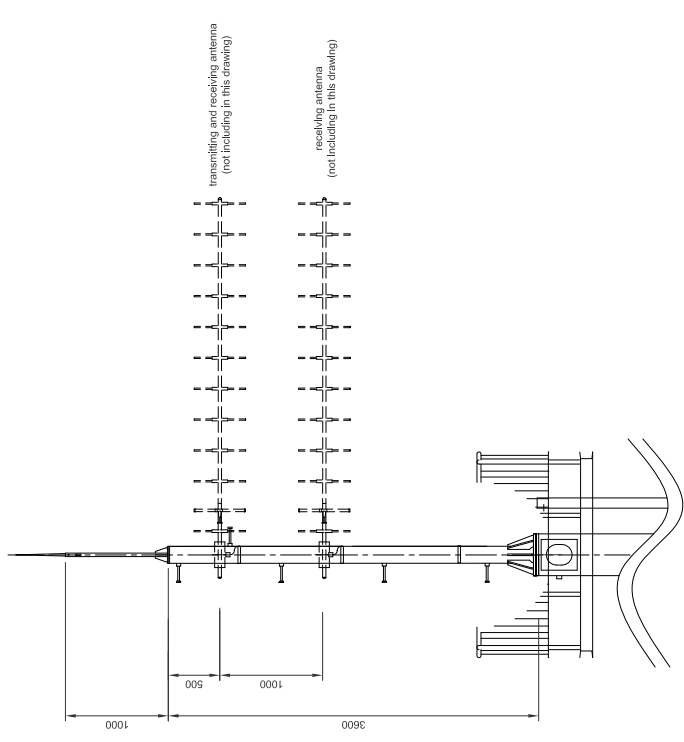
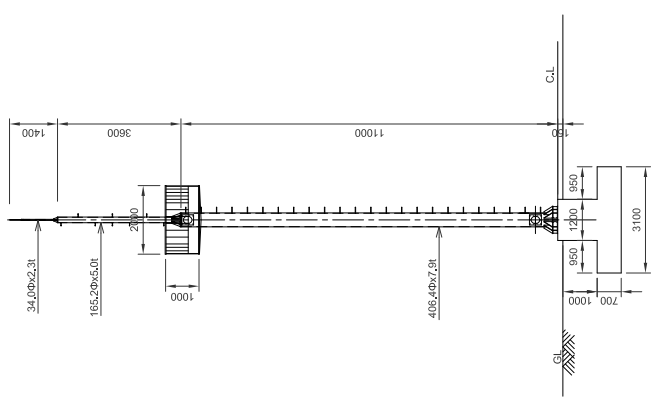
**TYPE 2**  
(15m of pole)



**TYPE 3**  
(20m of pole)



**TYPE 1**  
(11m of pole)



transmitting and receiving antenna  
(not including in this drawing)

receiving antenna  
(not including in this drawing)

Volume table for TYPE 1

Material	Dimension	Volume	Remarks
Pole	34.0mm x 2.3l	855kg	
Steel	165.2mm x 5.0l	75kg	
Steel	34.0mm x 2.3l	3kg	
Foundation	RC 3100x3100	8.2m <sup>3</sup>	

Volume table for TYPE 2

Material	Dimension	Volume	Remarks
Pole	34.0mm x 2.3l	855kg	
Steel	165.2mm x 5.0l	1290kg	
Steel	34.0mm x 2.3l	79kg	
Foundation	RC 3500x3500	11.2m <sup>3</sup>	

Volume table for TYPE 3

Material	Dimension	Volume	Remarks
Pole	34.0mm x 2.3l	1077kg	
Steel	165.2mm x 5.0l	855kg	
Steel	34.0mm x 2.3l	79kg	
Foundation	RC 3100x3100	24.2m <sup>3</sup>	

\*1 Structural steel conforms ASTM A-709M Grade 250 or equivalence with:  
Yield strength  $F_y = 250$  MPa  
Tensile strength  $F_u = 450$  MPa  
\*2 Concrete strength equivalence with:  
Concrete strength  $F_c = 18$  MPa  
Reinforcing Bar (CS300-1) : Yield strength  $F_y = 300$  MPa  
Tensile strength  $F_u = 450$  MPa  
\*3 In case without any recommendation about zhuichu in details, all metal members exposed to weather or soil must be zinc-coated with amount of 550g/m<sup>2</sup>.  
\*4 This drawing is based on NEXCO(Japan) drawings.  
\*5 These structures should be redesigned to meet site condition.

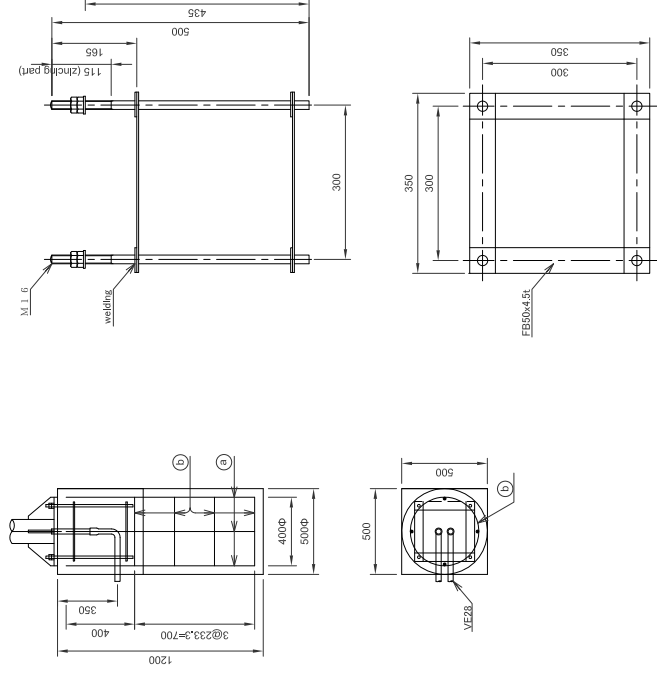
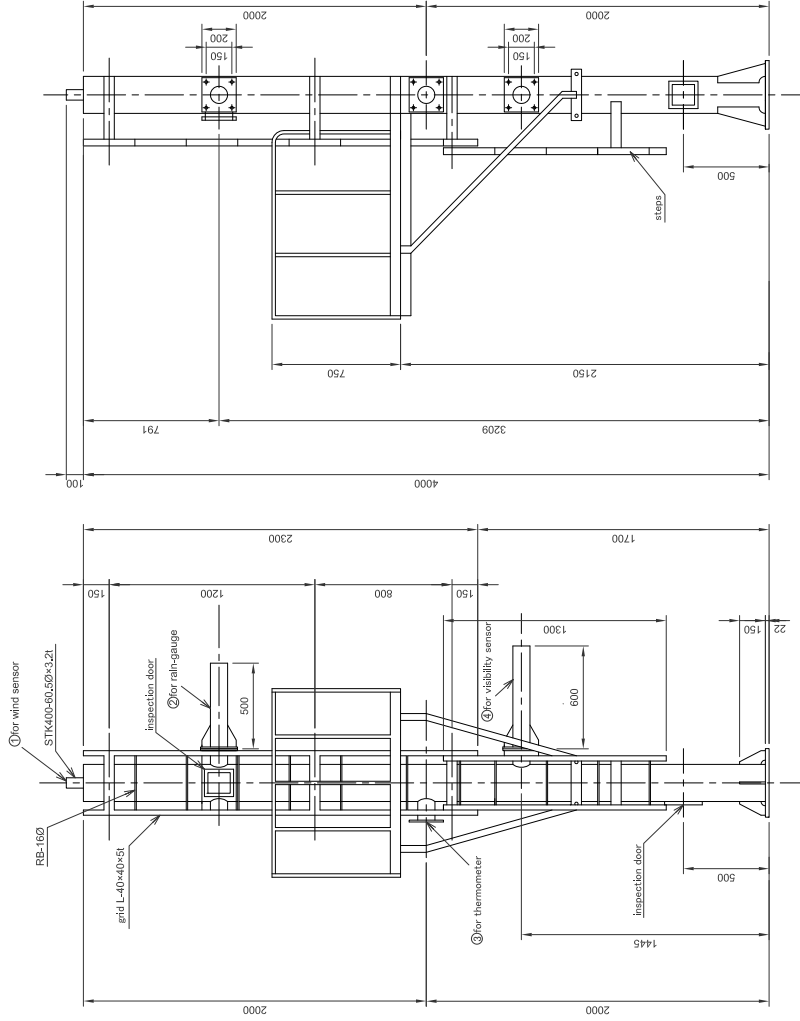
<b>CONSULTANT</b>		<b>SOCIALIST REPUBLIC OF VIETNAM</b>		<b>ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 &amp; NORTHERN AREA OF VIETNAM</b>		PACKAGE:	
ORIENTAL CONSULTANTS CO., LTD		MINISTRY OF TRANSPORT		HA NOI - BAC NINH EXPRESSWAY		DRAWING NO. IX.2-05	
NEXCO EAST ENGINEERING CO., LTD		RADIO COMMUNICATION ANTENNA TOWER		SHEET No. _____		Rev. _____	
TRANSPORTATION RESEARCH INSTITUTE CO., LTD		SCALE: Various		Sheet _____ of _____		of _____	
LANDTEC JAPAN INC.							

# SUPPORT POLE FOR WEATHER SENSOR

SUPPORT POLE FOR WEATHER SENSOR scale:1/30

FOUNDATION scale:1/30

ANCHOR BOLT scale:1/10



Rebar processing table of foundation

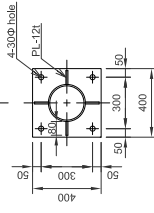
type	shape	volume in liter part
a	D13	4
b	D10	4

Volume table of foundation

items	class	unit	volume in liter part
concrete	D13	kg	0.62
rebar	D10	kg	4.378
formwork		m <sup>2</sup>	3.807
disposal of waste soil		m <sup>3</sup>	0.238
anchor bolt	16@500/4	set	1
Normal Bend	VE28	pipe	2

Volume table of support pole

No.	Material	Dimension	Volume	Weight (kg)	Remarks
①	Steel	215.3@x4.21	4.0	188.4	
	Steel	60.5@x3.21	0.1	0.452	
	Steel	114.3@x4.51	0.384	4.708	
	Steel	161	0.205	2.727	
	Steel	121	0.028	2.713	
	Steel	4.51	0.146	5.1564	
	Steel	114.3@x4.51	0.484	5.905	
	Steel	161	0.040	5.020	
	Steel	121	0.035	2.297	
	Steel	114.3@x4.51	0.440	5.020	
	Steel	121	0.035	0.339	
	Steel	50x5@x6r	8.100	40.313	
	Steel	FB-50-6t	3.900	4.8542	
	Steel	XG-21	1.000	1.370	
	Steel	40x4@x6r	4.0	1.600	
	Steel	RB-160	7.4	21.240	
	Steel	RB-160	3.64	3.660	
		Total weight		368kg	



