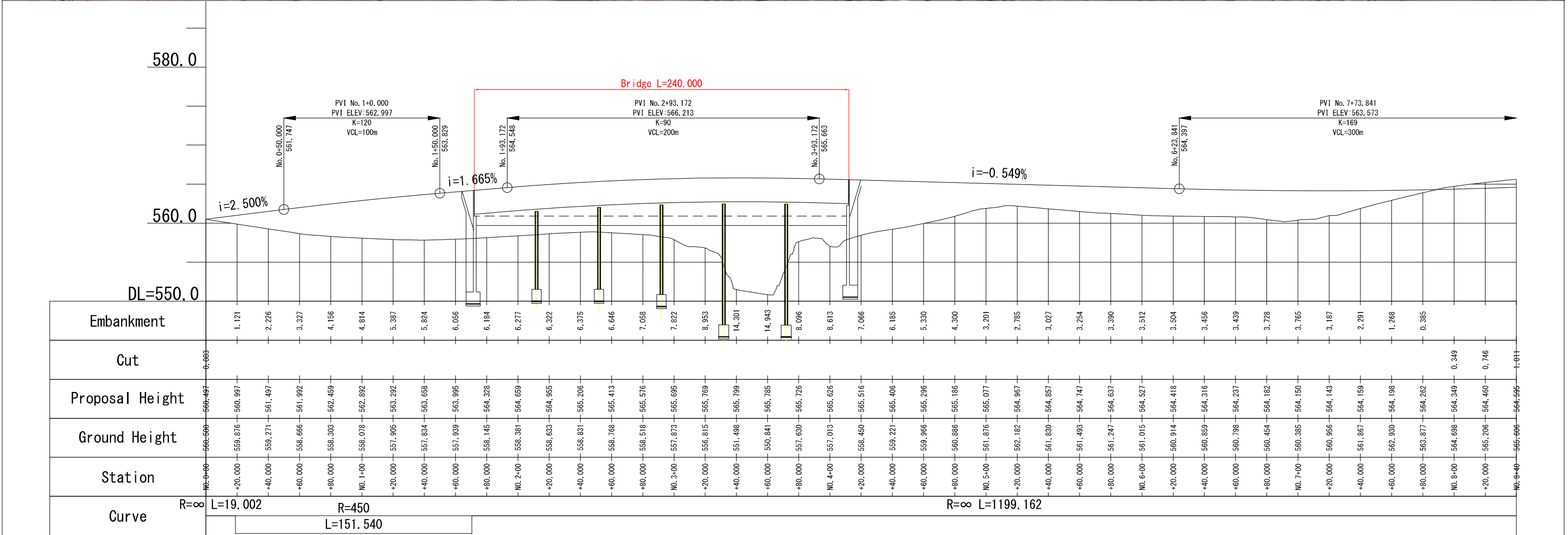
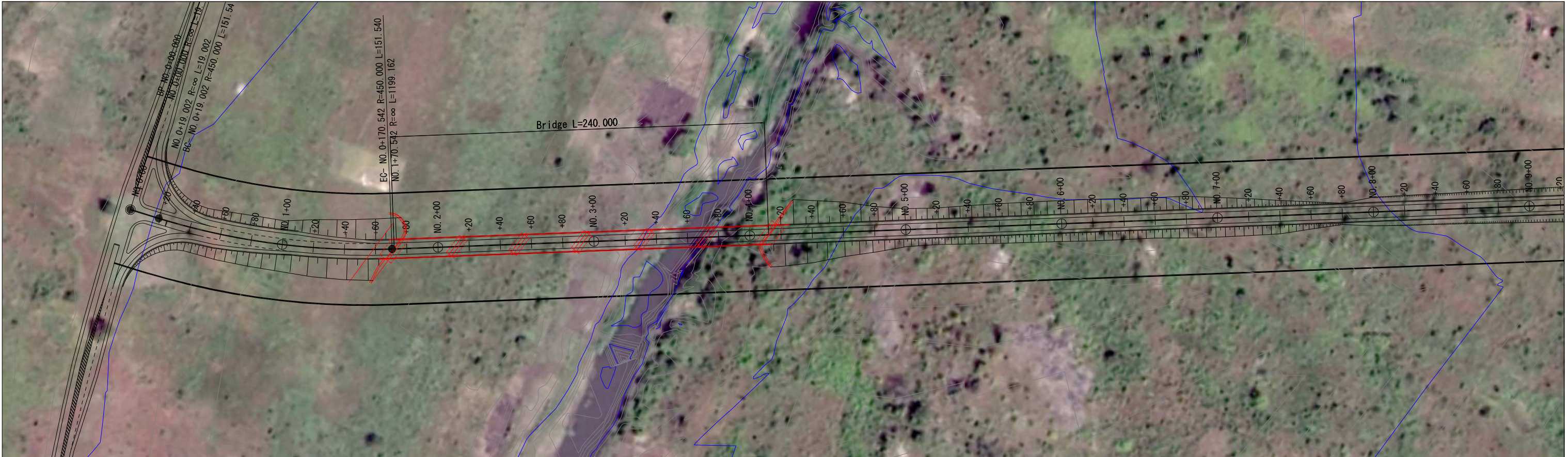
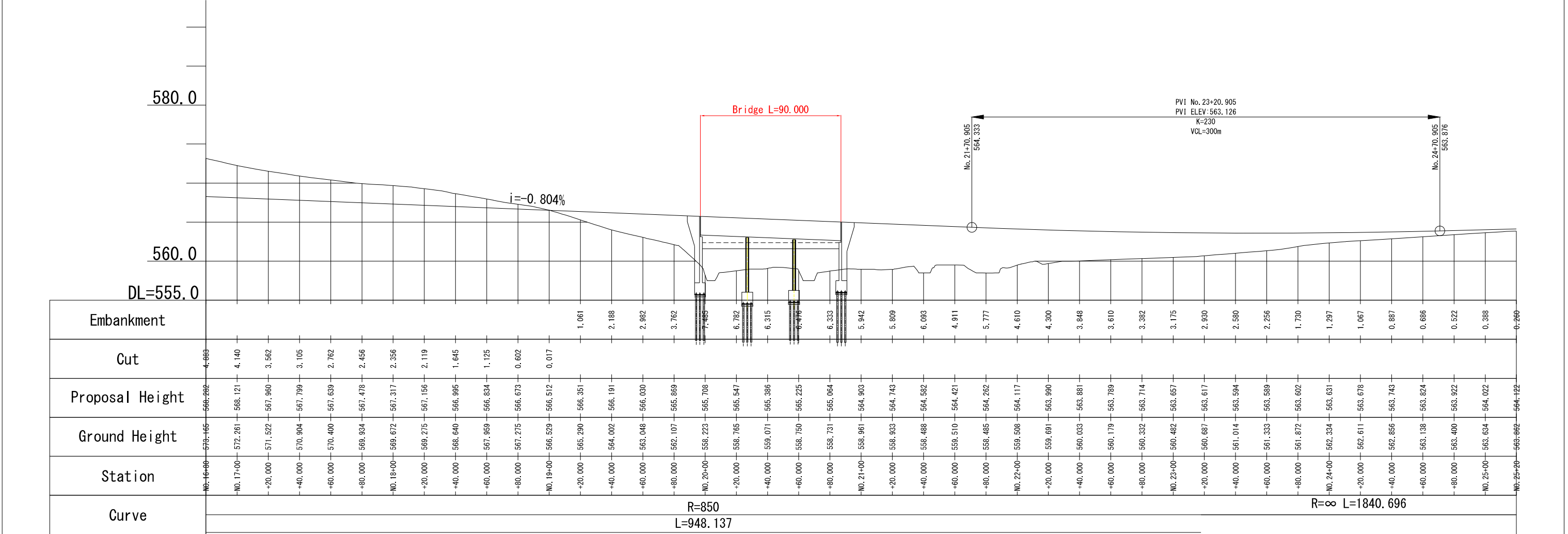
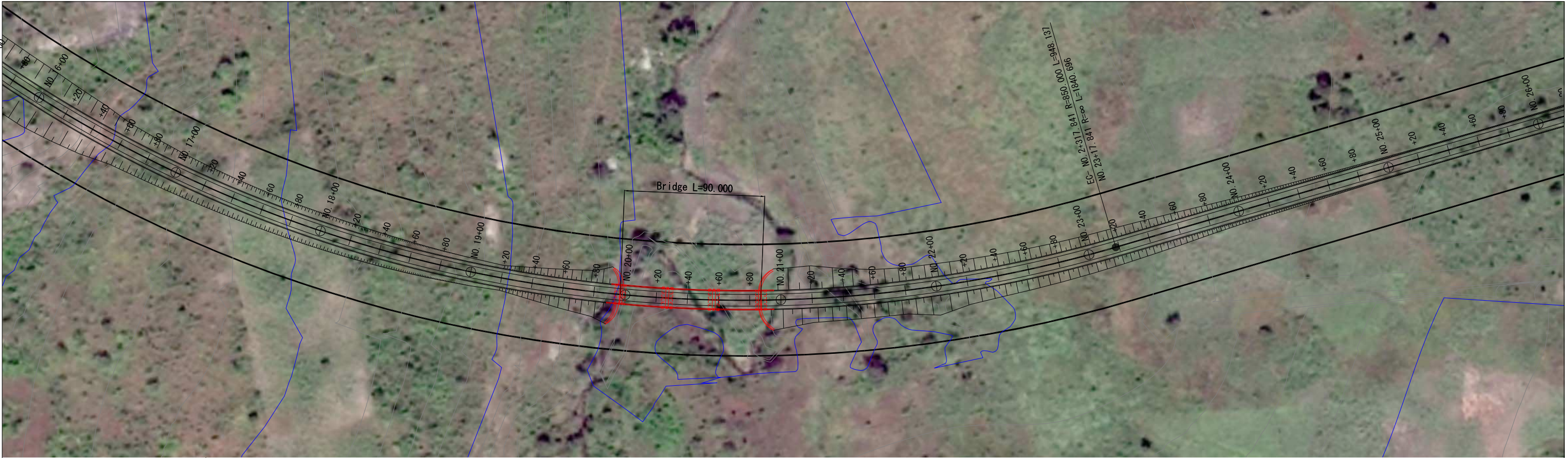
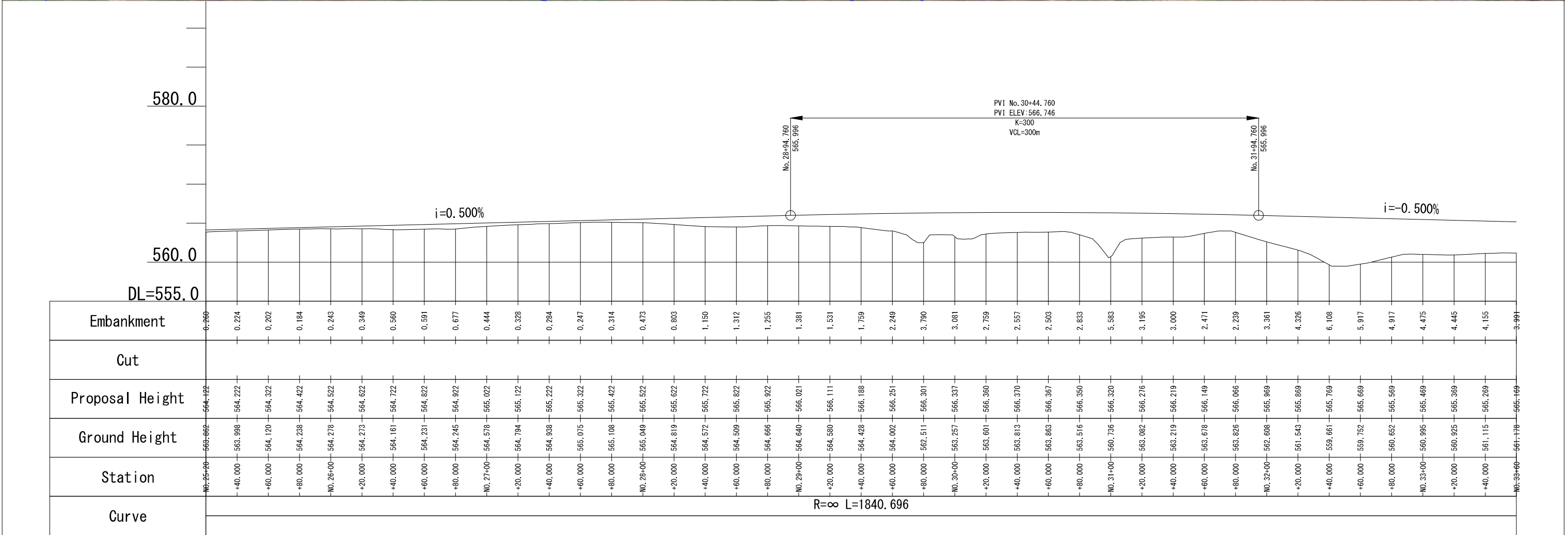
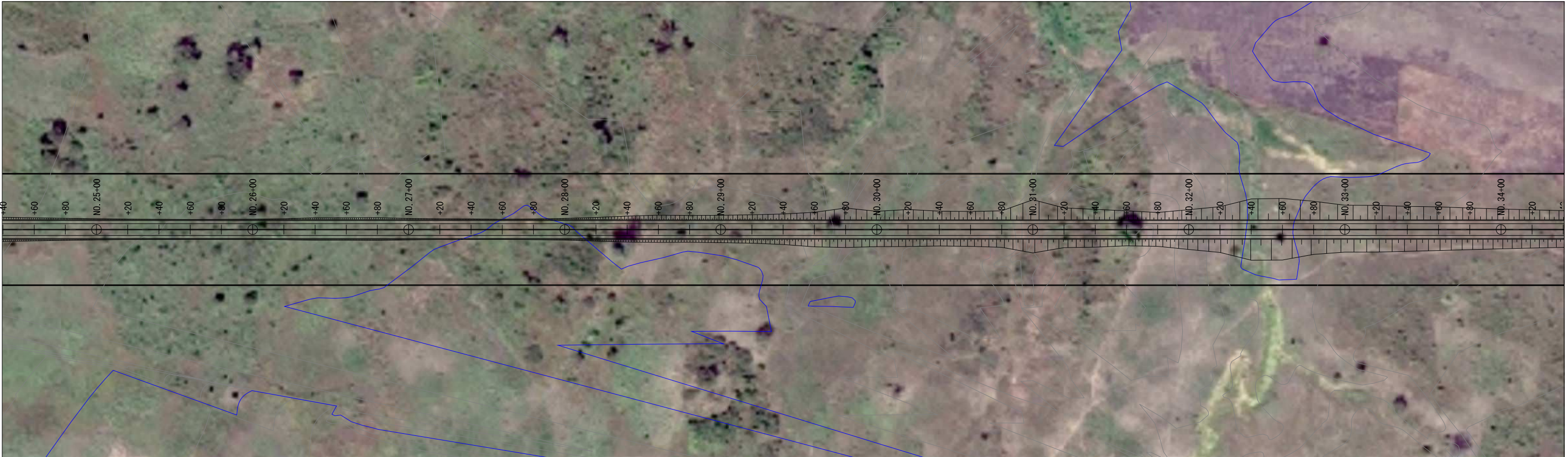
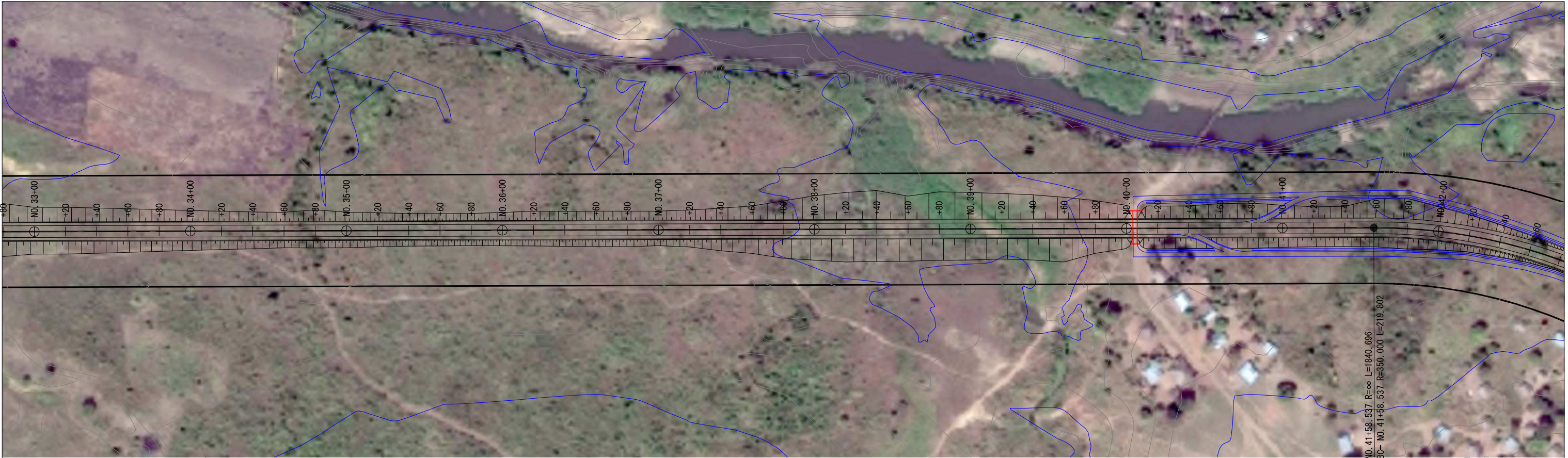