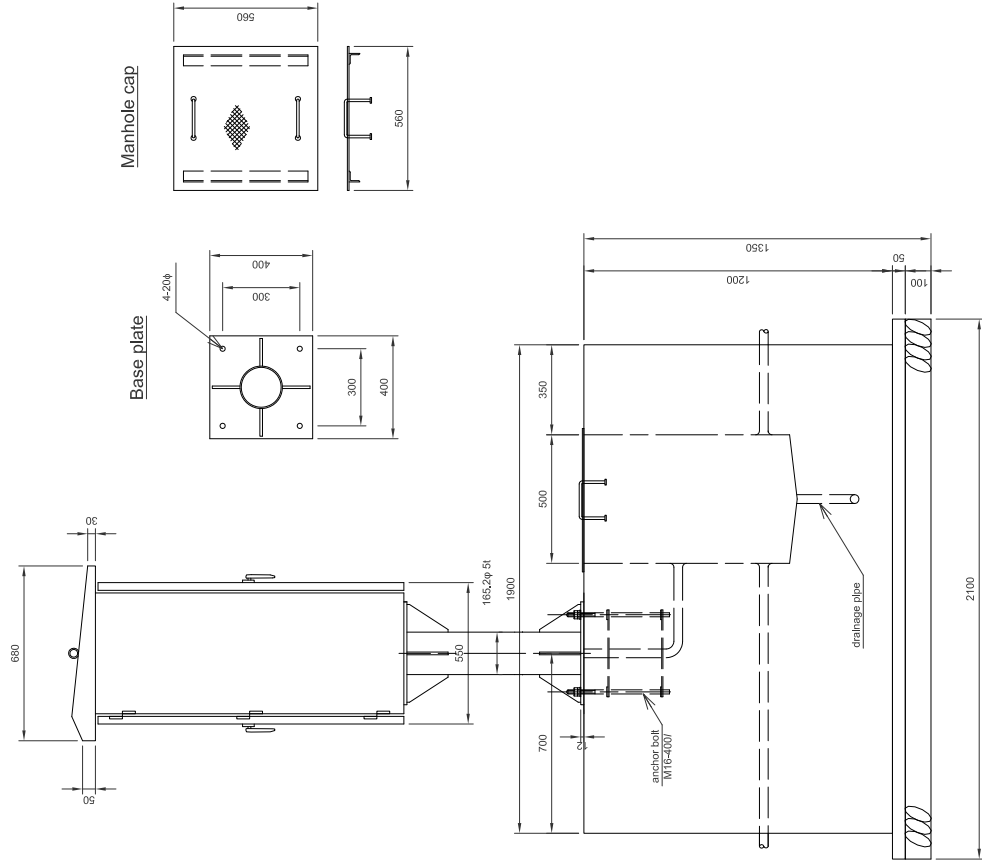
\*1 Structural steel conforms ASTM A-709M Grade 250 or equivalence with:  
Yield strength Fy = 250 MPa  
Tensile strength Ft = 450 MPa  
\*2 Concrete structure equivalence with:  
Concrete strength Fc = 18MPa  
Reinforcing Bar (GB300-11) : Yield strength Fy = 300 MPa  
Tensile strength Ft = 450 MPa

\*3 In case without any recommendation about zhuang in details, all metal members exposed to weather or soil must be zhuang with amount of 550g/m<sup>2</sup>.  
\*4 This drawing be based on NEXCO(Japan) drawings.  
\*5 These structures should be redesigned to meet site condition.

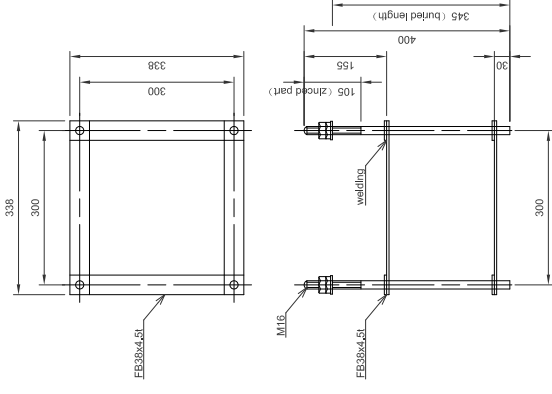
CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM	
TITLE	NAME	NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
PREPARED BY	SIGNATURE	HA NOI - BAC NINH EXPRESSWAY	
CHECKED BY	DATE	SUPPORT POLE FOR WEATHER SENSOR	
APPROVED BY		PACKAGE:	
ORIENTAL CONSULTANTS CO., LTD		DRAWING NO. IX-2-06	
NEXCO EAST ENGINEERING CO., LTD		SHEET No. _____ of _____	
TRANSPORTATION RESEARCH INSTITUTE CO., LTD		Scale: Various	
LANDTEC JAPAN INC.			

# HOUSING BOX FOR WEATHER SENSOR

STANCE FIGURE scale: 1/20



ANCHOR BOLT scale: 1/10



Volume table

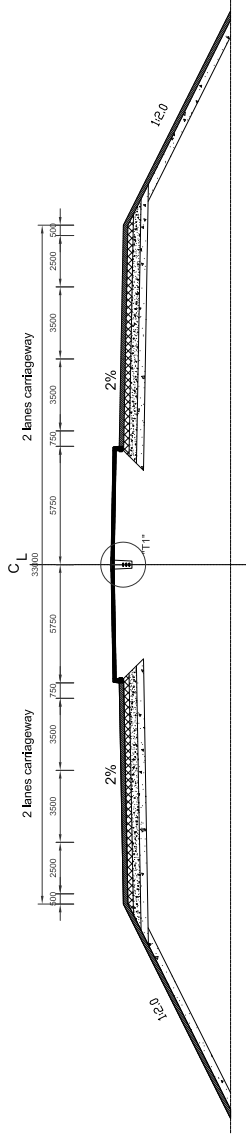
Material	Dimension	Volume
Box	1.92mm Steel Plate (165.24x561)	14 kg
Base plate	400x400 Steel	15 kg
Manhole cap	400x400 Steel	15 kg
Anchor bolt	M16-400	30 kg
Concrete		2.6m³

- \*1 Structural steel conforms ASTM A-709M Grade 250 or equivalence with: Yield strength  $F_y = 250$  MPa, Tensile strength  $F_u = 420$  MPa.
- \*2 Concrete structure equivalence with: Concrete strength  $F_c = 18$  MPa, Reinforcing Bar (GB3000-1): Yield strength  $F_y = 300$  MPa, Tensile strength  $F_u = 450$  MPa
- \*3 In case without any recommendation about zinching in details, all metal members exposed to weather or soil must be zinc-plated with amount of 550g/m².
- \*4 This drawing is based on NEXCO(Japan) drawings.
- \*5 These structures should be redesigned to meet site condition.

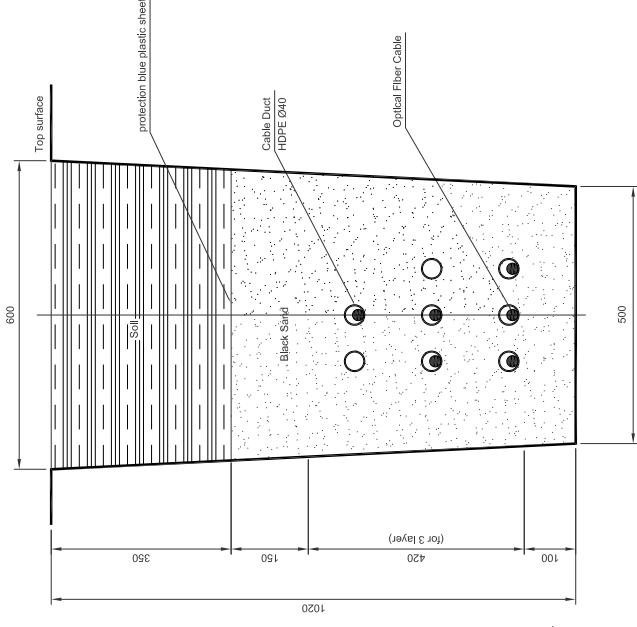
CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM		PACKAGE:	
TITLE	NAME	SIGNATURE	DATE	DRAWING NO.:	DRAWING NO.:
ORIENTAL CONSULTANTS CO., LTD				NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	IX-2-07
NEXCO EAST ENGINEERING CO., LTD				HA NOI - BAC NINH EXPRESSWAY	
TRANSPORTATION RESEARCH INSTITUTE CO., LTD				HOUSING BOX FOR WEATHER SENSOR	
LANDTEC JAPAN INC.					
					Sheet of

# TYPICAL CROSS SECTION OF COMMUNICATION DUCT(TYPE T1) IN EARTHWORK SECTION

ARRANGEMENT OF COMMUNICATION DUCT IN MEDIAN ( T1 TYPE)



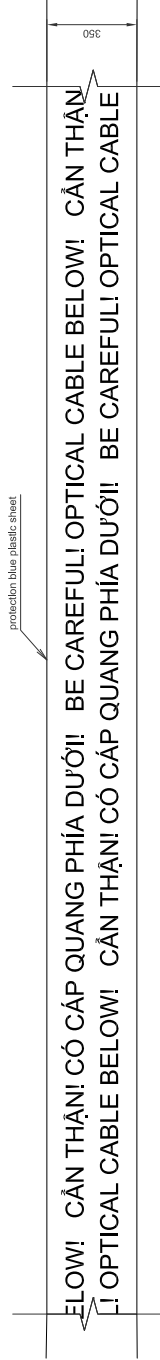
T1 DETAIL scale:1/10



Volume table of T1 Duct (for 1 kilometer in length)

Material	Volume
Disposal soil	651 m <sup>3</sup>
Black sand	357 m <sup>3</sup>
Backfill soil	204 m <sup>3</sup>
Protection blue plastic sheet	500 m <sup>2</sup>

PROTECTION BLUE PLASTIC SHEET scale:1/20



⚠️ CẢNH THẬN! CÓ CÁP QUANG PHÍA DƯỚI! BE CAREFUL! OPTICAL CABLE BELOW! CẢNH THẬN! OPTICAL CABLE BELOW! CẢNH THẬN! CÓ CÁP QUANG PHÍA DƯỚI! BE CAREFUL! OPTICAL CABLE

### CONSULTANT

TITLE	NAME	SIGNATURE	DATE
PREPARED BY			
CHECKED BY			
APPROVED BY			

ORIENTAL CONSULTANTS CO., LTD  
 NEXCO EAST ENGINEERING CO., LTD  
 NIPPON KOEI CO., LTD  
 TRANSPORTATION RESEARCH INSTITUTE CO., LTD  
 LANDTEC JAPAN INC.

### SOCIALIST REPUBLIC OF VIETNAM

MINISTRY OF TRANSPORT

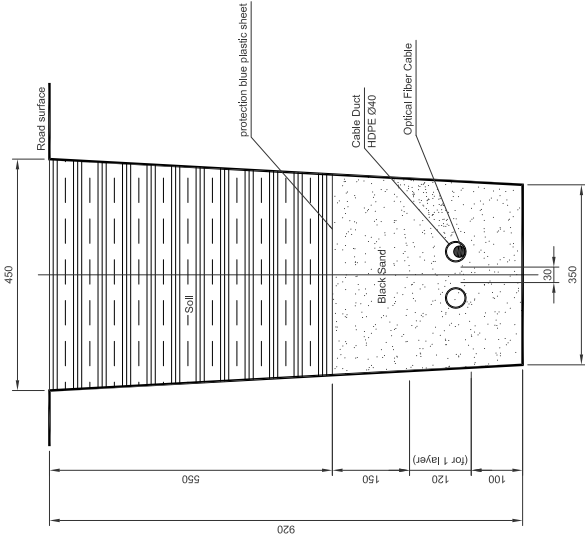
ITS INTEGRATION PROJECT ON  
 NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM  
 DRAWING TITLE  
 HA NOI - BAC NINH EXPRESSWAY  
 TYPICAL CROSS SECTION OF COMMUNICATION DUCT(TYPE T1)  
 IN EARTHWORK SECTION

SCALE: varied

PACKAGE:  
 DRAWING NO.: IX-3-01  
 SHEET No.:  
 Sheet of

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

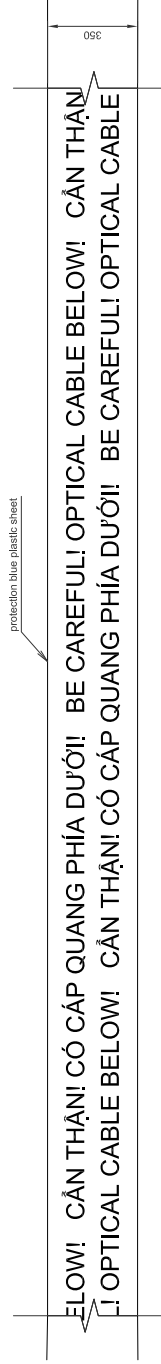
COMMUNICATION DUCT TYPE T3 DETAIL scale:1/10  
(USE FOR COMMUNICATION DUCT SPREAD FOR ROADSIDE EQUIPMENT )



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

Disposal soil	Volume
Black sand	368 m <sup>3</sup>
Backfill soil	137 m <sup>3</sup>
Protection blue plastic sheet	231 m <sup>2</sup>
	350 m <sup>2</sup>