(D) CUAMBA BYPASS ROAD

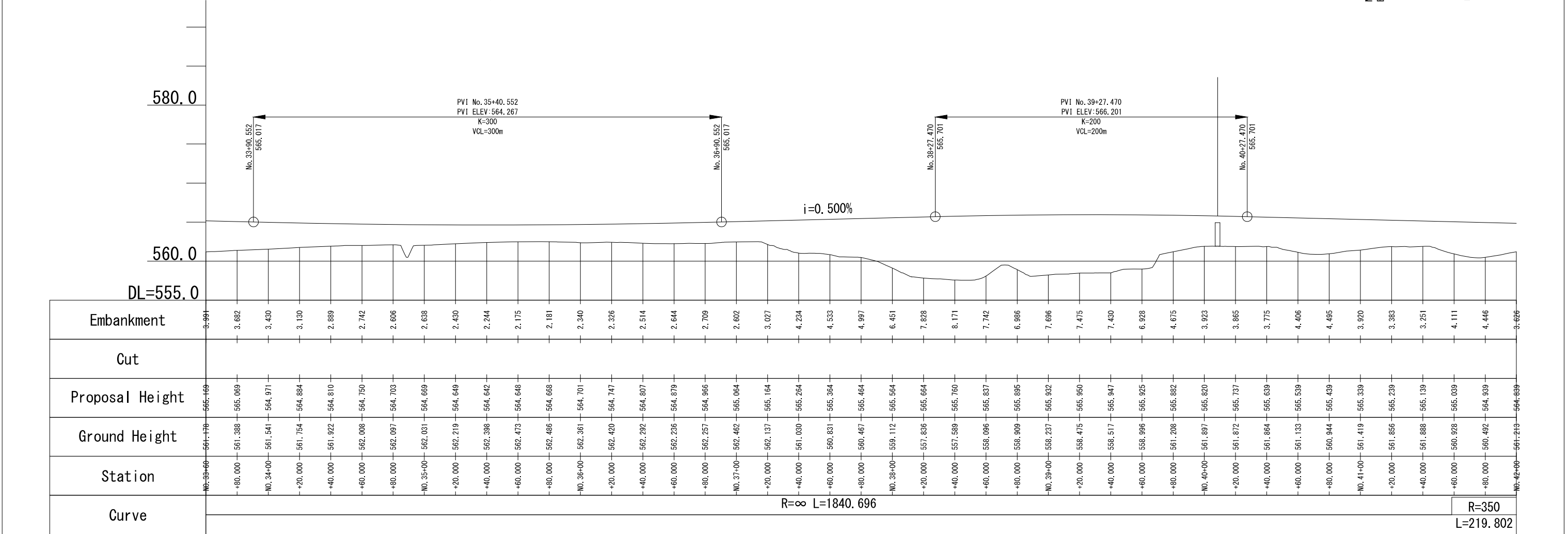


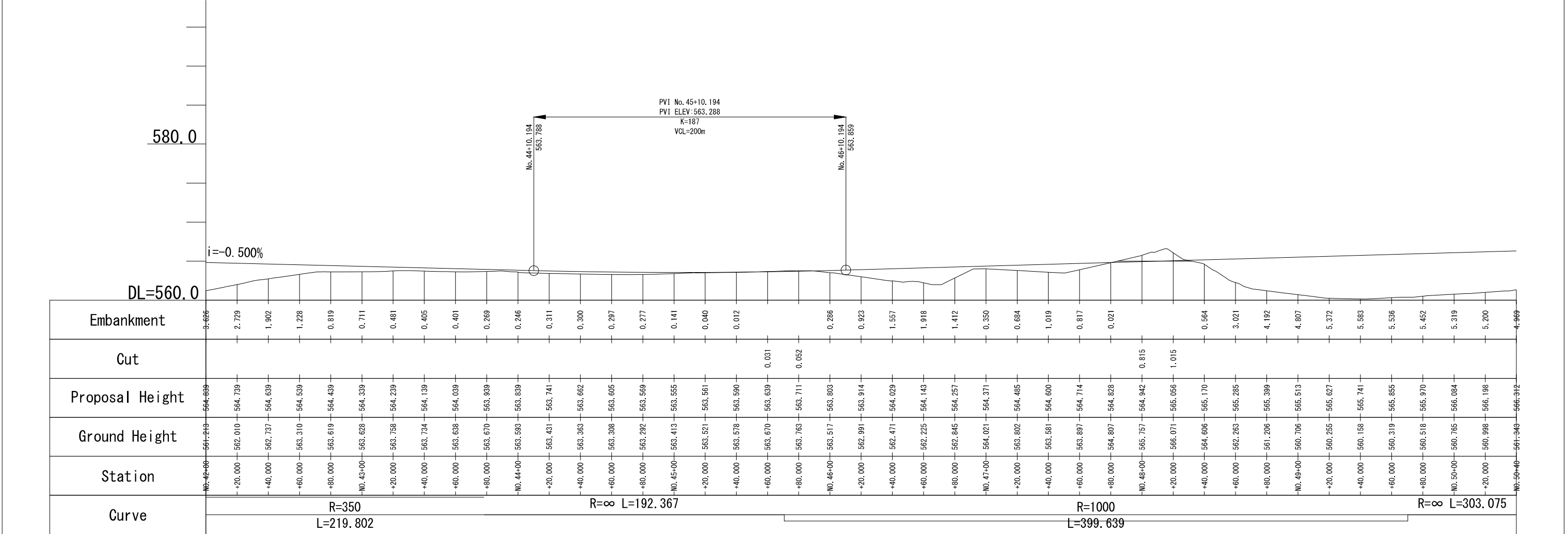


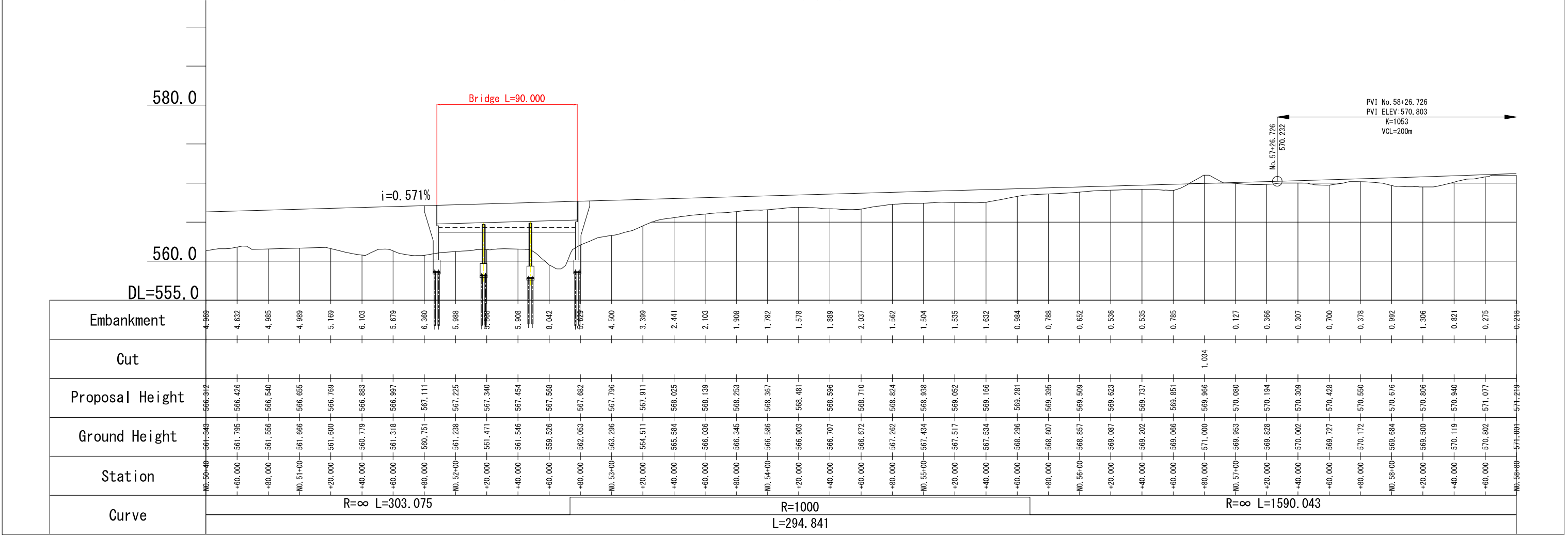
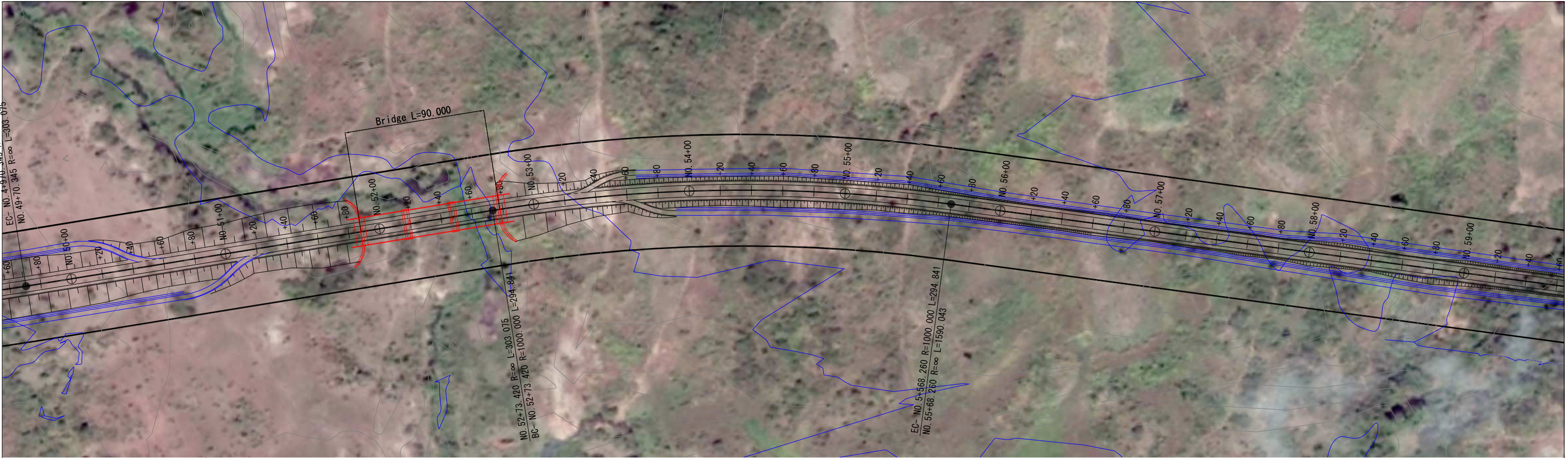