PROTECTION BLUE PLASTIC SHEET scale:1/20

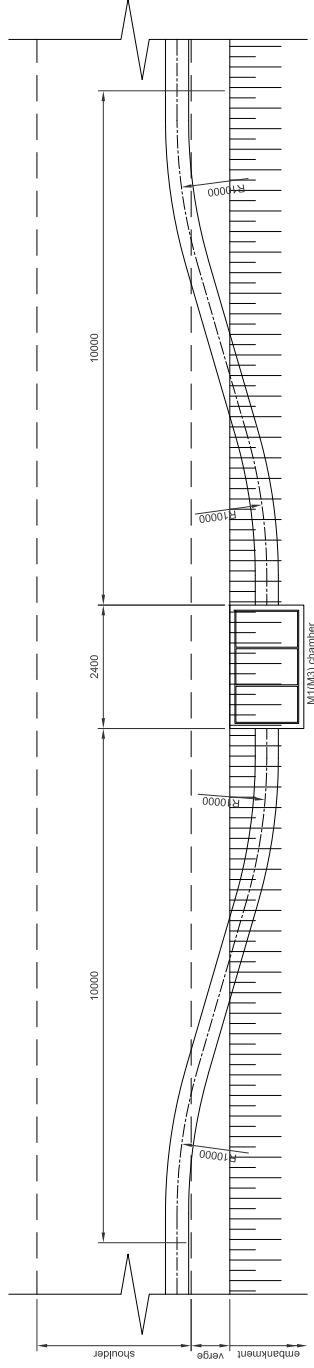


⚠️ CẢNH BÁO! CÓ CÁP QUANG PHÍA DƯỚI! BE CAREFUL! OPTICAL CABLE BELOW! CẢNH THẬN!  
⚠️ OPTICAL CABLE BELOW! CẢNH THẬN! CÓ CÁP QUANG PHÍA DƯỚI! BE CAREFUL! OPTICAL CABLE

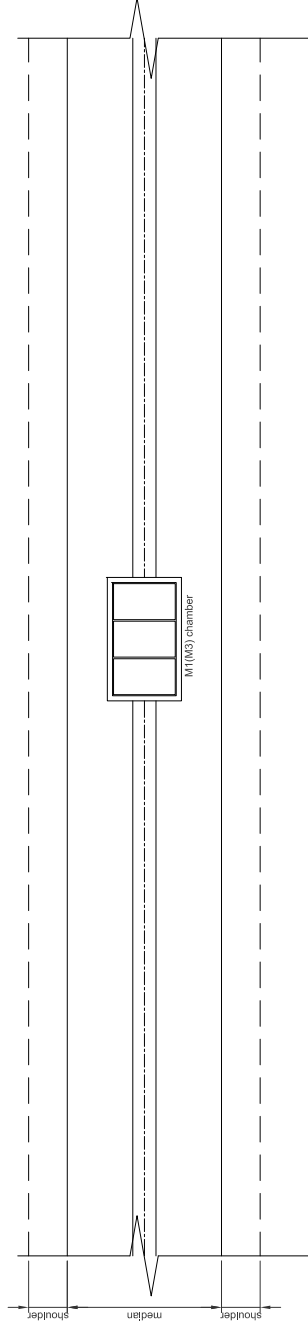
CONSULTANT				SOCIALIST REPUBLIC OF VIETNAM		ITS INTEGRATION PROJECT ON	
ORIENTAL CONSULTANTS CO., LTD	TITLE	NAME	SIGNATURE	DATE	NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	PACKAGE:	
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY				HA NOI - BAC NINH EXPRESSWAY	DRAWING NO.:	IX.3-02
NIPPON KOEI CO., LTD	CHECKED BY				TYPICAL CROSS SECTION OF COMMUNICATION DUCT(TYPE T2,T3)	SHEET No.:	
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	APPROVED BY				IN EARTHWORK SECTION	Sheet	of
LANDTEC JAPAN INC.							
				SCALE:varied			

# ARRANGEMENT OF COMMUNICATION DUCT AT CHAMBER (1)

CHAMBER FOR COMMUNICATION DUCT ON ROAD scale: 1/100



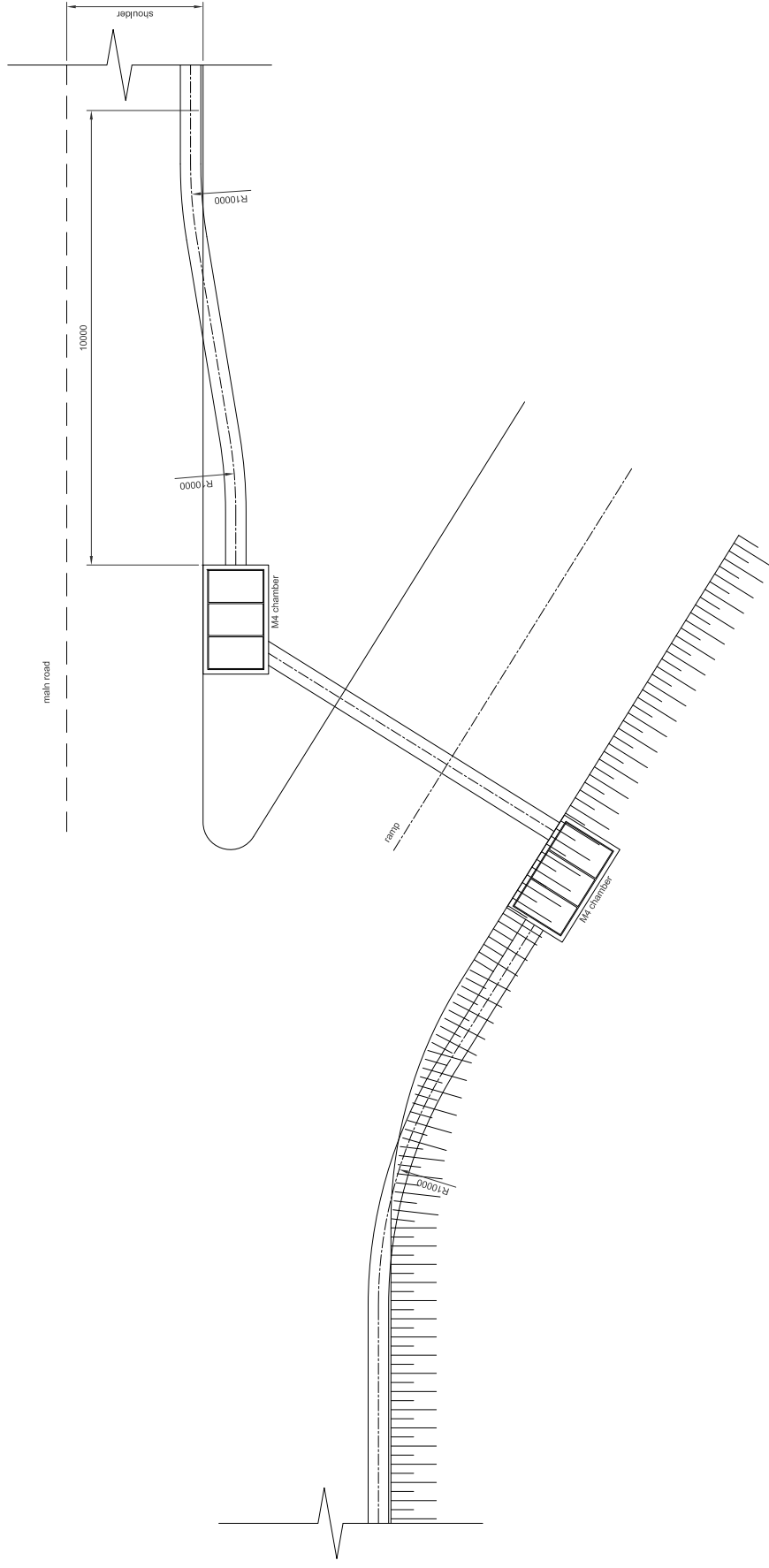
CHAMBER FOR COMMUNICATION DUCT ON MEDIAN scale: 1/100



CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM				PACKAGE:	
		MINISTRY OF TRANSPORT				NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.		TITLE	NAME	SIGNATURE	DATE	DRAWING NO. IX-3-03	
		PREPARED BY				SHEET No. _____ of _____	
		CHECKED BY				SCALE: 1/100	
		APPROVED BY					

# ARRANGEMENT OF COMMUNICATION DUCT AT CHAMBER (2)

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



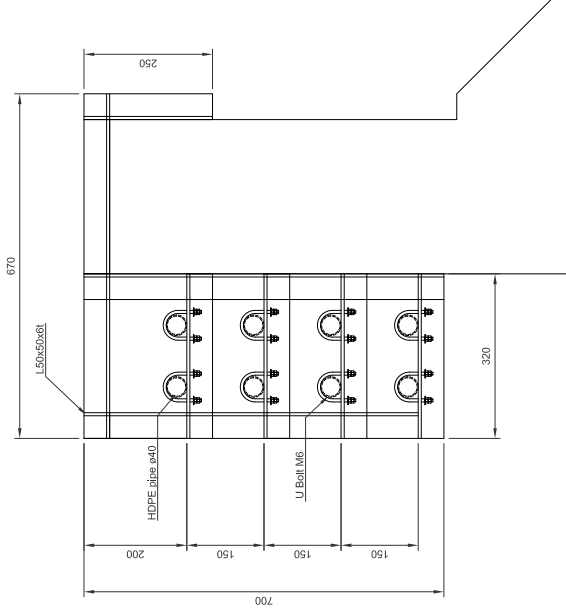
CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM		PACKAGE:	
ORIENTAL CONSULTANTS CO., LTD	TITLE	NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM		DRAWING NO. IX:3-04	
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY	HA NOI - BAC NINH EXPRESSWAY		SHEET No. of	
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	CHECKED BY	ARRANGEMENT OF COMMUNICATION DUCT AT CHAMBER (2)		Rev.	
LANDTEC JAPAN INC.	APPROVED BY	SCALE: 1/100		Sheet of	



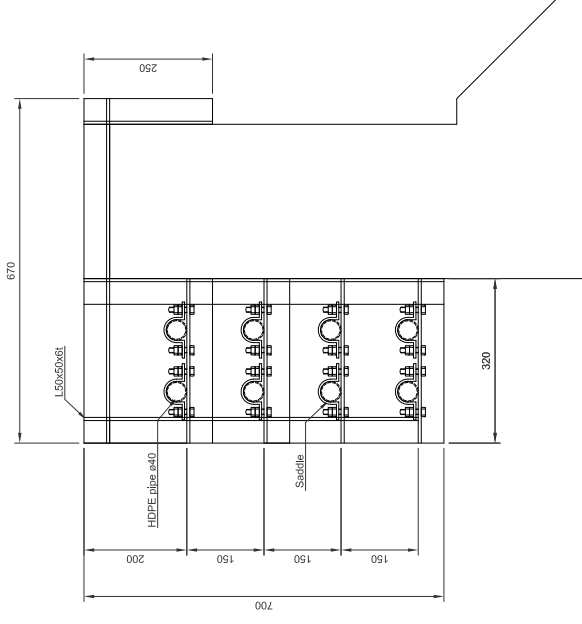
# DETAIL OF COMMUNICATION DUCT ( TYPE B1) ON BRIDGE

ARRANGEMENT OF COMMUNICATION DUCT ON BRIDGE ( CROSS SECTION VIEW) scale:1/10

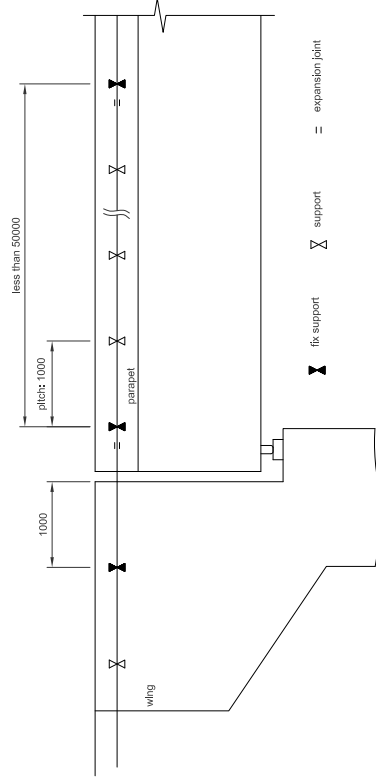
Support



Fix Support



# ARRANGEMENT OF COMMUNICATION DUCT ON BRIDGE ( SIDE VIEW)



Volume table of supporting rack (for 1 piece)

Weighting)
L50x50x6L
16

- \*1 Structural steel conforms ASTM A-709M Grade 250 (use the recommendation about zincing in details, all metal members be exposed to weather or soil must be zincate with amount of 650g/m<sup>2</sup>.  
Yield strength: Fy = 250 MPa  
Tensile strength: Fu = 400 MPa
- \*2 Concrete conforms JIS A-5311 (use the recommendation about zincing in details, all metal members be exposed to weather or soil must be zincate with amount of 650g/m<sup>2</sup>.  
Compressive strength: Fc = 18 MPa  
Reinforcing Bar (CB300-II): Yield strength: Fy = 300 MPa;  
Tensile strength: Fu = 450 MPa;
- \*3 These structures should be redesigned to meet site condition.

CONSULTANT			
TITLE	NAME	SIGNATURE	DATE
ORIENTAL CONSULTANTS CO., LTD			
NEXCO EAST ENGINEERING CO., LTD			
NIPPON KOEI CO., LTD			
TRANSPORTATION RESEARCH INSTITUTE CO., LTD			
LANDTEC JAPAN INC.			

SOCIALIST REPUBLIC OF VIETNAM	
MINISTRY OF TRANSPORT	

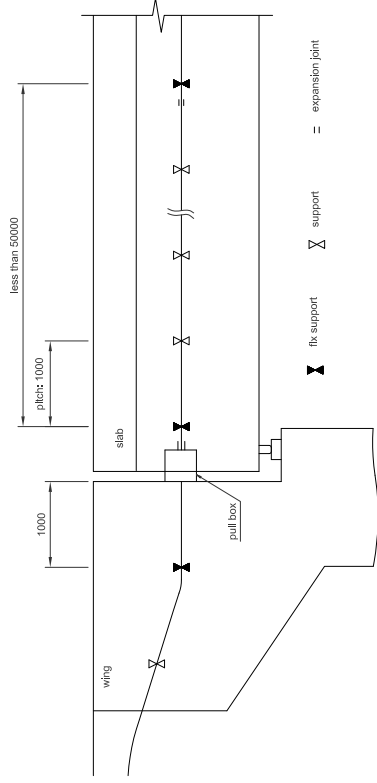
NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
DRAWING TITLE	
ARRANGEMENT OF COMMUNICATION DUCT ON BRIDGE ( TYPE B1)	
PACKAGE:	IX-3-05
DRAWING NO.:	
SHEET No.:	Sheet of
Rev.:	

SCALE:varied

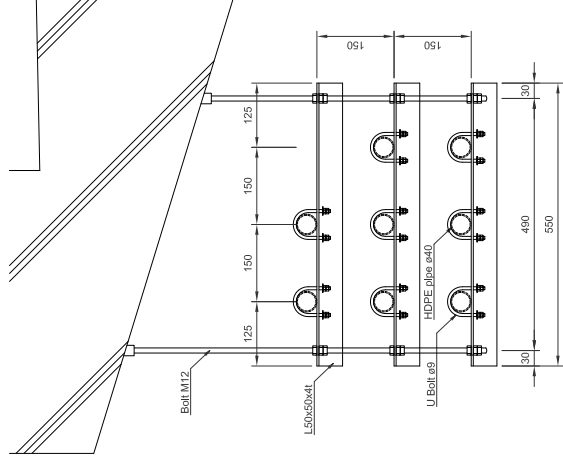
# DETAIL OF COMMUNICATION DUCT (TYPE B2) ON BRIDGE ( 1 )

ARRANGEMENT OF COMMUNICATION DUCT ON BRIDGE ( SIDE VIEW )

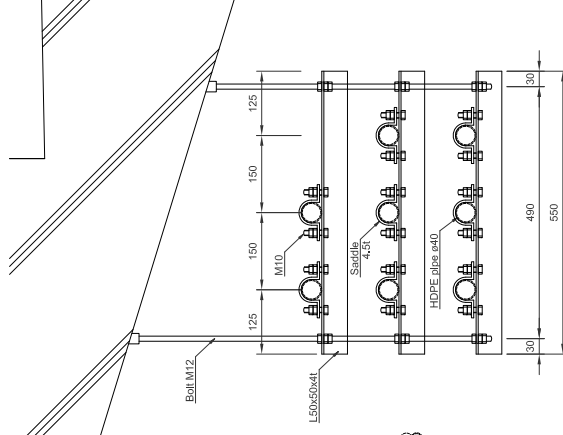
"A" DETAIL SCALE: 1/10



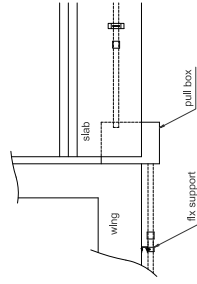
Support



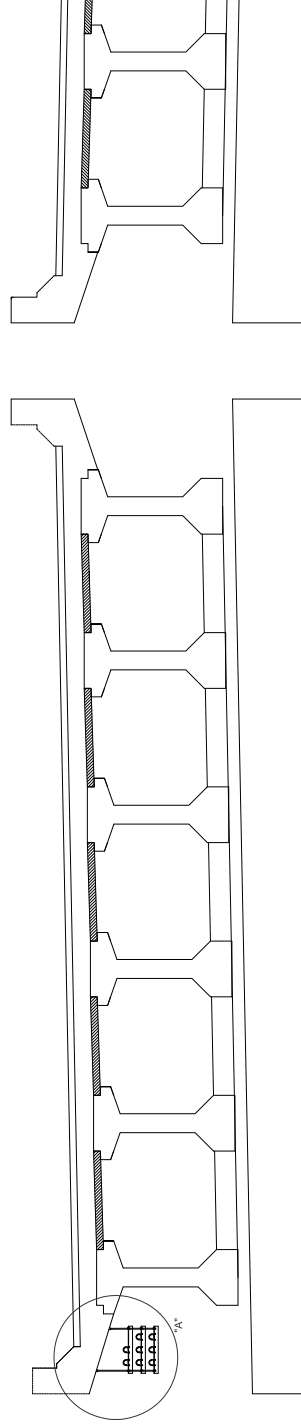
Fix Support



ARRANGEMENT OF COMMUNICATION DUCT AT JOINT AREA ( PLAN VIEW )



ARRANGEMENT OF COMMUNICATION DUCT ON BRIDGE ( CROSS SECTION VIEW )



Volume table of supporting rack B2 (for 1 piece)

	Weight(kg)
L50x50x4t	6
Anchor bolt M12	1.3

- \*1 Structural steel conforms ASTM A-708M Grade 250 or equivalence mild; Yield strength:  $F_y = 250 \text{ MPa}$ ; Tensile strength:  $F_t = 400 \text{ MPa}$
- \*2 Concrete structure equivalence with: Concrete strength  $F_{cc} = 18 \text{ MPa}$ ; Slab strength  $F_s = 300 \text{ MPa}$ ; Reinforcing Bar (GB500-11): Tensile strength:  $F_t = 460 \text{ MPa}$
- \*3 In case without any recommendation about zincing in details, all metal members be exposed to weather or soil must be zinced with amount of  $550\text{g/m}^2$ .
- \*4 This drawing be based on NEXCO(Japan) drawings.
- \*5 These structures should be redesigned to meet site condition.

CONSULTANT		SIGNATURE		DATE	
ORIENTAL CONSULTANTS CO., LTD					
NEXCO EAST ENGINEERING CO., LTD					
NIPPON KOEI CO., LTD					
TRANSPORTATION RESEARCH INSTITUTE CO., LTD					
LANDTEC JAPAN INC.					

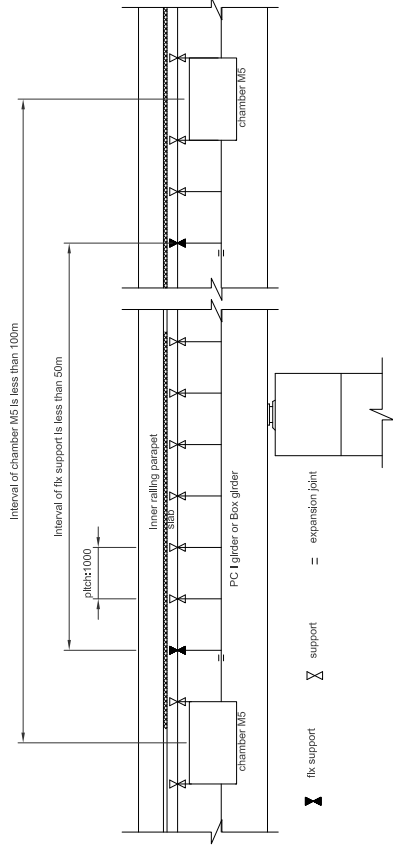
SOCIALIST REPUBLIC OF VIETNAM  
MINISTRY OF TRANSPORT

NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM  
HA NOI - BAC NINH EXPRESSWAY  
DETAIL OF COMMUNICATION DUCT (TYPE B2) ON BRIDGE ( 1 )

PACKAGE:  
DRAWING NO.: IX.3-06  
SHEET No.:  
Sheet of

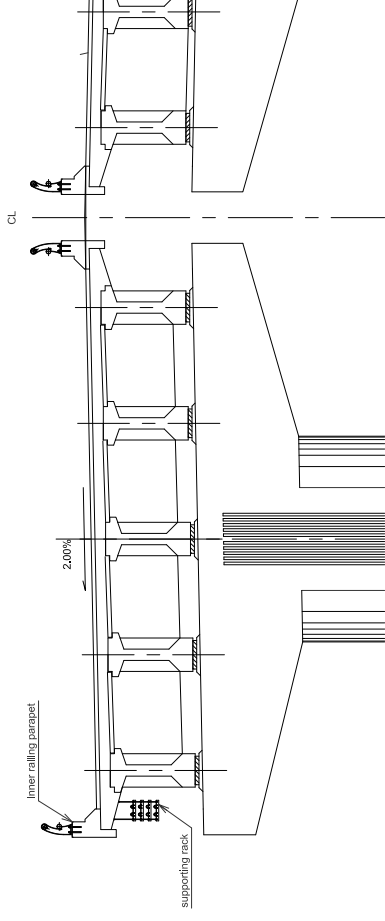
# DETAIL OF COMMUNICATION DUCT (TYPE B2) ON BRIDGE(2)

## SIDE VIEW



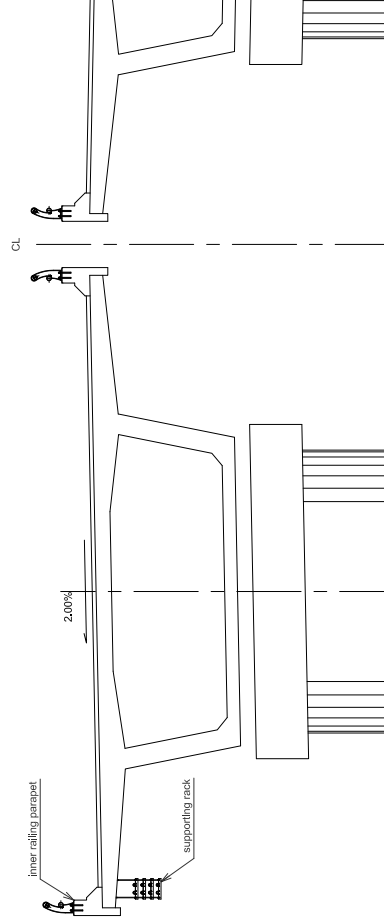
## CROSS SECTION VIEW

(PC I girder section)



## CROSS SECTION VIEW

(Box girder section)



- \*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:  $F_{cc} = 18$  MPa  
Reinforcing Bar (GB50061):  
Yield strength:  $F_y = 300$  MPa  
Tensile strength:  $F_u = 460$  MPa
- \*3 In case without any recommendation about zincing in details, all metal members be exposed to weather or soil must be zincod with amount of  $550g/m^2$ .
- \*4 This drawing be based on NEXCO(Japan) drawings.
- \*5 These structures should be redesigned to meet site condition.

### CONSULTANT

ORIENTAL CONSULTANTS CO., LTD  
NEXCO EAST ENGINEERING CO., LTD  
NIPPON KOEI CO., LTD  
TRANSPORTATION RESEARCH INSTITUTE CO., LTD  
LANDTEC JAPAN INC.