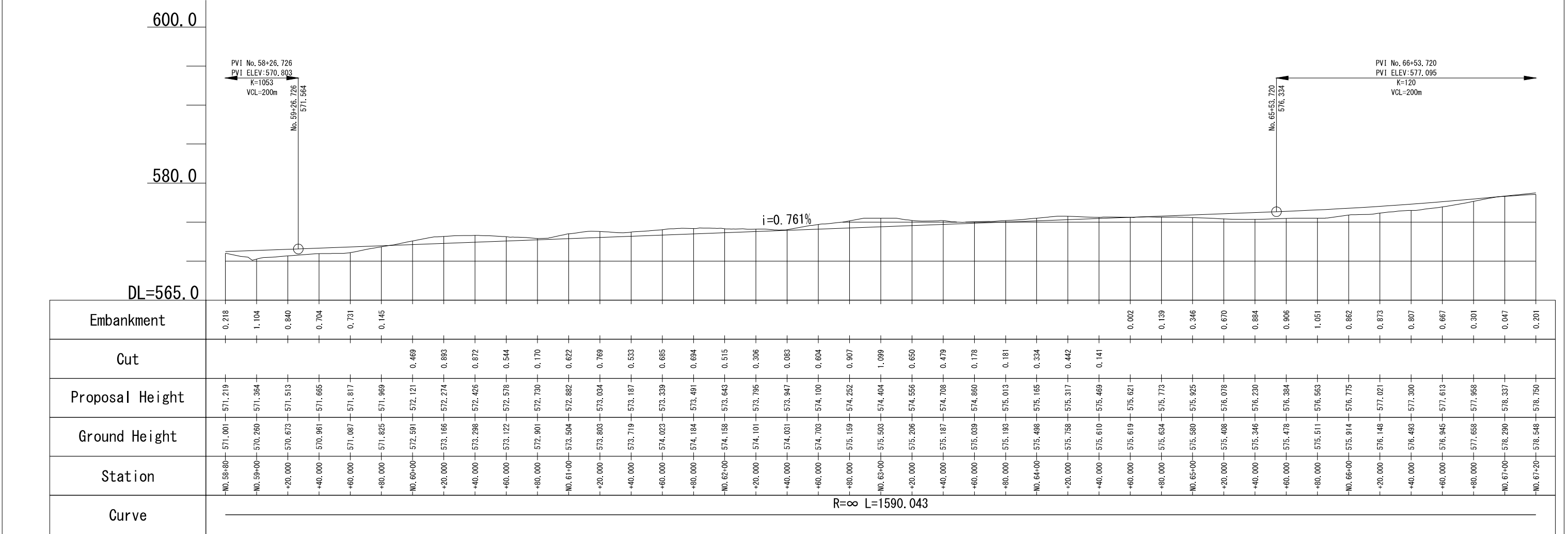


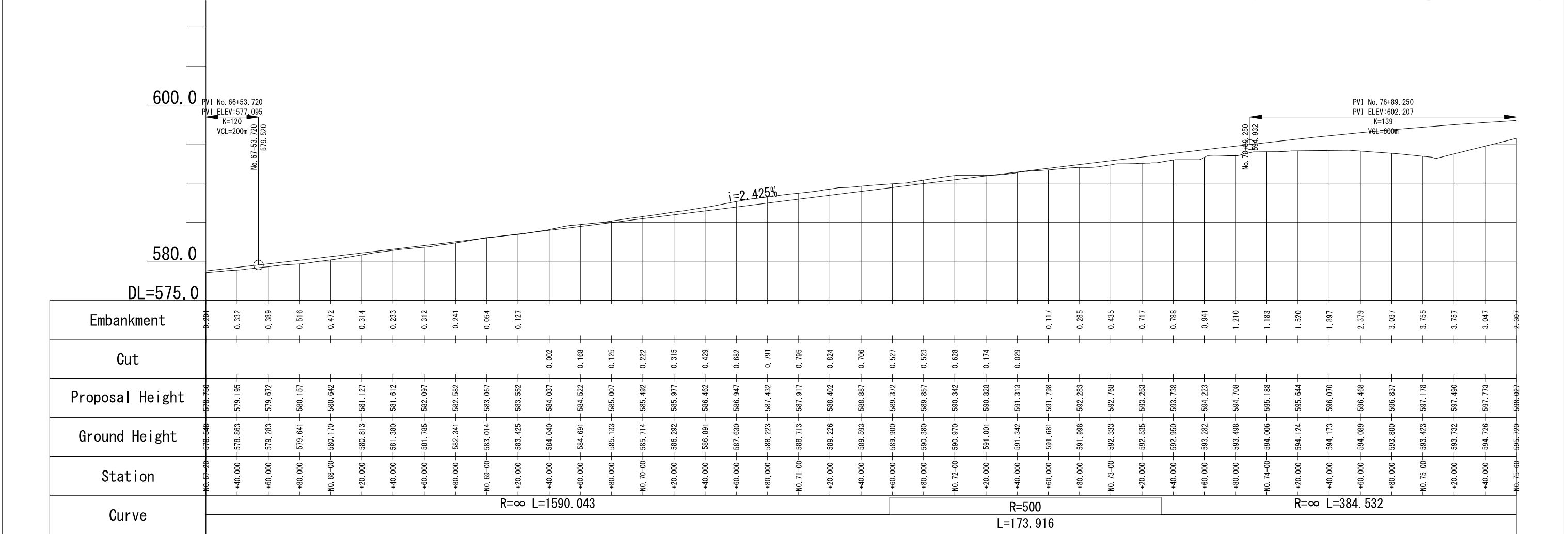
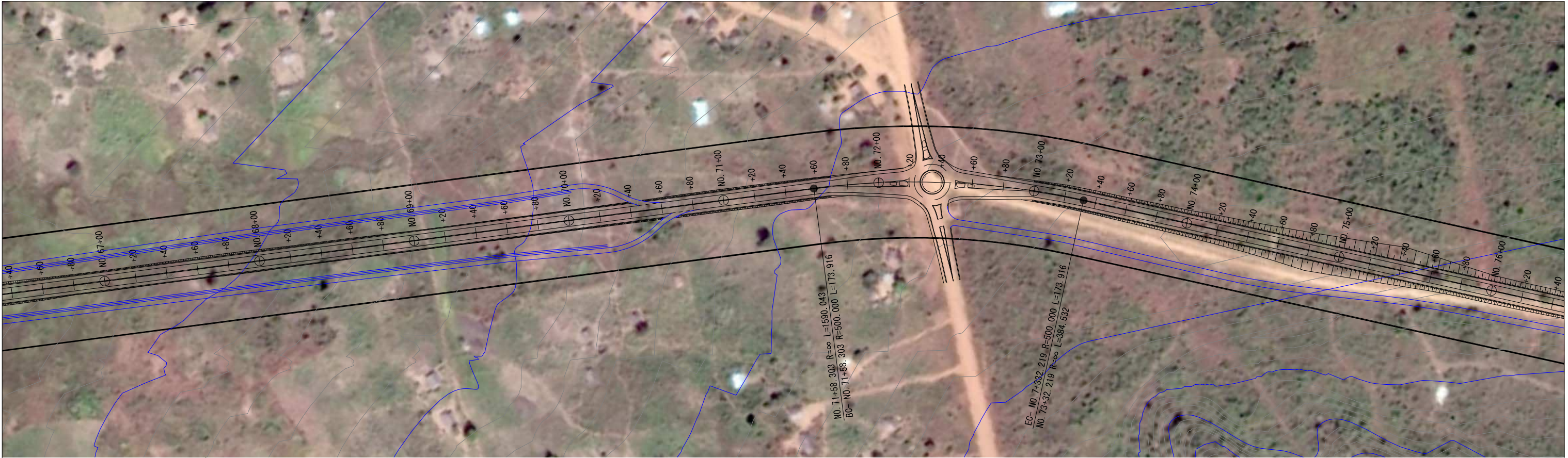
NO. 41+58.537 R=∞ L=1840.696
BC- NO. 41+58.537 R=350.000 L=219.802