TITLE	NAME	SIGNATURE	DATE
PREPARED BY			
CHECKED BY			
APPROVED BY			

### SOCIALIST REPUBLIC OF VIETNAM

MINISTRY OF TRANSPORT

NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM

HA NOI - BAC NINH EXPRESSWAY

DETAIL OF COMMUNICATION DUCT (TYPE B2) ON BRIDGE(2)

PACKAGE:

DRAWING NO.:

IX-3-07

SHEET No.:

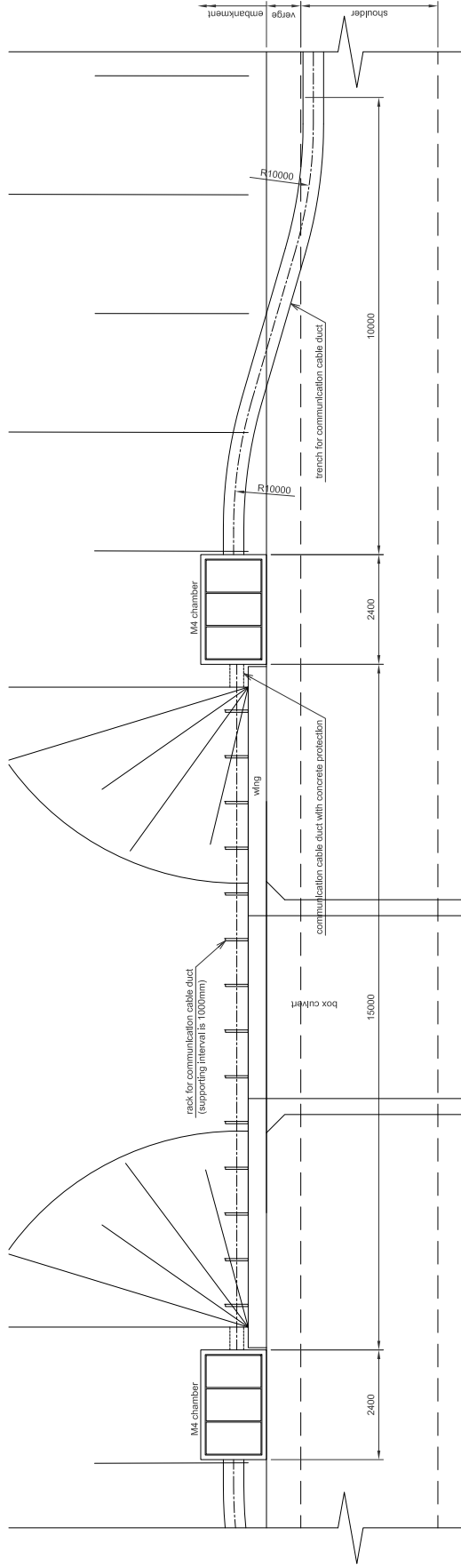
Sheet of

SCALE: 1/100

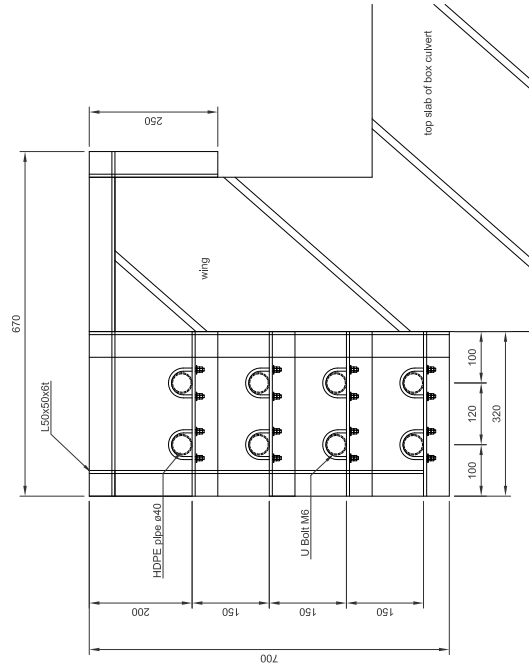


# ARRANGEMENT OF COMMUNICATION DUCT ON WING OF BOX CULVERT

PLAN VIEW scale: 1/100

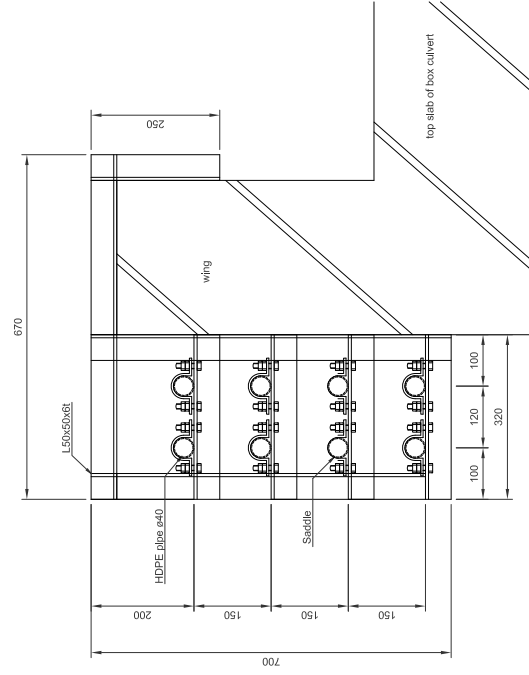


SUPPORT RACK scale: 1/10



FIX SUPPORT RACK scale: 1/10

(2 points on wing)

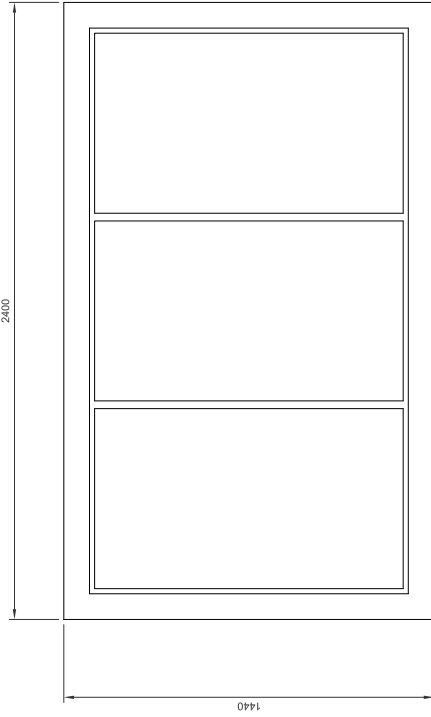


- \*1 Structural steel conforms ASTM A-710M Grade 250 or equivalence with:  
Yield strength:  $F_y = 250$  MPa  
Tensile strength:  $F_u = 400$  MPa
- \*2 Concrete structure equivalence with:  
Concrete strength:  $F_{cc} = 18$  MPa  
Reinforcing Bar (GB50061):  
Yield strength:  $F_y = 300$  MPa  
Tensile strength:  $F_u = 460$  MPa
- \*3 In case without any recommendation about zincing in details, all metal members be exposed to weather or soil must be zinced with amount of 550g/m<sup>2</sup>.
- \*4 This drawing be based on NEXCO(Japan) drawings.
- \*5 These structures should be redesigned to meet site condition.

CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM				ITS INTEGRATION PROJECT ON	
		ORIENTAL CONSULTANTS CO., LTD NEXCO EAST ENGINEERING CO., LTD NIPPON KOEI CO., LTD TRANSPORTATION RESEARCH INSTITUTE CO., LTD LANDTEC JAPAN INC.				NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM	
TITLE		NAME		SIGNATURE		DATE	
PREPARED BY		CHECKED BY		APPROVED BY		DRAWING NO. IX.3-09	
DRAWING TITLE		ARRANGEMENT OF COMMUNICATION DUCT ON WING OF BOX CULVERT		PACKAGE:		SHEET No. of	
MINISTRY OF TRANSPORT		SCALE: 1/100		New		Sheet of	

# DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M1)

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



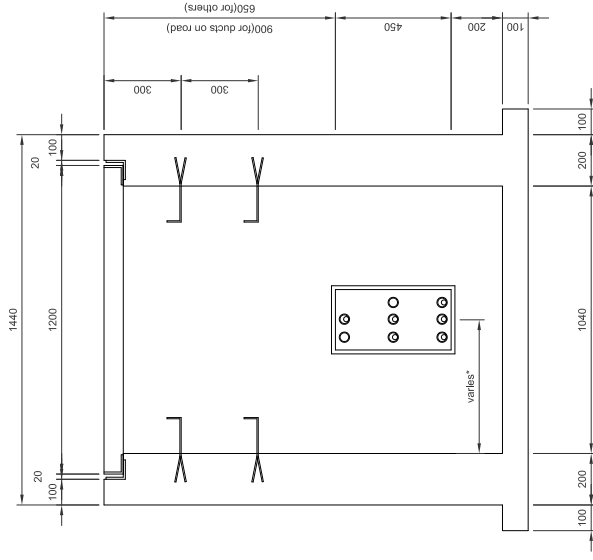
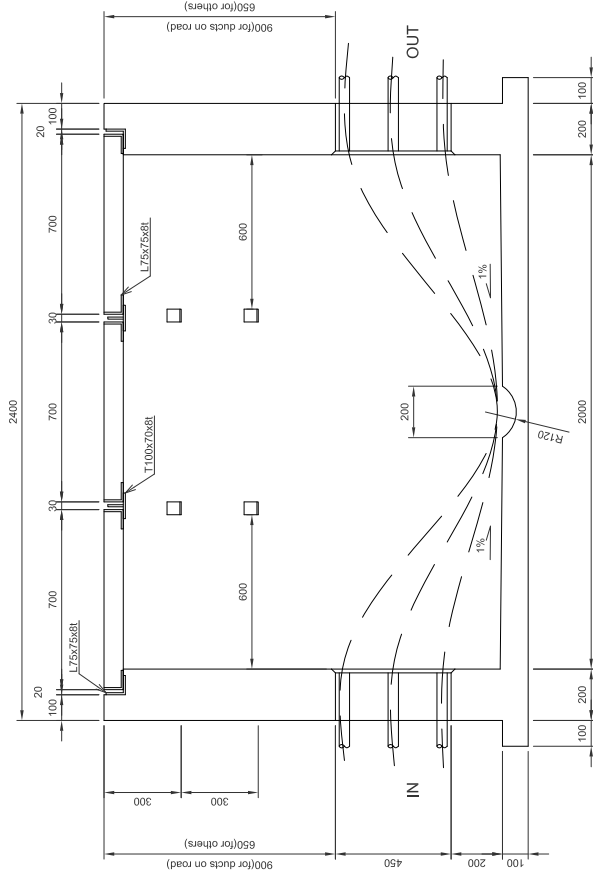
Volume table of chamber for ducts on road

Volume	Weight
L75x75x8L	183 kg
PL80x8L	10 kg
T100x70x8L	26 kg
Concrete M300	1.9 m <sup>3</sup>

Volume table of chamber for others

Volume	Weight
L75x75x8L	183 kg
PL80x8L	10 kg
T100x70x8L	26 kg
Concrete M300	1.7 m <sup>3</sup>

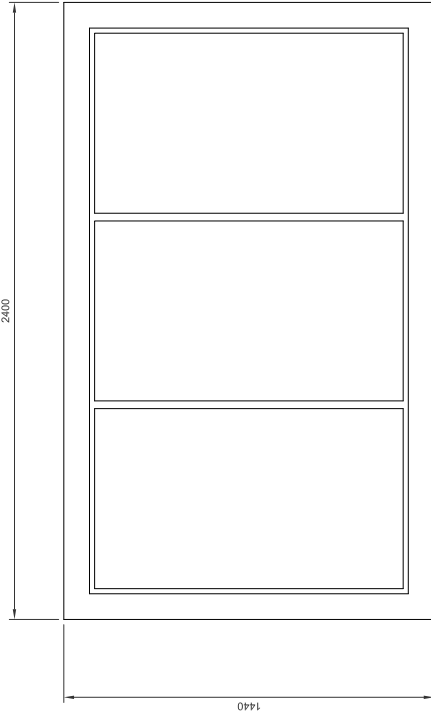


\* Depending to duct arrangement.