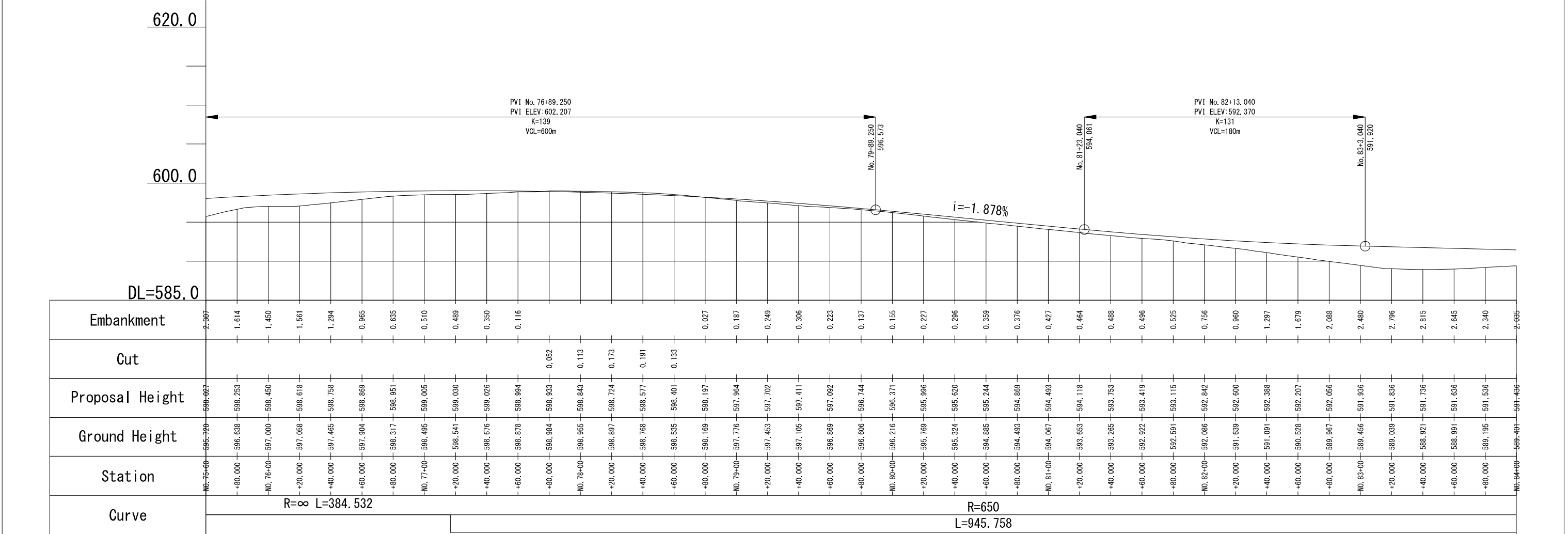


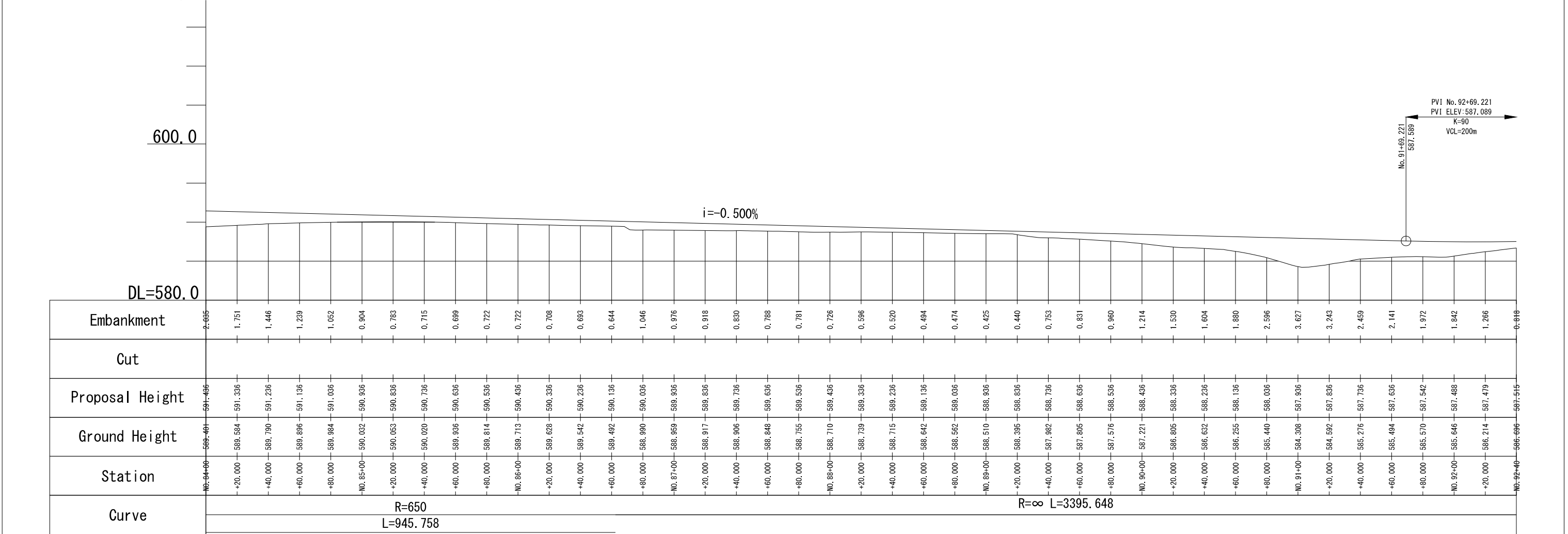


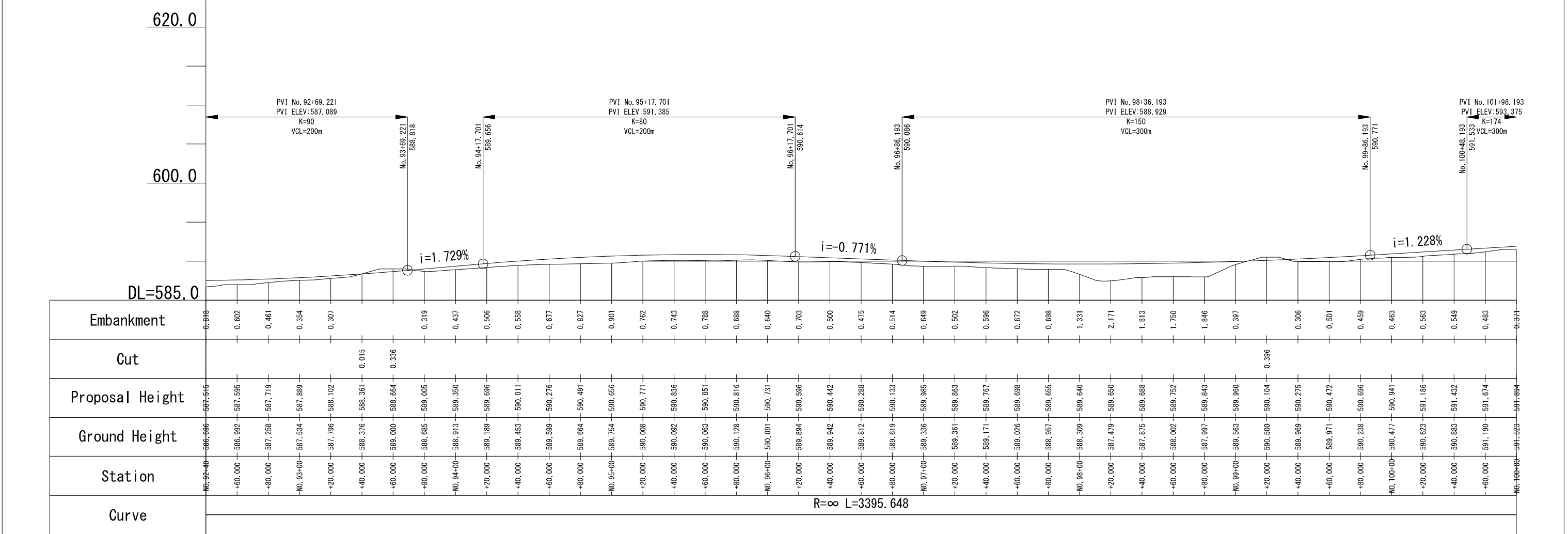


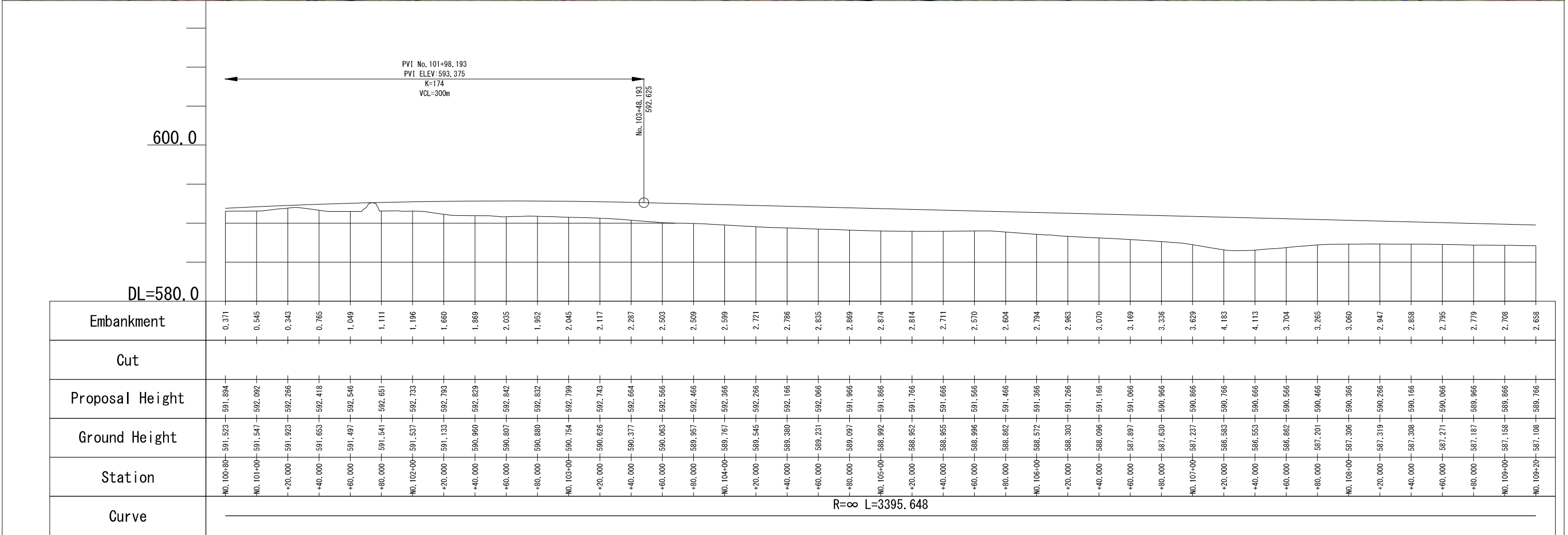


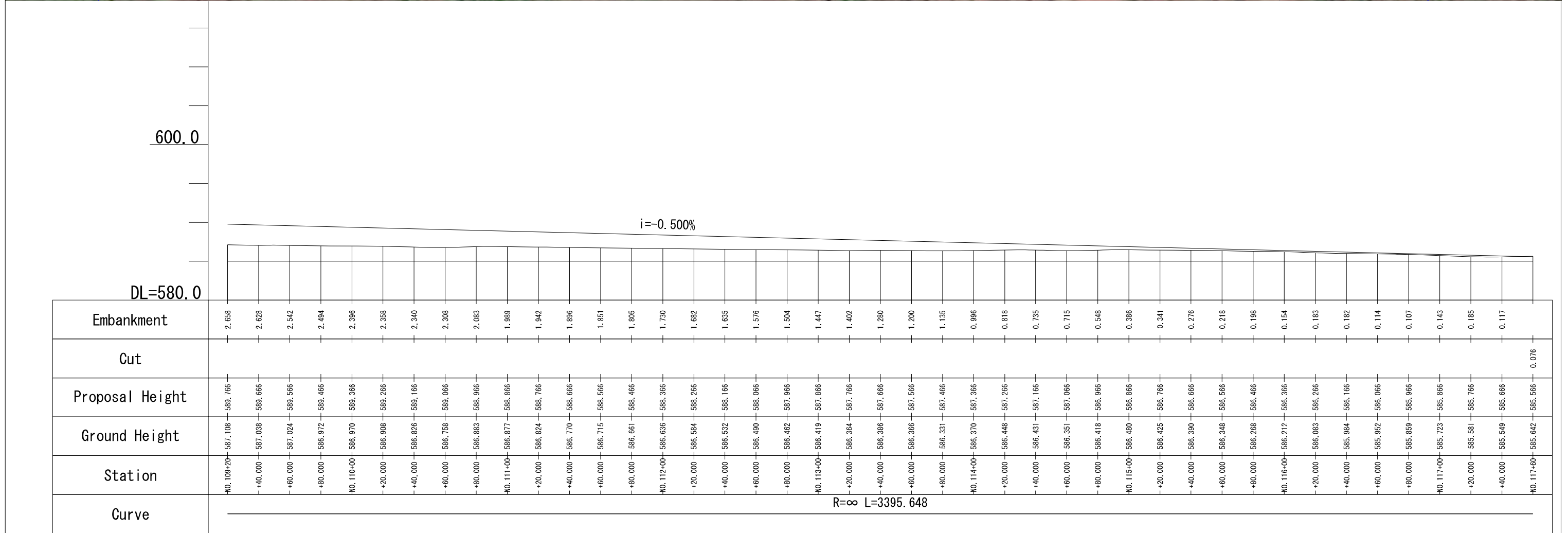
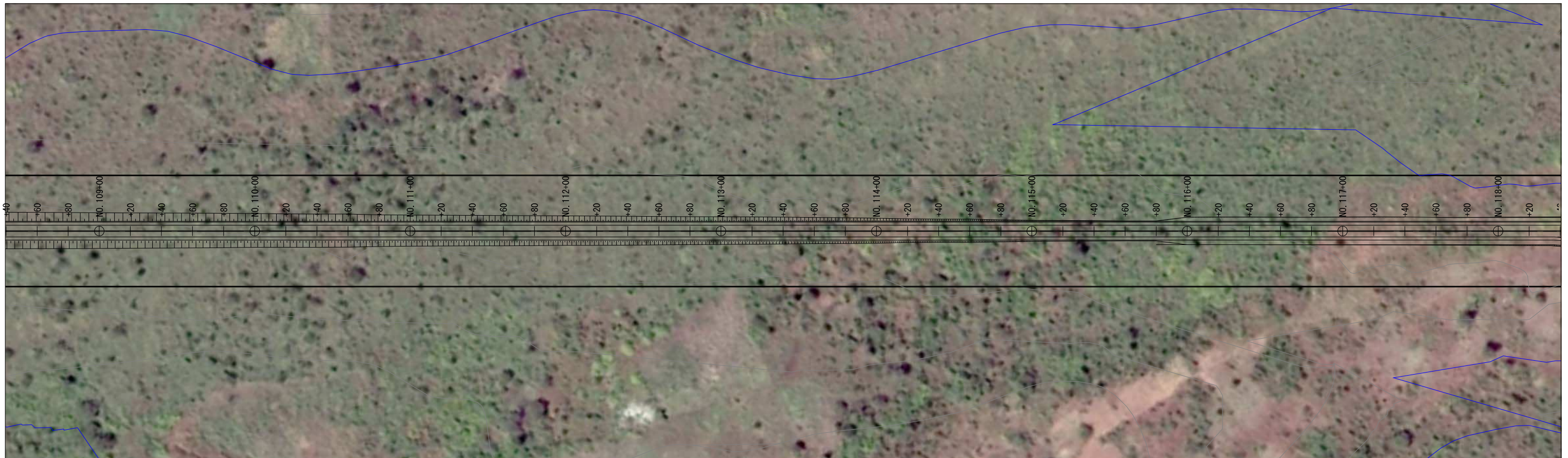




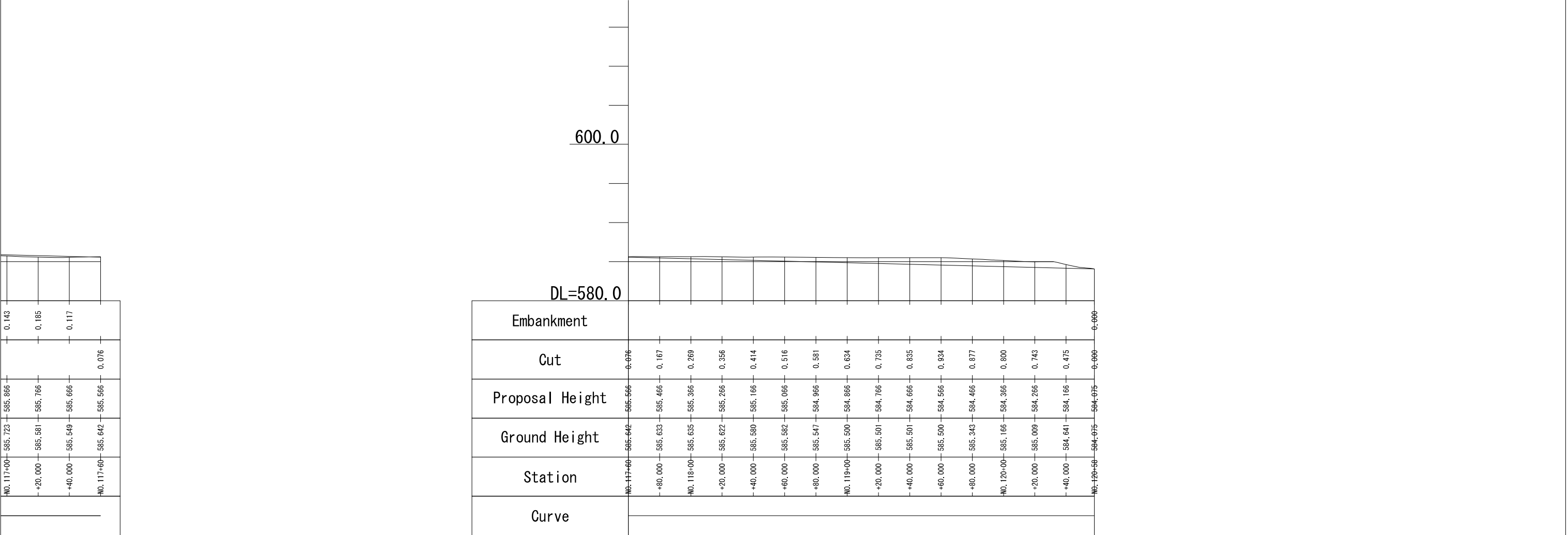




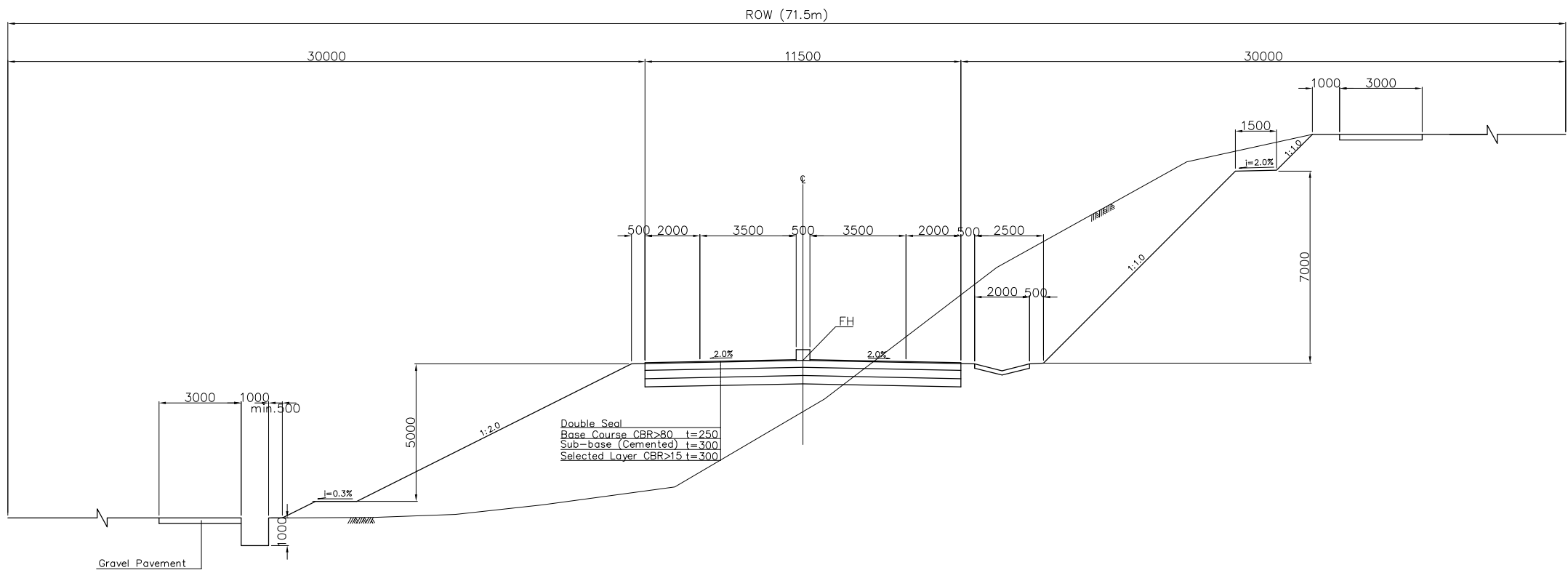


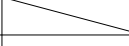


 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project (Cuamba Bypass Road)	DRAWING TITLE: Basic Option (Initial Stage) Plan and Profile			
	 Eight-Japan Engineering Consultants Inc.	NAME					SCALE	SHEET NO.	DRAWING NO.	REV. NO.
 National Road Administration (ANE)	 Kokusai Kogyo Co., Ltd.	SIGNATURE					1/2500		D-15	
		DATE								



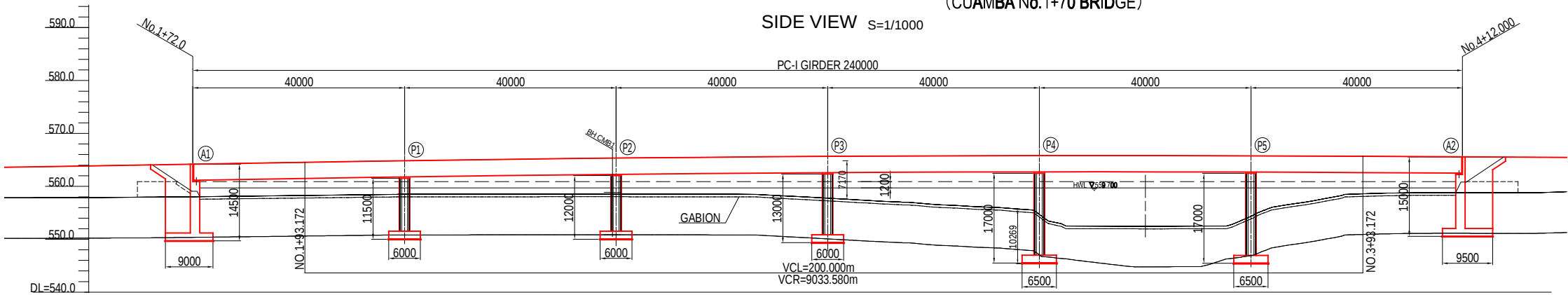
CUAMBA BYPASS ROAD
Typical Cross Section



 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project (Cuamba Bypass Road)	DRAWING TITLE: Basic Option (Initial Stage) Typical Cross Section			
	 Eight-Japan Engineering Consultants Inc.		NAME				SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		SIGNATURE				1/200		D-17	
 National Road Administration (ANE)			DATE							

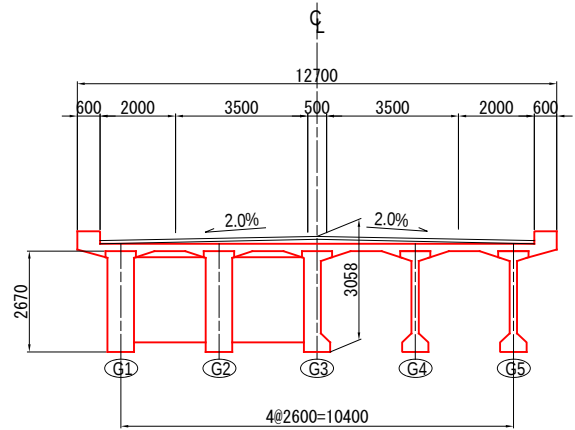
GENERAL VIEW
(CUAMBA No.1+70 BRIDGE)

SIDE VIEW S=1/1000



GRADIENT	i=1.665% L=193.172m 566.213 i=-0.549% L=480.669m																					
PROPOSED HEIGHT	563.995	564.195	564.328	564.657	564.839	564.953	565.204	565.334	565.411	565.576	565.652	565.692	565.768	565.791	565.797	565.783	565.753	565.726	565.626	565.560	565.516	
GROUND HEIGHT	557.941	558.049	558.144	558.381	558.505	558.511	558.540	558.538	558.530	558.411	557.760	557.320	556.180	224.715	552.496	552.487	554.348	556.697	558.758	558.825	558.803	
DISTANCE	20.000	12.000	8.000	20.000	12.000	8.000	20.000	12.000	8.000	20.000	21.000	8.000	20.000	12.000	8.000	20.000	12.000	8.000	20.000	12.000	8.000	
STATION	NO.1 +60.000	A1 +72.000	+80.000	NO.2 +0.000	P1 +12.000	+20.000	+40.000	P2 +52.000	+60.000	+80.000	P3 +12.000	NO.3 +0.000	+20.000	P4 +32.000	+40.000	+60.000	P5 +72.000	+80.000	NO.4 +0.000	A2 +12.000	+20.000	
CURVE ELEMENT	R= 450 CL= 151.540												R= ∞ CL= 1199.162									

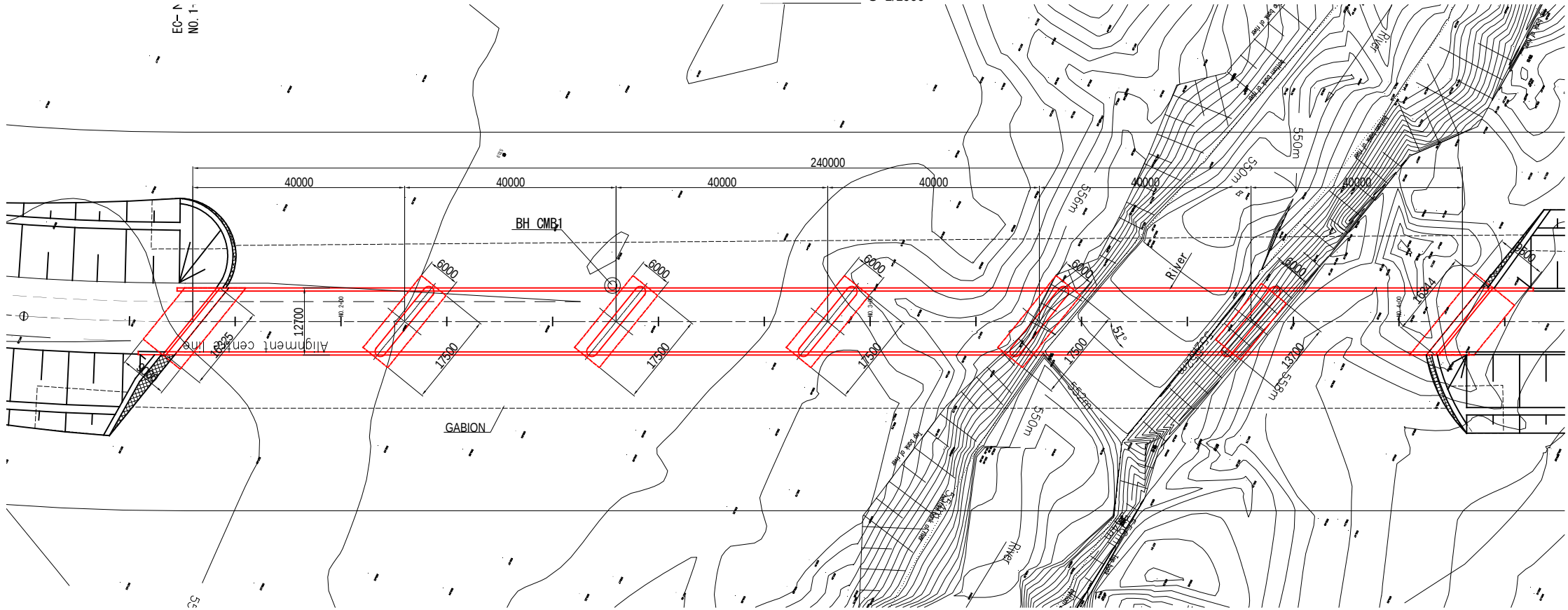
SUPERSTRUCTURE CROSS SECTION S=1/200



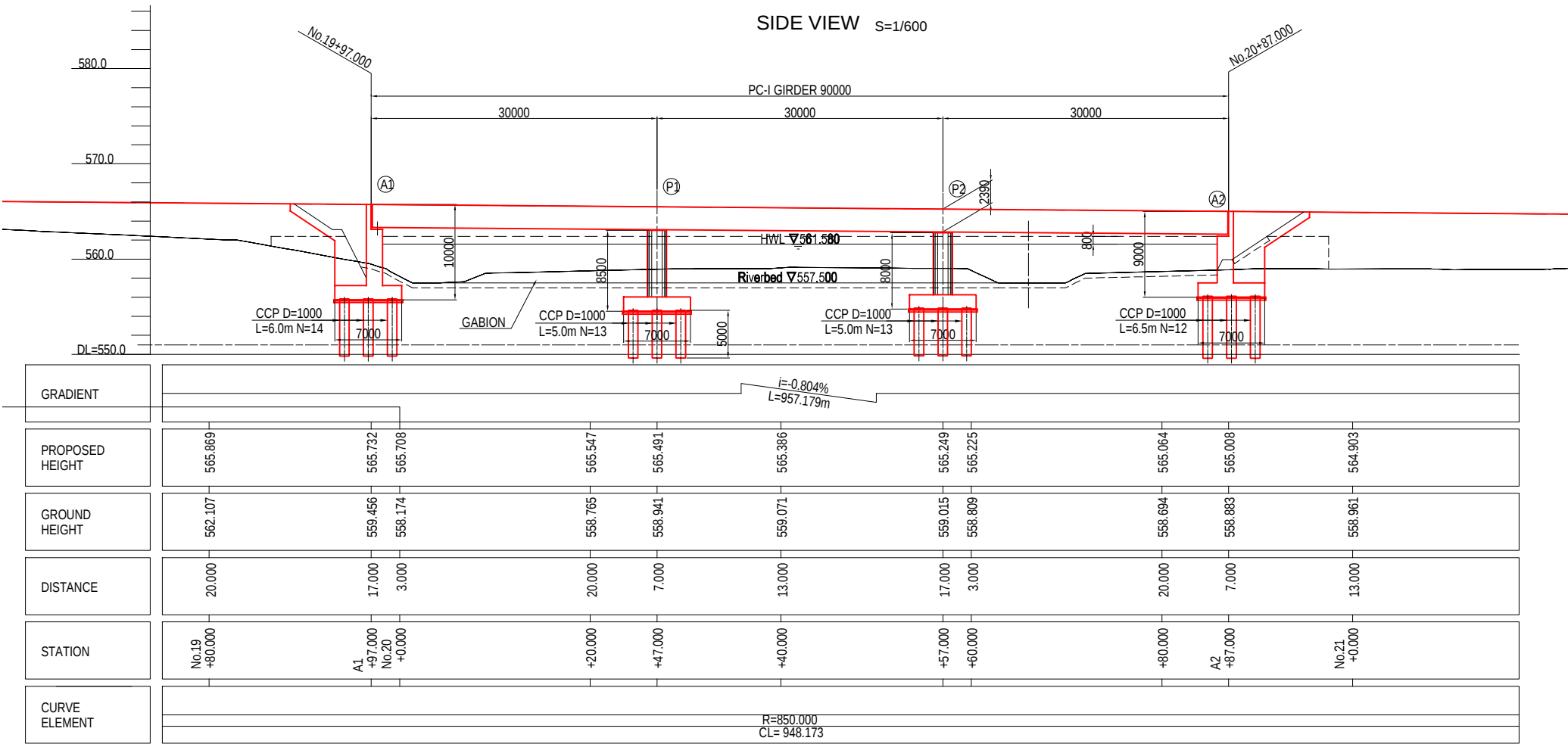
DESIGN CONDITION

TOTAL BRIDGE LENGTH	240.000m
GIRDER LENGTH	6@39.800m
SPAN	6@39.000m
WIDTH	12.700m
ANGEL OF SKEW	51°00'00"
RADIUS OF CURVATURE	R=∞
LONGITUDINAL SLOPE	1.665% -0.549%
COMPRESSIVE STRENGTH	Main Girder: ock=40N/mm2 Floor Slab : ock=30N/mm2

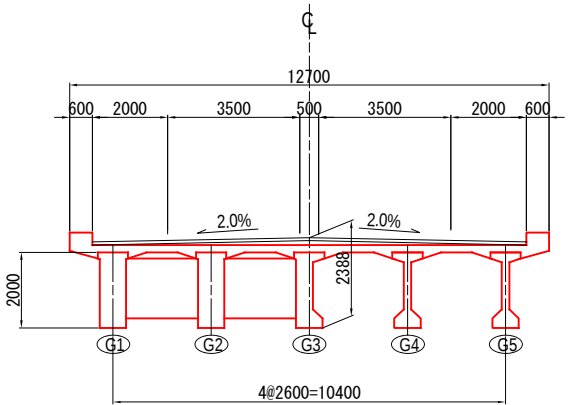
PLAN VIEW S=1/1000



GENERAL VIEW
(CUAMBA No.20+00 BRIDGE)