\*1 Concrete structure equivalence with:  
 Concrete strength: F<sub>c</sub> = 18 MPa;  
 Reinforcing Bar (GB300-01):  
 Yield strength: F<sub>y</sub> = 300 MPa;  
 Tensile strength: F<sub>t</sub> = 450 MPa;

<b>CONSULTANT</b>		<b>SOCIALIST REPUBLIC OF VIETNAM</b>		<b>ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 &amp; NORTHERN AREA OF VIETNAM</b>	
ORIENTAL CONSULTANTS CO., LTD	TITLE	SIGNATURE	DATE	DRAWING NO.:	IX-3-10
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY			HA NOI - BAC NINH EXPRESSWAY	
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	CHECKED BY			DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M1)	
LANDTEC JAPAN INC.	APPROVED BY			Sheet	of
SCALE: 1/20					

# DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M2 ) (INSTALL AT BACK OF ABUTMENT )



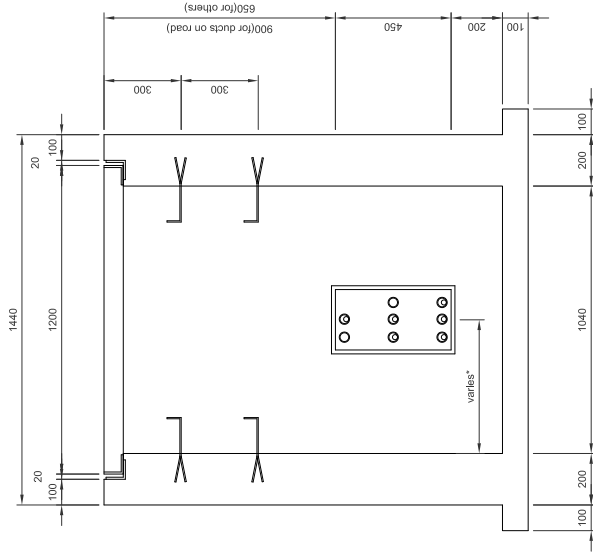
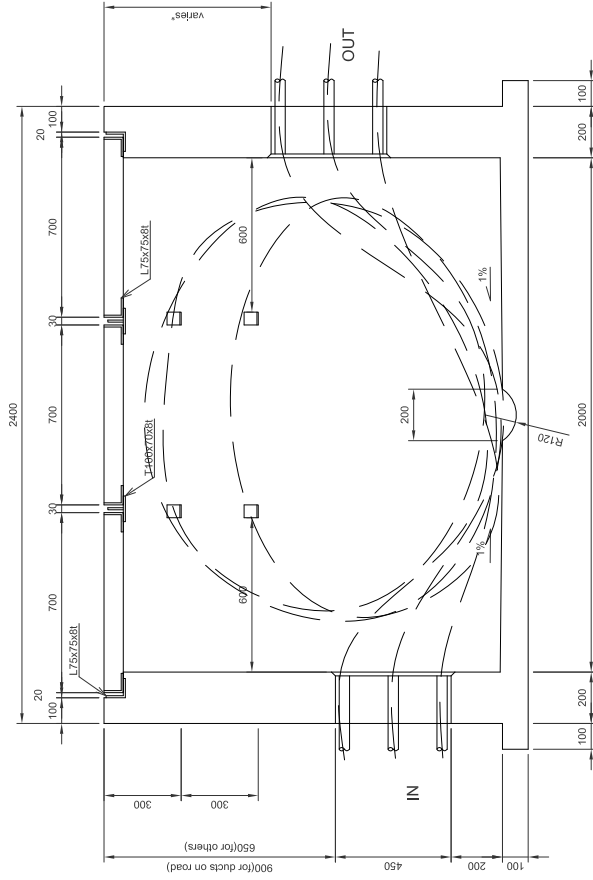
Volume table of chamber for ducts on road

Volume	Weight
L75x75x8L	183 kg
PL80x8L	10 kg
T100x70x8L	26 kg
Concrete M300	1.9 m <sup>3</sup>

Volume table of chamber for others

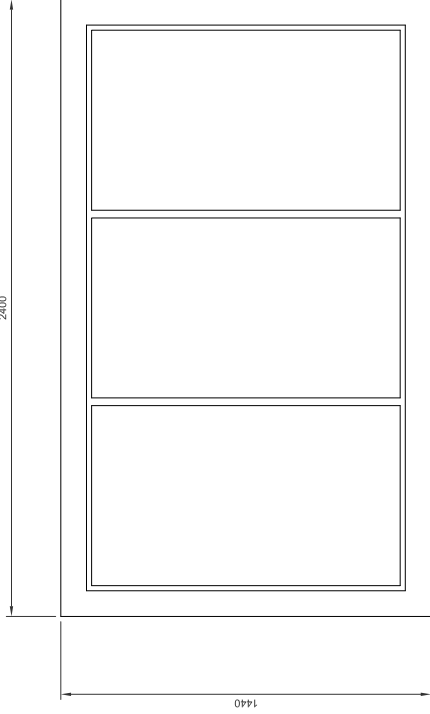
Volume	Weight
L75x75x8L	183 kg
PL80x8L	10 kg
T100x70x8L	26 kg
Concrete M300	1.7 m <sup>3</sup>



\* Depending to duct arrangement,  
 \*1 Concrete structure equivalence with:  
 Concrete strength: F<sub>c</sub> = 18 MPa;  
 Reinforcing Bar (CB300-U):  
 Yield strength: F<sub>y</sub> = 300 MPa;  
 Tensile strength: F<sub>t</sub> = 450 MPa;

<b>CONSULTANT</b>		<b>SOCIALIST REPUBLIC OF VIETNAM</b>		<b>ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 &amp; NORTHERN AREA OF VIETNAM</b>	
ORIENTAL CONSULTANTS CO., LTD	TITLE	NAME	SIGNATURE	DATE	
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY				
NIPPON KOEI CO., LTD	CHECKED BY				
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	APPROVED BY				
LANDTEC JAPAN INC.					
<b>MINISTRY OF TRANSPORT</b>			<b>PACKAGE:</b>		
<b>HA NOI - BAC NINH EXPRESSWAY</b>			<b>DRAWING NO.:</b>		
<b>DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M2 )</b>			<b>IX.3-11</b>		
SCALE: 1/20			Sheet of		

# DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M3 ) (INSTALL AT MEDIAN or EMBANKMENT; WITH PITCH LESS THAN 2000M )

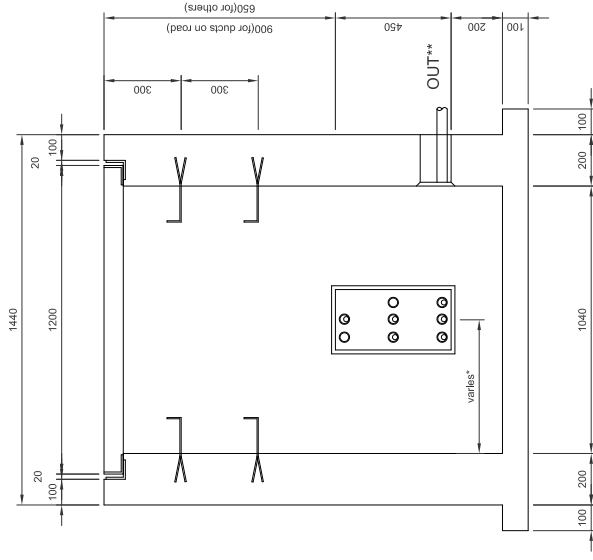
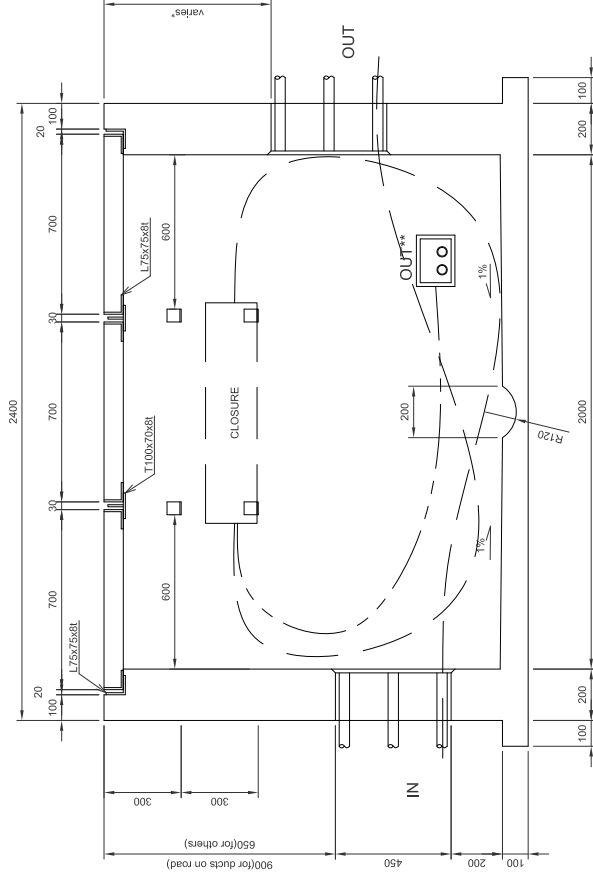


Volume table of chamber for ducts on road

Reinforcing Bar	Volume
L75x75x8L	183 kg
PL80x8L	10 kg
T100x70x8L	26 kg
Concrete M300	1.9 m <sup>3</sup>

Volume table of chamber for others

Reinforcing Bar	Volume
L75x75x8L	183 kg
PL80x8L	10 kg
T100x70x8L	26 kg
Concrete M300	1.7 m <sup>3</sup>



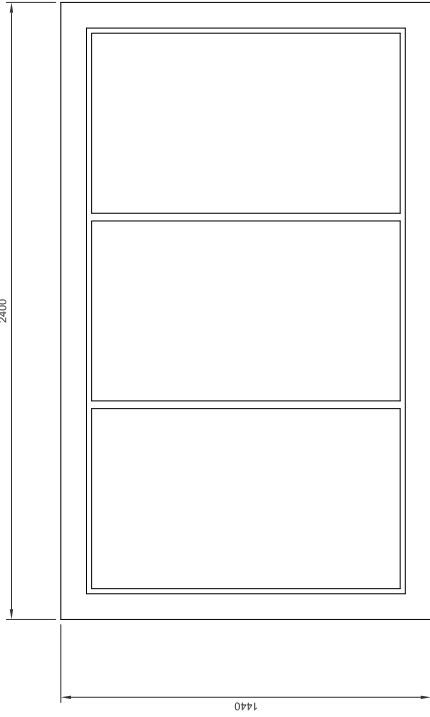
\* Depending to duct arrangement.  
 \*\* Divergence exits be used for roadside equipments.