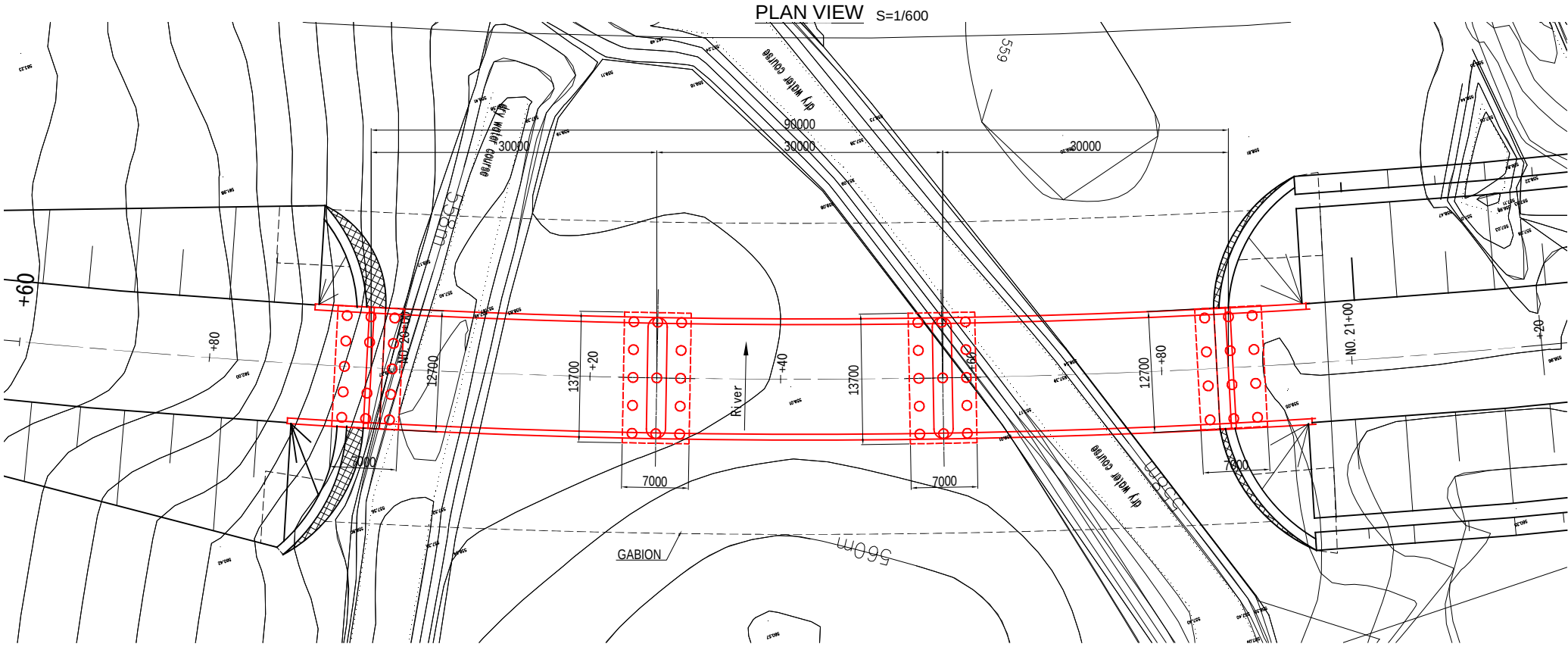


SUPERSTRUCTURE CROSS SECTION S=1/200

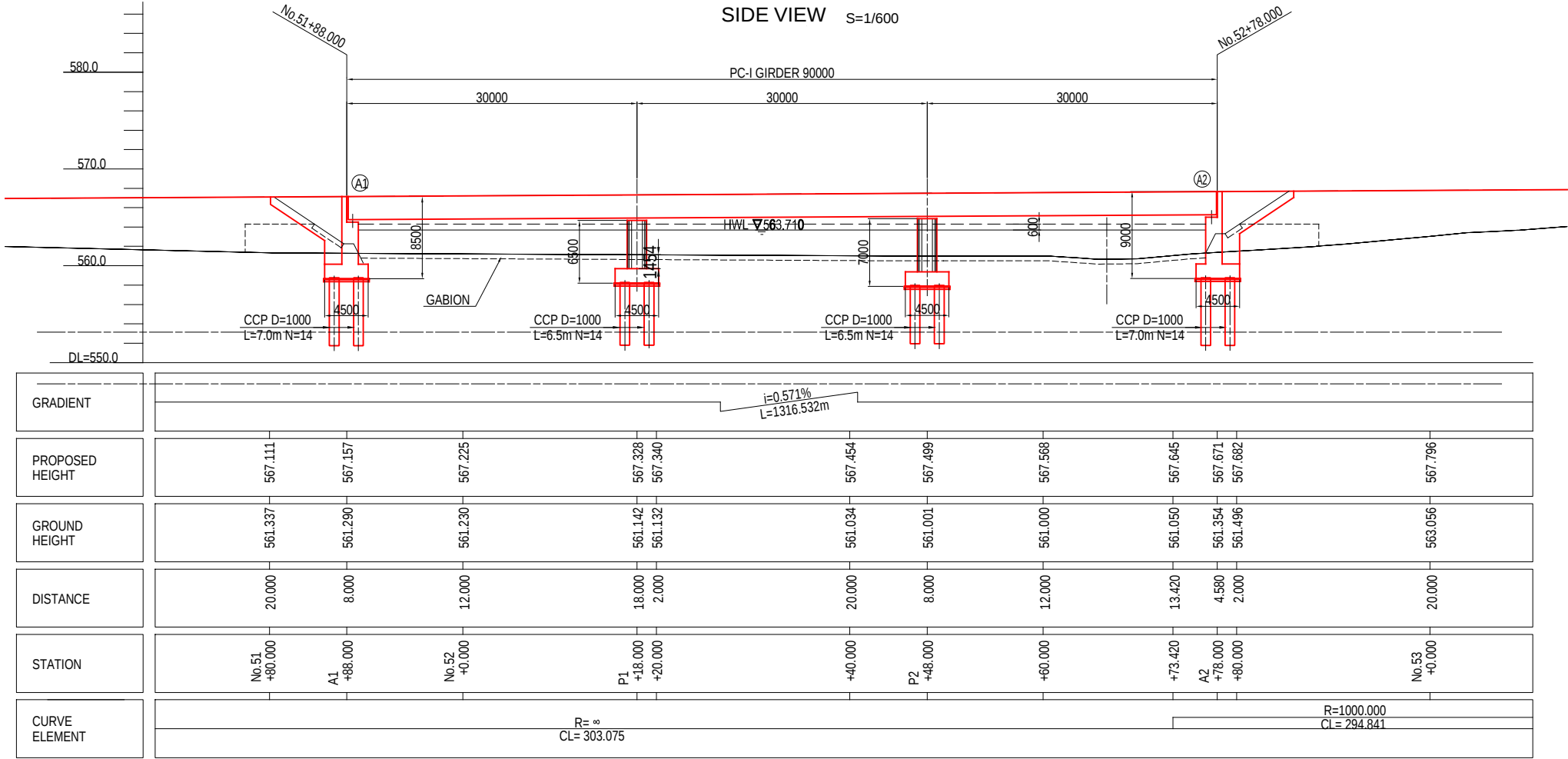


DESIGN CONDITION

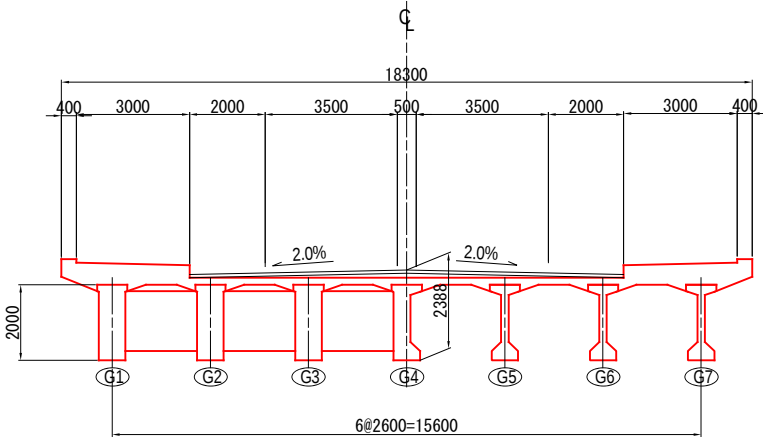
TOTAL BRIDGE LENGTH	90.000m
GIRDER LENGTH	29.850m+29.800m+29.850m
SPAN	29.050m+29.000m+29.050m
WIDTH	12.700m
ANGEL OF SKEW	90°00'00"
RADIUS OF CURVATURE	R=∞
LONGITUDINAL SLOPE	1.665% -0.549%
COMPRESSIVE STRENGTH	Main Girder:σck=40N/mm2 Floor Slab :σck=30N/mm2



GENERAL VIEW
(CUAMBA No.52+00 BRIDGE)

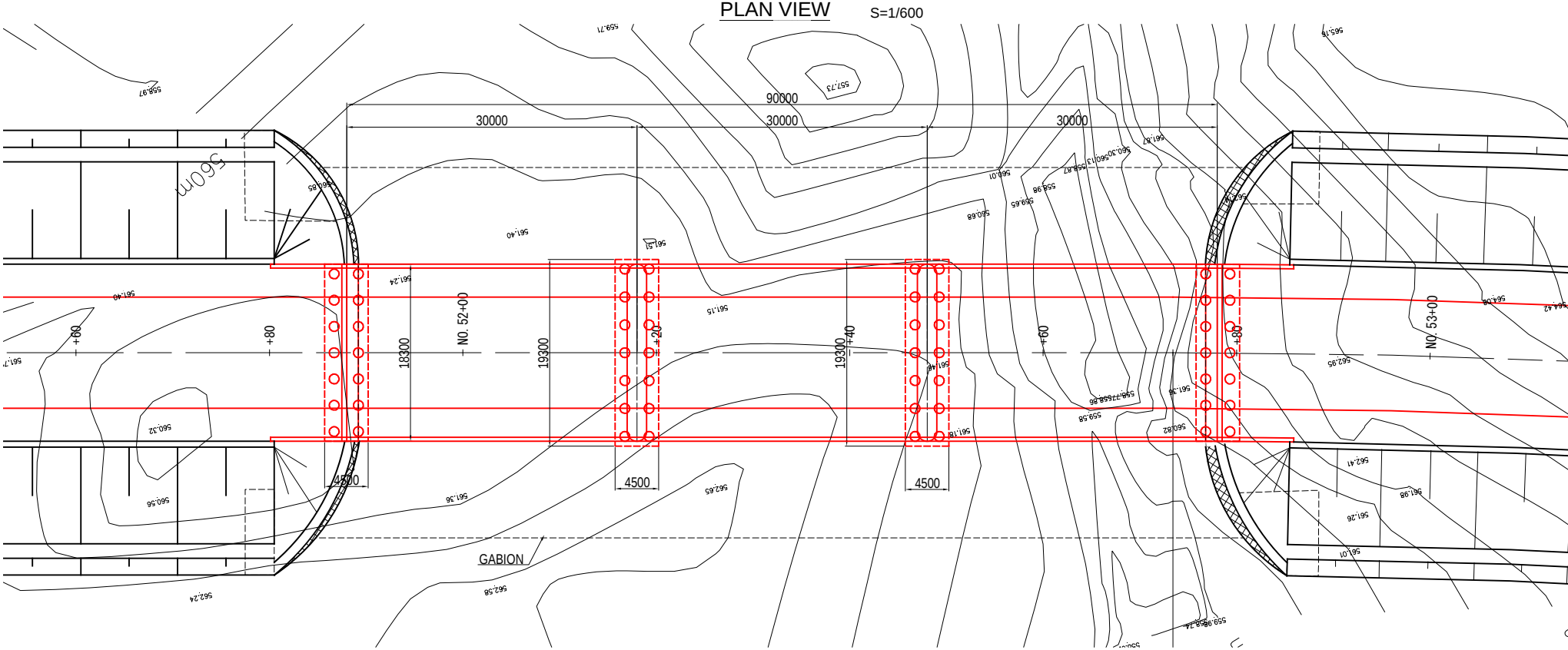


SUPERSTRUCTURE CROSS SECTION S=1/200



DESIGN CONDITION

TOTAL BRIDGE LENGTH	90.000m
GIRDER LENGTH	29.850m+29.800m+29.850m
SPAN	29.050m+29.000m+29.050m
WIDTH	12.700m
ANGEL OF SKEW	90°00'00"
RADIUS OF CURVATURE	R=∞
LONGITUDINAL SLOPE	0.571%
COMPRESSIVE STRENGTH	Main Girder:ock=40N/mm2 Floor Slab :ock=30N/mm2



Japan International Cooperation Agency



Oriental Consultants Global Co., Ltd.



Eight-Japan Engineering Consultants Inc.



Kokusai Kogyo Co., Ltd.

NAME

SIGNATURE

DATE

PREPARED BY

CHECKED BY

APPROVED BY

PROJECT TITLE:

Preparatory Survey for Nacala Corridor
Road Network Upgrading Project
(Cuamba Bypass Road)

DRAWING TITLE:

Basic Option (Initial Stage)

GENERAL VIEW (CUAMBA No.52+20 BRIDGE)

SCALE

SHEET NO.

DRAWING NO.

REV. NO.