\*1 Concrete structure equivalence with:  
 Concrete strength: F<sub>c</sub> = 18 MPa;  
 Reinforcing Bar (CB300-II):  
 Yield strength: F<sub>y</sub> = 300 MPa;  
 Tensile strength: F<sub>t</sub> = 450 MPa;

<b>CONSULTANT</b>		<b>SOCIALIST REPUBLIC OF VIETNAM</b>		<b>ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 &amp; NORTHERN AREA OF VIETNAM</b>	
ORIENTAL CONSULTANTS CO., LTD	TITLE	SIGNATURE	DATE	DRAWING NO.:	IX.3-12
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY			HA NOI - BAC NINH EXPRESSWAY	
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	CHECKED BY			DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M3 )	
LANDTEC JAPAN INC.	APPROVED BY			Sheet No. _____	Sheet of _____
SCALE: 1/20					



# DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M4 ) (INSTALL AT MEDIAN or EMBANKMENT; FOR CHANGING DUCT DIRECTION )

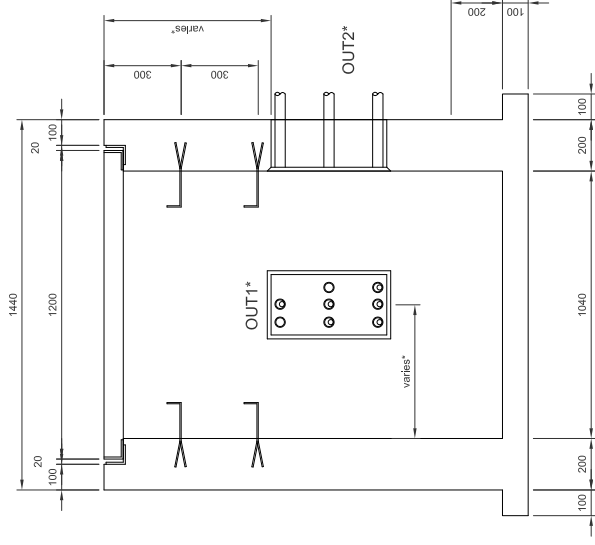
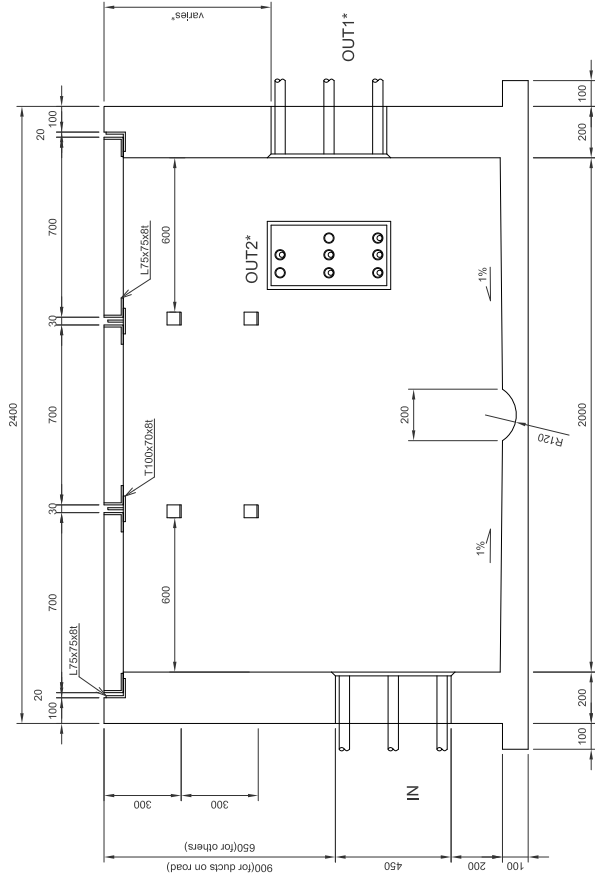


Volume table of chamber for ducts on road

Item	Volume
L75x75x8L	183 kg
PL80x8L	10 kg
T100x70x8L	26 kg
Concrete M300	1.9 m <sup>3</sup>

Volume table of chamber for others

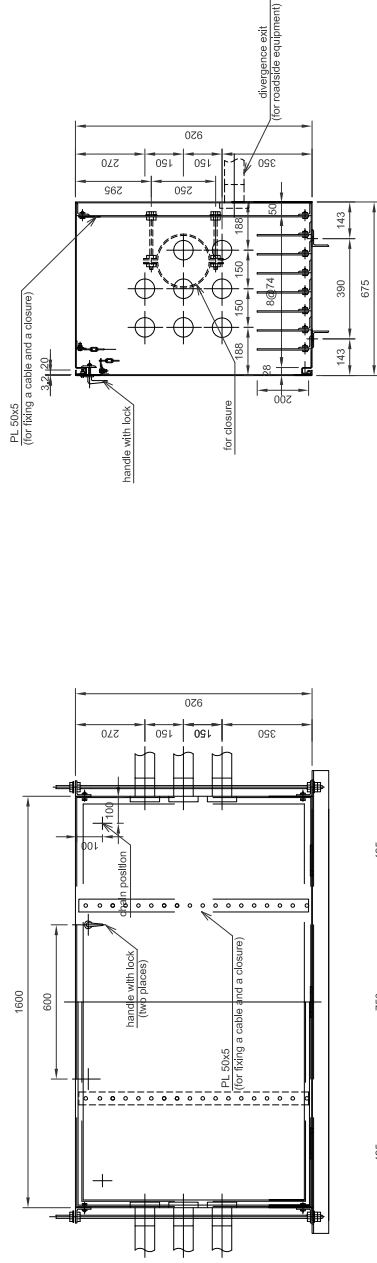
Item	Volume
L75x75x8L	183 kg
PL80x8L	10 kg
T100x70x8L	26 kg
Concrete M300	1.7 m <sup>3</sup>



\*1 Concrete structure equivalence with:  
Concrete strength: F<sub>c</sub> = 18 MPa;  
Reinforcing Bar (GB3000-II):  
Yield strength: F<sub>y</sub> = 300 MPa;  
Tensile strength: F<sub>t</sub> = 450 MPa;

<b>CONSULTANT</b>		<b>SOCIALIST REPUBLIC OF VIETNAM</b>		<b>ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 &amp; NORTHERN AREA OF VIETNAM</b>	
ORIENTAL CONSULTANTS CO., LTD	TITLE	NAME	SIGNATURE	DRAWING NO.:	IX.3-13
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY			PROJECT TITLE:	HA NOI - BAC NINH EXPRESSWAY
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	CHECKED BY			DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M4 )	Sheet of
LANDTEC JAPAN INC.	APPROVED BY			SCALE:	1:20

# DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M5) (INSTALL AT BRIDGE SECTION IN WHICH DUCT IS HUNG ON CANTILEVER SLAB)



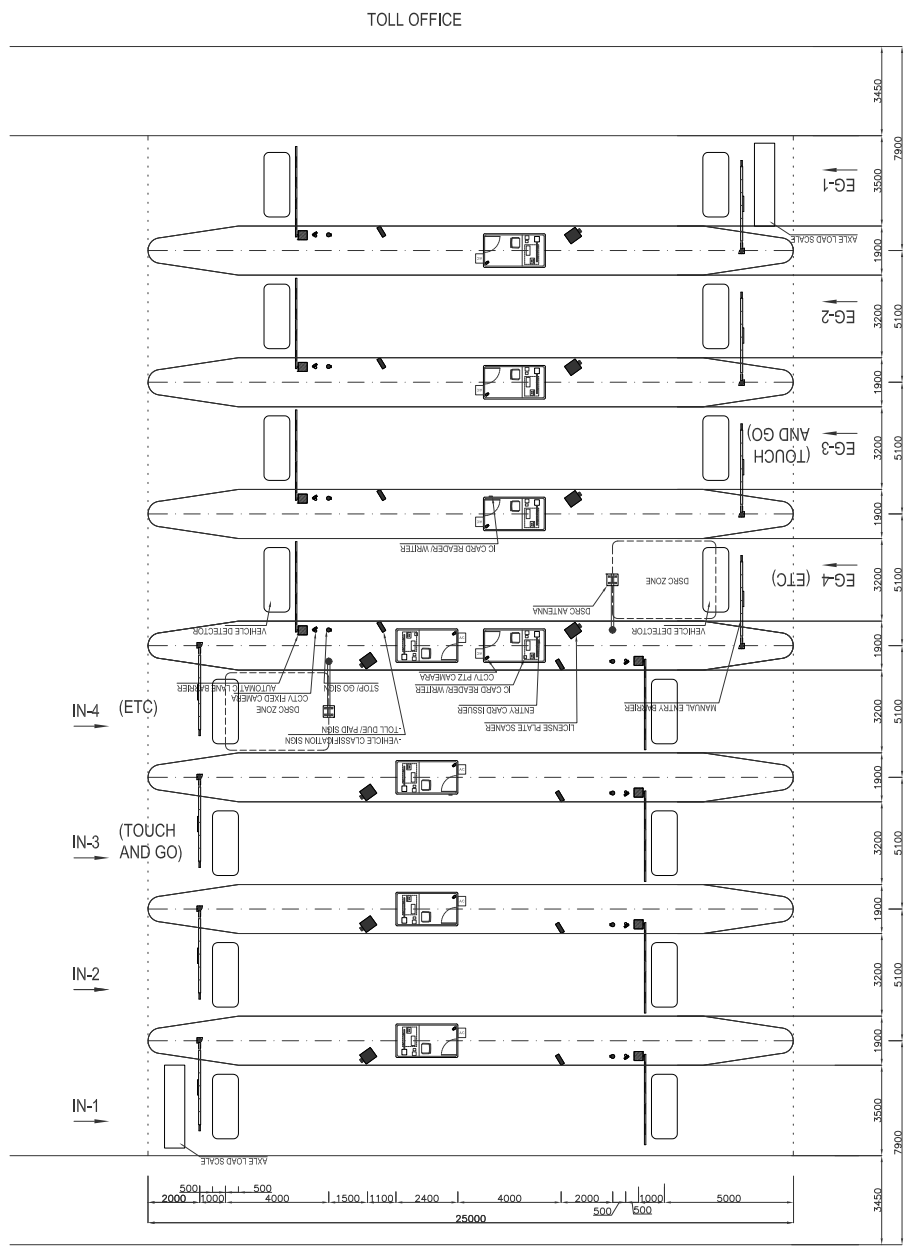
Volume table

Length(mm)	Volume	Weight (kg)
L 65x65x6L	2	22,0
L 65x65x6R	4	2,0
L 50x50x6R	18	4,0
PL 50x5	2	3,0
PL 50x5	200	14
PL 675x3,2	1600	2
PL 675x3,2	1600	2
PL 675x3,2	920	2

- \*1 Structural steel conforms ASTM A-708M Grade 250 or equivalence with:  
Yield strength:  $F_y = 250$  MPa  
Tensile strength:  $F_u = 400$  MPa
- \*2 Concrete structure equivalence with:  
Concrete strength:  $F_{cc} = 18$  MPa  
Reinforcing Bar (GB50061):  
Yield strength:  $F_y = 300$  MPa  
Tensile strength:  $F_u = 460$  MPa
- \*3 In case without any recommendation about zincing in details, all metal members be exposed to weather or soil must be zinced with amount of  $550g/m^2$ .
- \*4 This drawing be based on NEXCO(Japan) drawings.
- \*5 These structures should be redesigned to meet site condition.