D-20

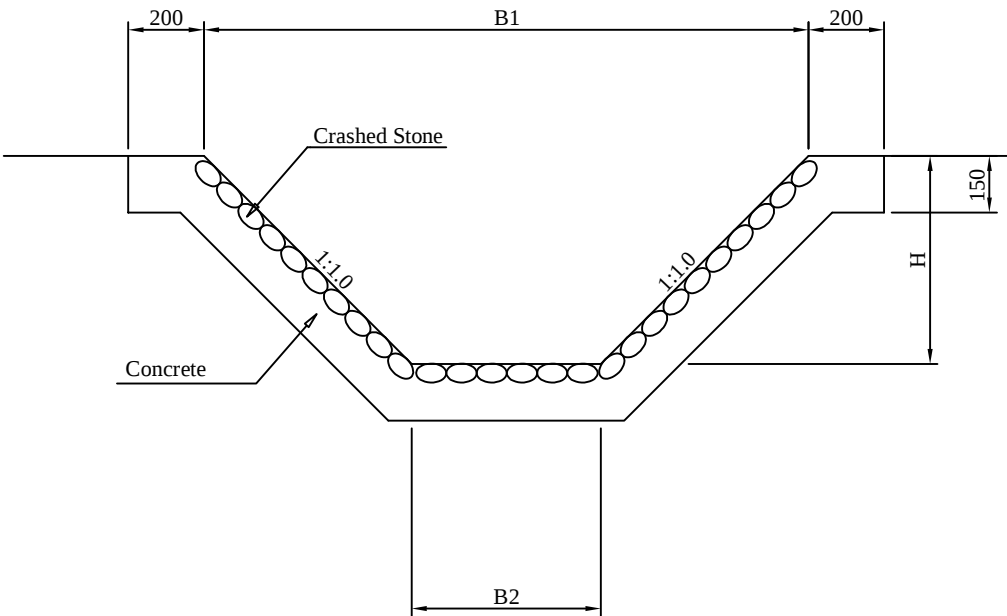


National Road Administration (ANE)

(E) ACCESSORY

DRAINAGE STRUCTURE(2) SCALE A3 1:20

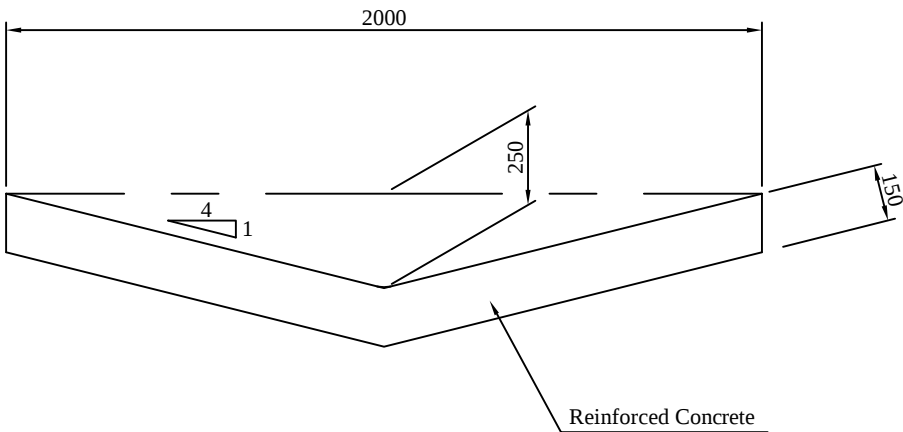
Stone Pitching Drain



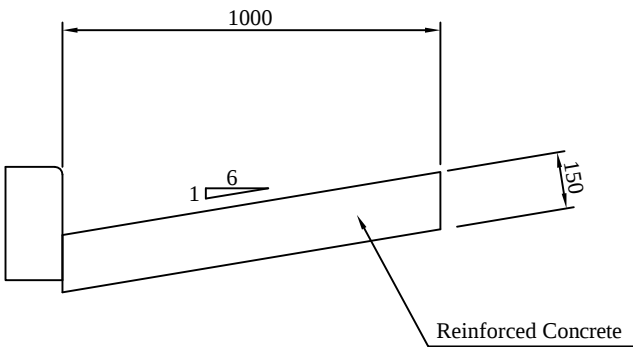
DIMENSION LIST

TYPE	STANDARD	B1	B2	H
TYPE-1	1500 x 500	1500	500	500
TYPE-2	2400 x 800	2400	800	800
TYPE-3	3000 x1000	3000	1000	1000

Type 1 Drain
V Shaped Drain

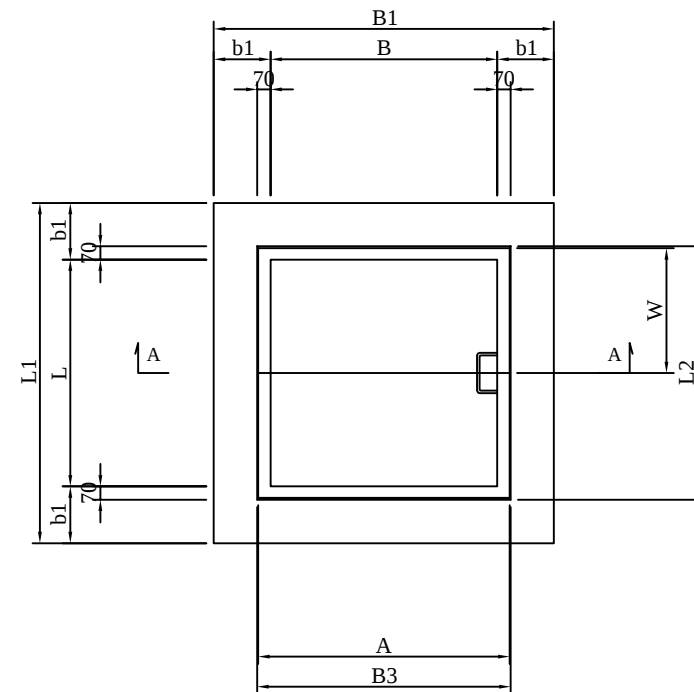


Type 2 Drain

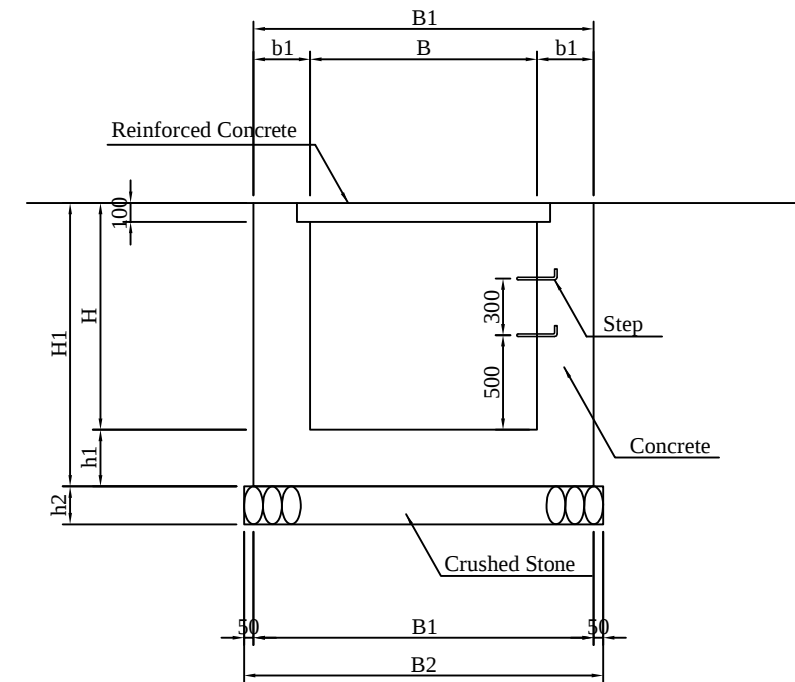


DRAINAGE STRUCTURE(3) SCALE A3 1:40

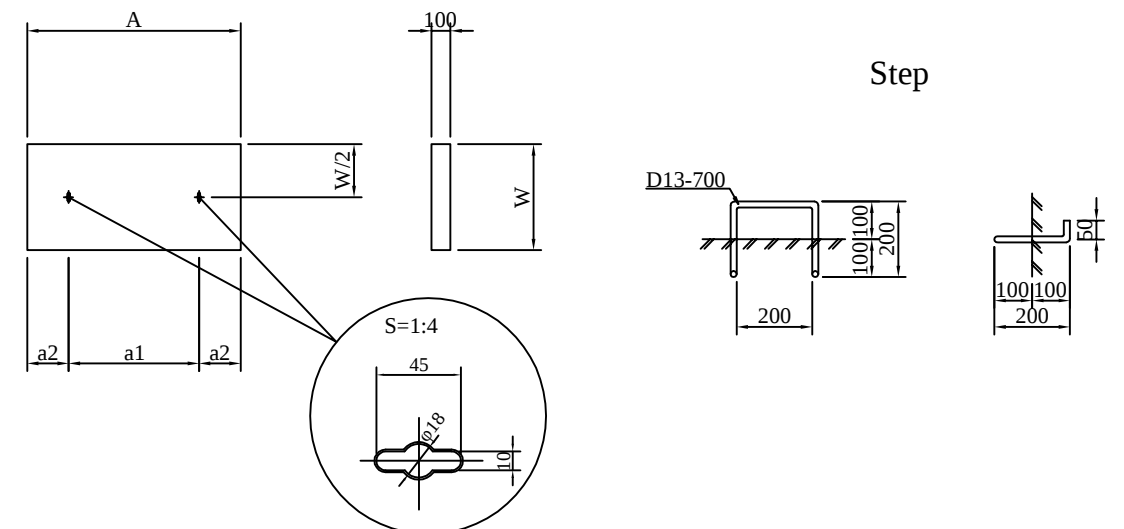
Catch Pit Type-E



A — A



Cover A x W



DIMENSION TABLE

TYPE	B	L	H	B1	b1	B2	B3	L1	L2	H1	h1	h2	A	W	a1	a2
500 x 500 x 700	500	500	700	800	150	900	640	800	640	850	150	150	630	310	410	1100
600 x 600 x 800	600	600	800	900	150	1000	740	900	740	950	150	150	730	360	510	1100
700 x 700 x 900	700	700	900	1000	150	1100	840	1000	840	1050	150	150	830	410	390	2200
800 x 800 x 1000	800	800	1000	1100	150	1200	940	1100	940	1150	150	150	930	460	490	2200
900 x 900 x 1300	900	900	1300	1300	200	1400	1040	1300	1040	1500	200	200	1030	510	590	2200

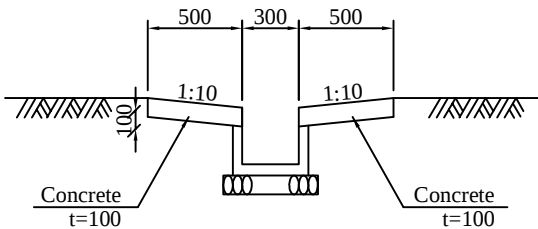
DRAINAGE STRUCTURE (4)