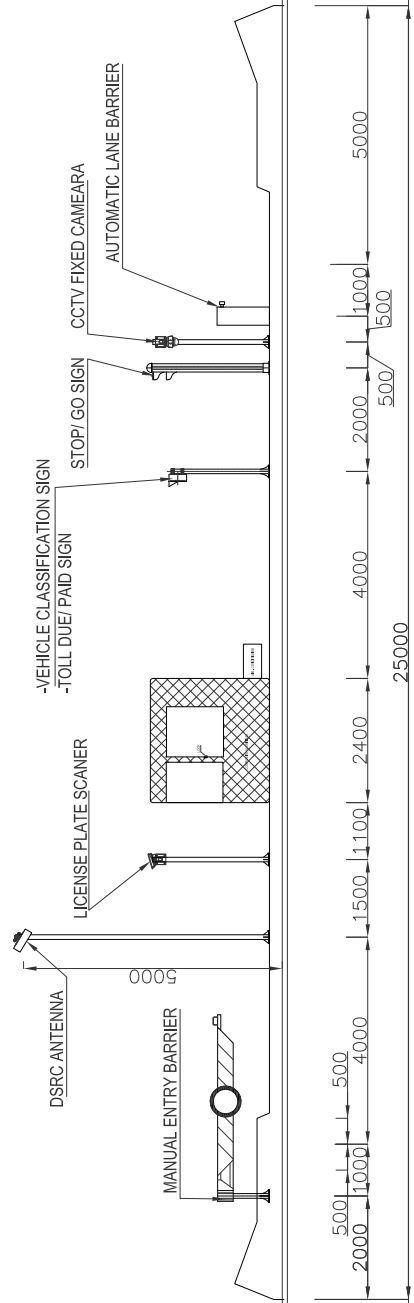
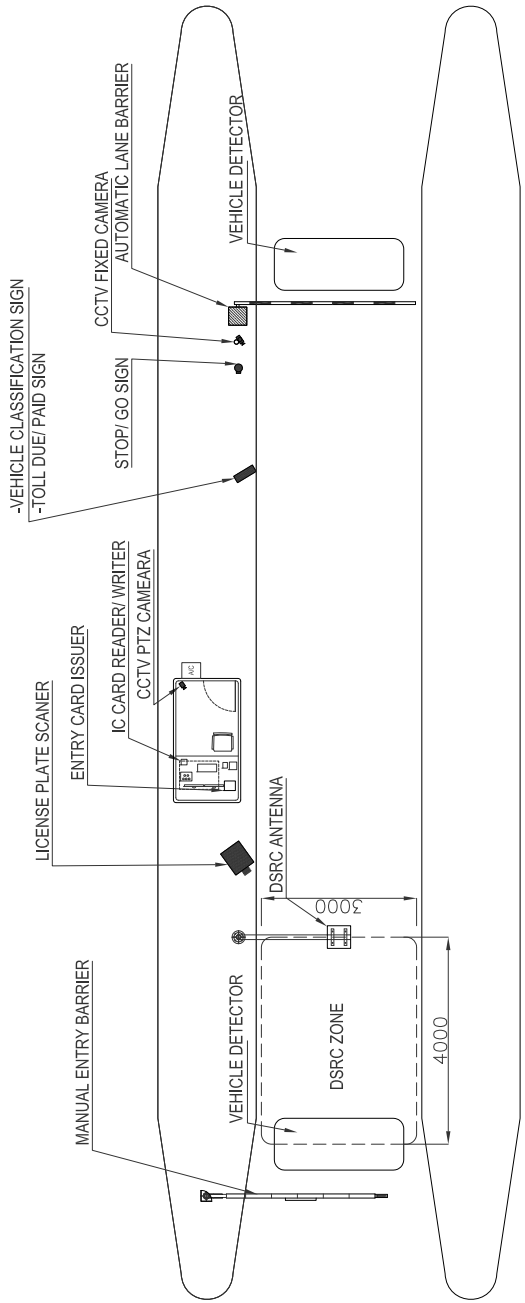
<b>CONSULTANT</b>		<b>SOCIALIST REPUBLIC OF VIETNAM</b>		<b>ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 &amp; NORTHERN AREA OF VIETNAM</b>		PACKAGE:	
ORIENTAL CONSULTANTS CO., LTD	TITLE	NAME	SIGNATURE	DRAWING NO.:	DRAWING NO.:	SHEET NO.:	SHEET
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY			HA NOI - BAC NINH EXPRESSWAY	IX.3-14		of
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	CHECKED BY			DETAIL OF COMMUNICATION DUCT CHAMBER ( TYPE M5)			
LANDTEC JAPAN INC.	APPROVED BY						
				SCALE: 1/20			

# TYPICAL LAYOUT OF TOLL EQUIPMENT FOR 8 LANES

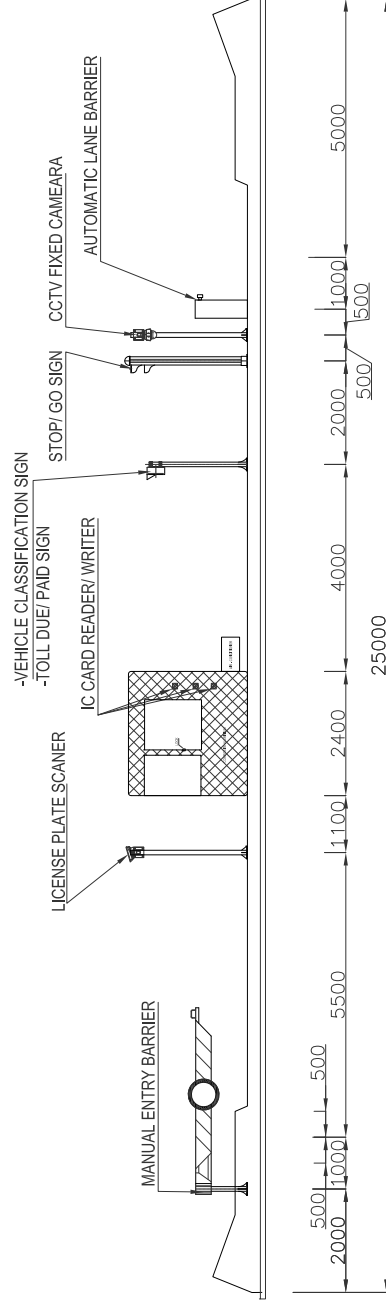
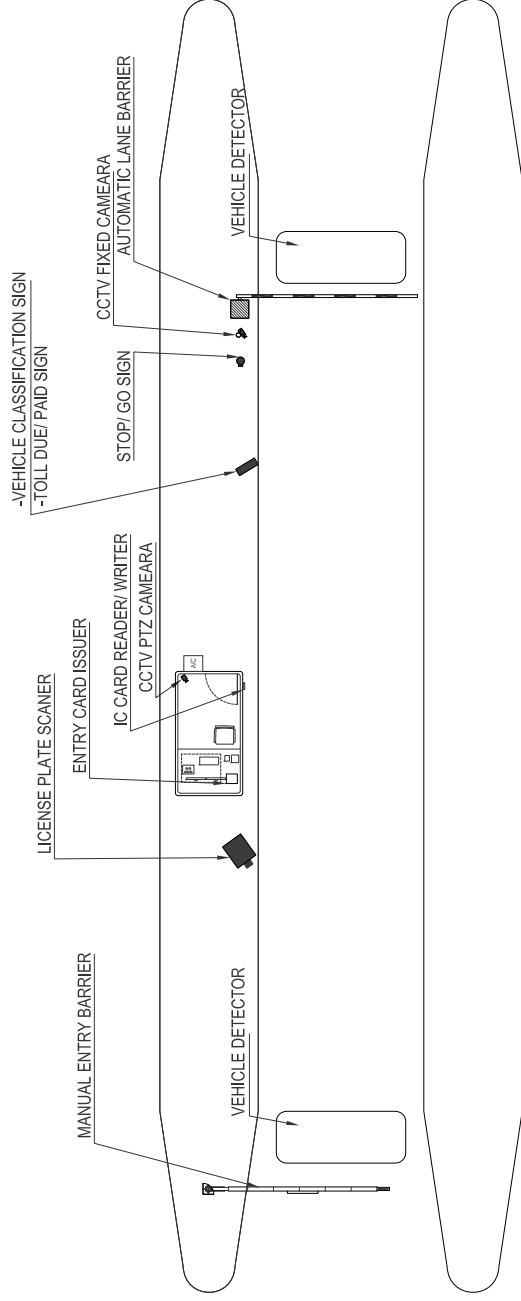


NOTES:  
 IN-3 INGRESS LANE-3  
 EGT-1 EGRESS LANE-1

CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM		ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM		PACKAGE
ORIENTAL CONSULTANTS CO., LTD	TITLE	NAME	SIGNATURE	DATE	DRAWING NO.: <b>IK-4-01</b>	
NEXCO EAST ENGINEERING CO., LTD	PREPARED BY				SHEET NO.:	
NIPPON KOEI CO., LTD	CHECKED BY				Sheet of	
TRANSPORTATION RESEARCH INSTITUTE CO., LTD	APPROVED BY				New	
LANDTEC JAPAN INC.					SCALE: 1/200	

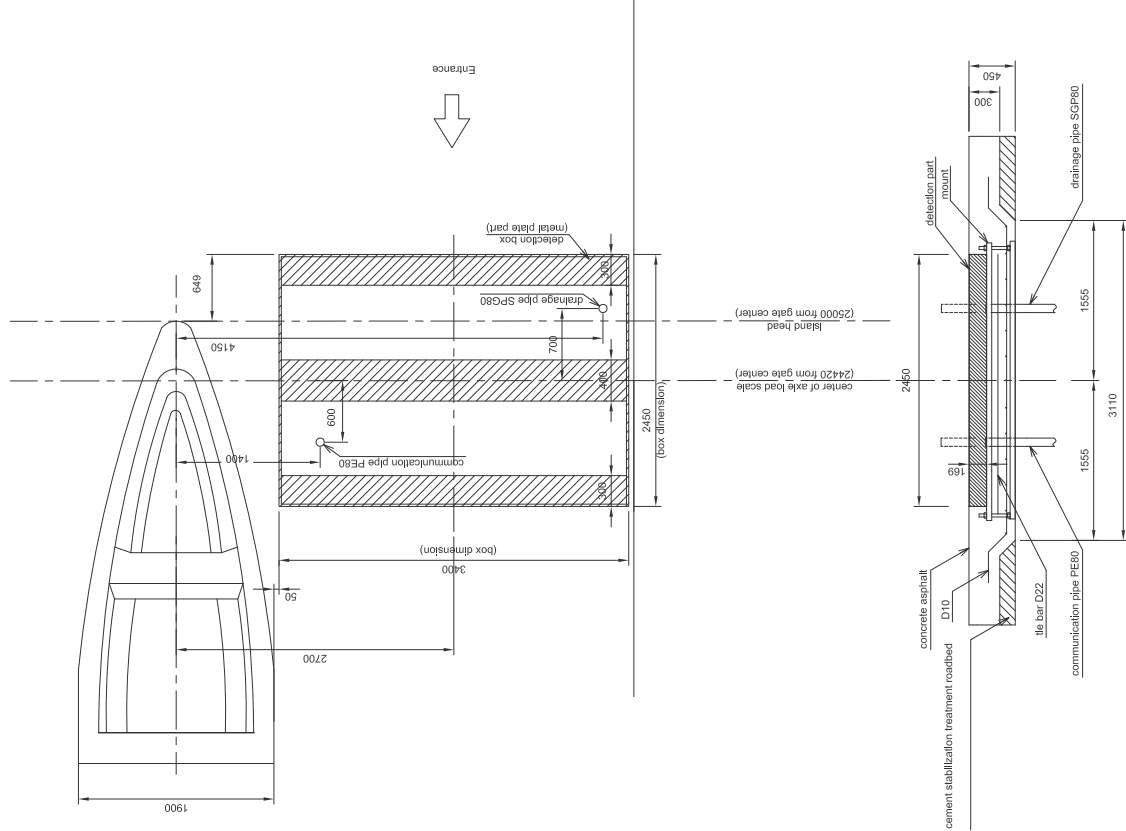


CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM		ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM		PACKAGE
ORIENTAL CONSULTANTS CO., LTD				DRAWING TITLE		DRAWING NO.
NEXCO EAST ENGINEERING CO., LTD		MINISTRY OF TRANSPORT		EQPT. ARRANGEMENT PROFILE		IX-4-02
TRANSPORTATION RESEARCH INSTITUTE CO., LTD				AT PHUOC LOI TOLLGATE FOR ETC LANENT		SHEET NO.
LANDTEC JAPAN INC.						Sheet of
TITLE	NAME	SIGNATURE	DATE	SCALE: 1/100		
PREPARED BY						
CHECKED BY						
APPROVED BY						



CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM		ITS INTEGRATION PROJECT ON NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM		PACKAGE
ORIENTAL CONSULTANTS CO., LTD				DRAWING TITLE		DRAWING NO.
NEXCO EAST ENGINEERING CO., LTD		MINISTRY OF TRANSPORT		EOPT. ARRANGEMENT PROFILE AT PHUC LOI		IX-4-03
TRANSPORTATION RESEARCH INSTITUTE CO., LTD				TOLLGATE FOR TOUCH&GO/MANUAL LANE		SHEET NO.
LANDTEC JAPAN INC.				SCALE: 1/100		Sheet of
TITLE	NAME	SIGNATURE	DATE	Rev:		
PREPARED BY						
CHECKED BY						
APPROVED BY						

# BASE STRUCTURE FOR AXLE LOAD SCALE (for reference)



\*1 All works belong to equipment makers.

CONSULTANT		SOCIALIST REPUBLIC OF VIETNAM		NEW NATIONAL HIGHWAY NO.3 & NORTHERN AREA OF VIETNAM		PACKAGE:
ORIENTAL CONSULTANTS CO., LTD				DRAWING TITLE		DRAWING NO.:
NEXCO EAST ENGINEERING CO., LTD				HA NOI - BAC NINH EXPRESSWAY		IX.4-04
TRANSPORTATION RESEARCH INSTITUTE CO., LTD				BASE STRUCTURE FOR AXLE LOAD SCALE (for reference)		SHEET No.:
LANDTEC JAPAN INC.				SCALE: 1:50		Sheet of
TITLE	NAME	SIGNATURE	DATE			
PREPARED BY						
CHECKED BY						
APPROVED BY						