Vertical Drain Inlet SCALE A3 1:25

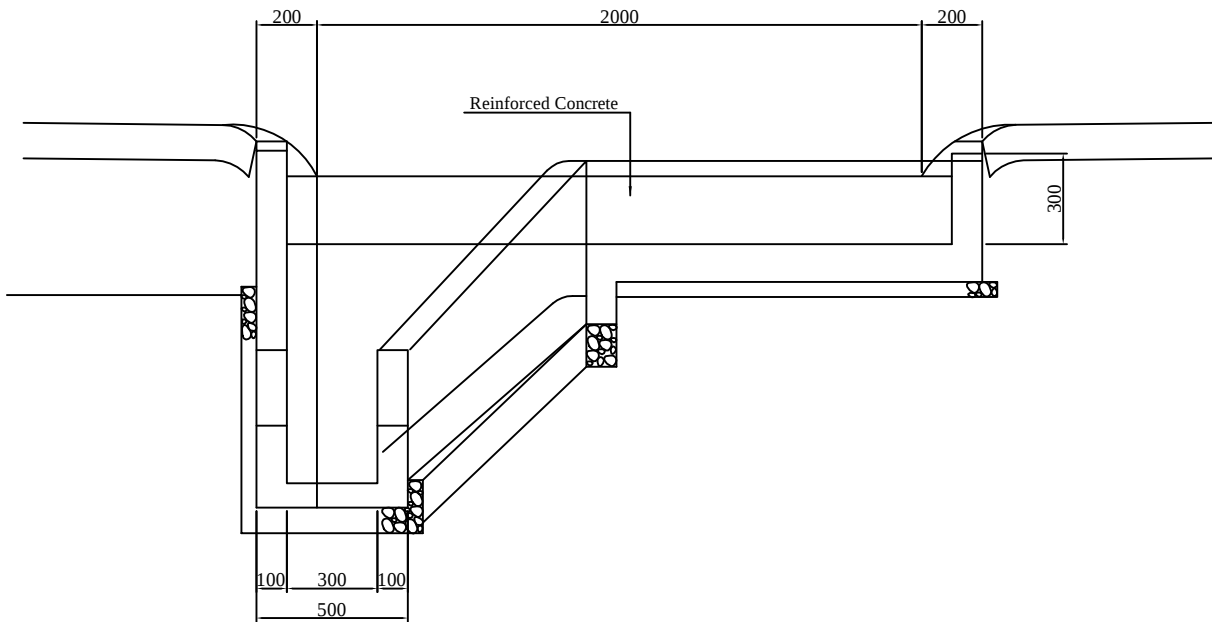
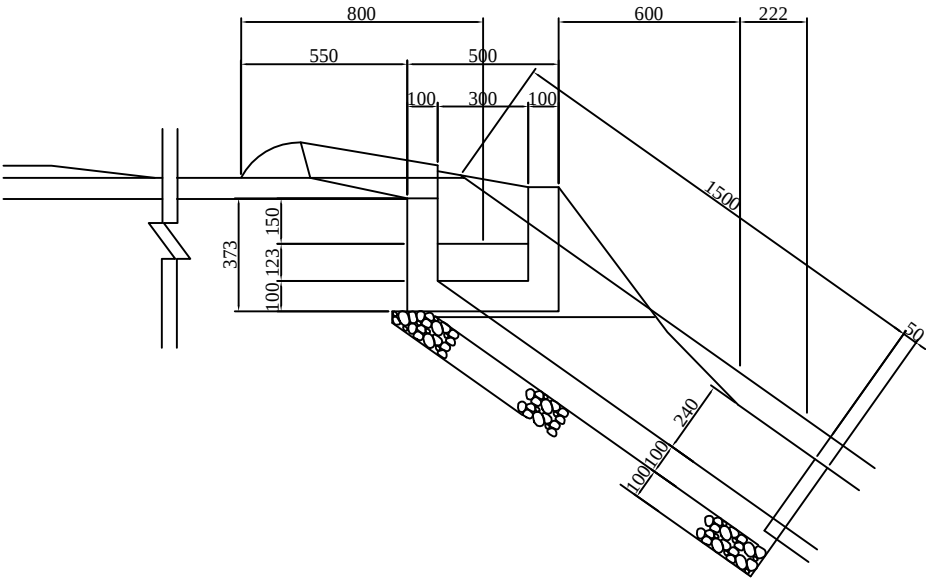
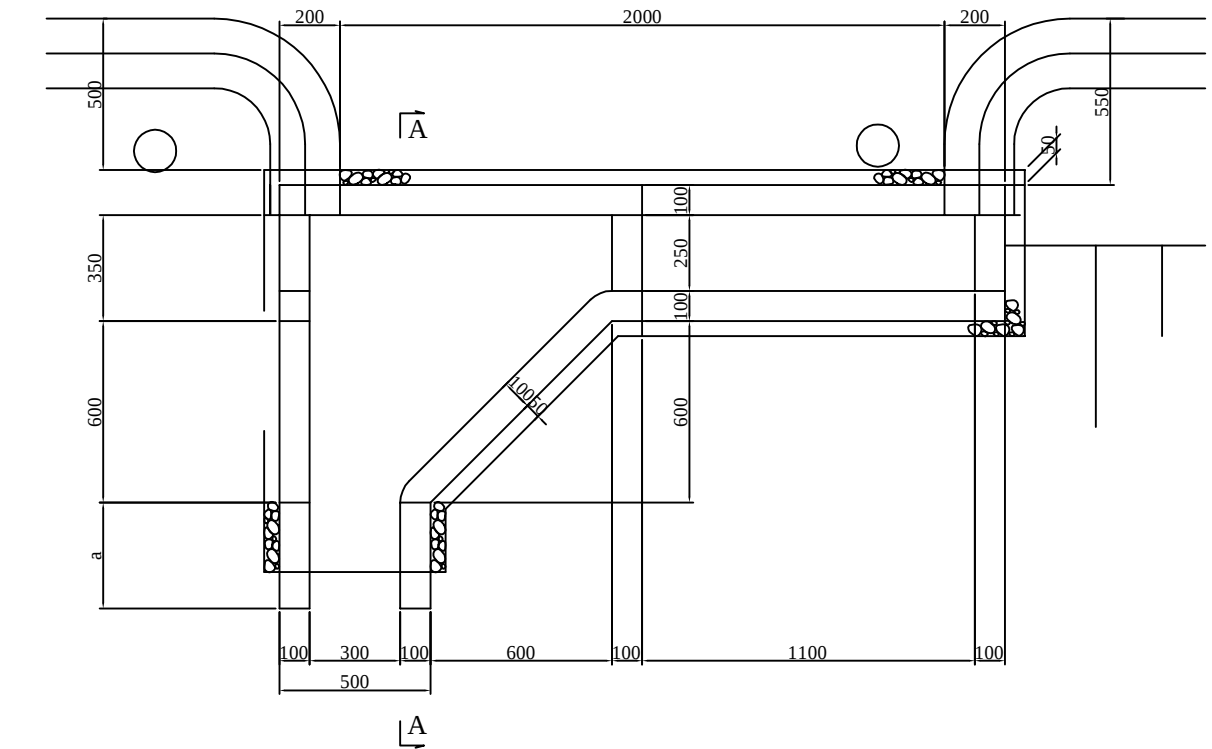
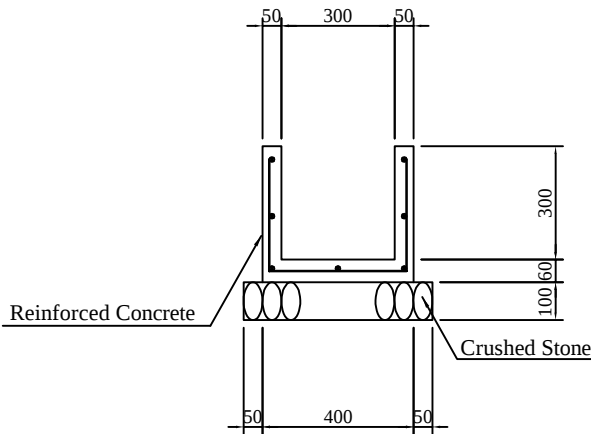
A - A

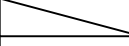
Vertical Drain

SCALE A3 1:40



SCALE A3 1:20



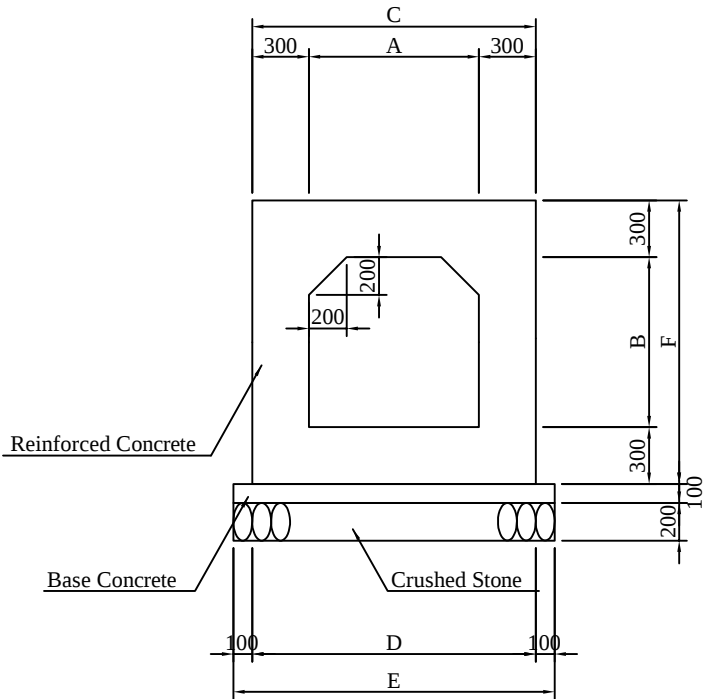
 Japan International Cooperation Agency	Oriental Consultants Global Co., Ltd. Eight-Japan Engineering Consultants Inc. Kokusai Kogyo Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project	DRAWING TITLE: DRAINAGE STRUCTURE (4)			
		NAME					SCALE	SHEET NO.	DRAWING NO.	REV. NO.
		SIGNATURE							E-4	
 National Road Administration (ANE)		DATE								

DRAINAGE STRUCTURE (5)

SCALE A3 1:40

Box Culvert

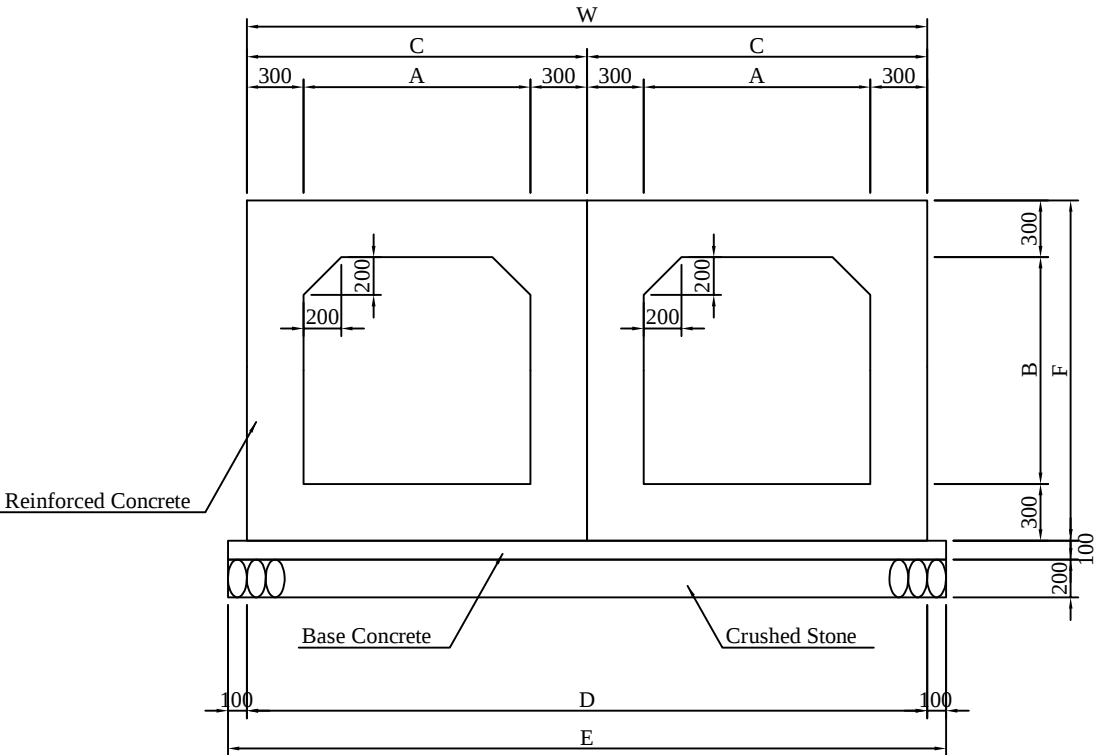
1 Cell Type



DIMENSION TABLE, 1 Cell Type

TYPE	A	B	C	D	E	F
900 x 900	900	900	1500	1500	1700	1500
1200 x 1200	1200	1200	1800	1800	2000	1800
1500 x 1500	1500	1500	2100	2100	2300	2100

2 Cell Type

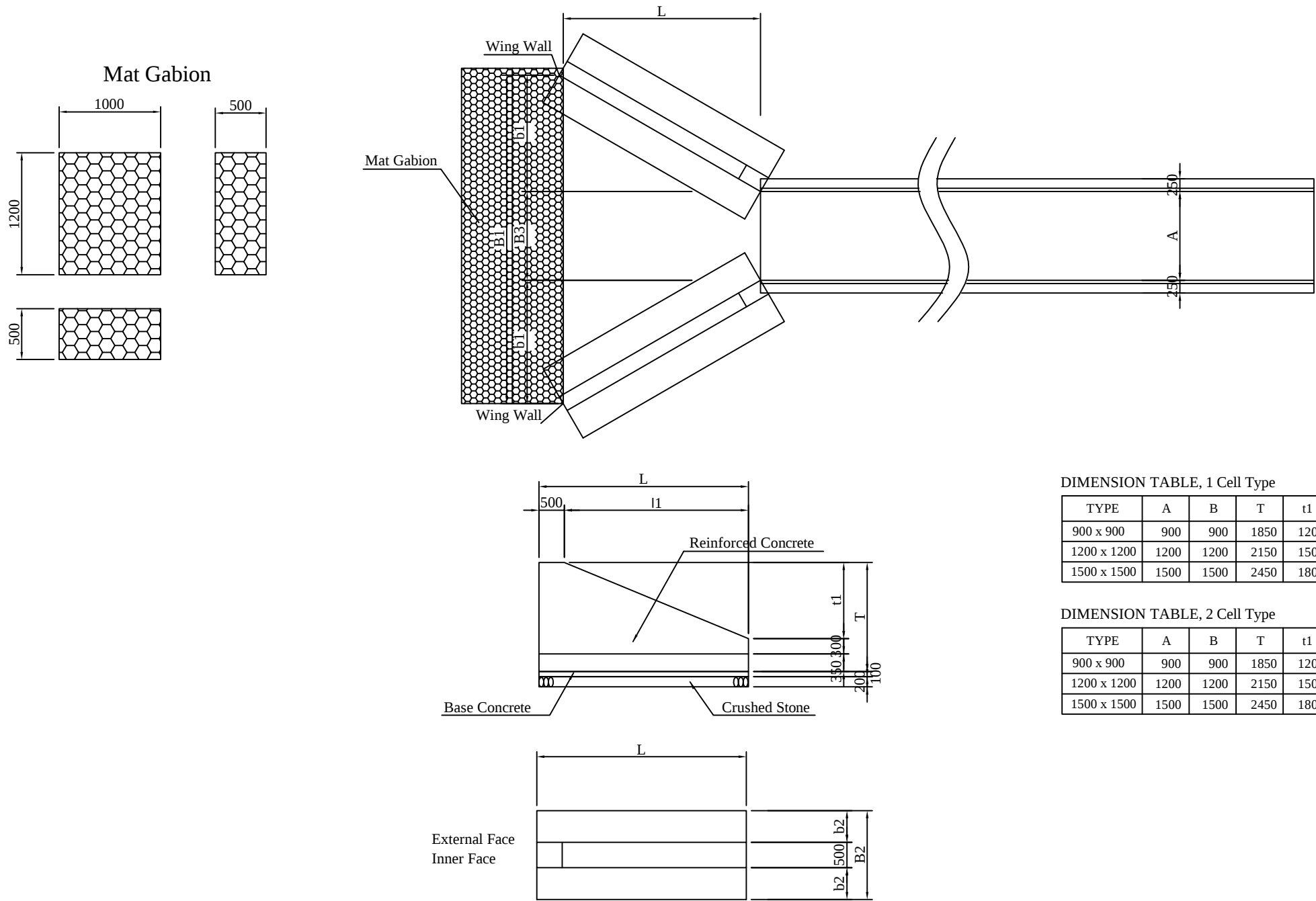


DIMENSION TABLE, 2 Cell Type

TYPE	A	B	C	W	D	E	F
900 x 900	900	900	1500	3000	3000	3200	1500
1200 x 1200	1200	1200	1800	3600	3600	3800	1800
1500 x 1500	1500	1500	2100	4200	4200	4400	2100

DRAINAGE STRUCTURE (6) SCALE A3 1:100

Box Culvert Inlet / Outlet



DIMENSION TABLE, 1 Cell Type

TYPE	A	B	T	t1	L	l1	B1	B2	B3	b1	b2
900 x 900	900	900	1850	1200	3500	3000	4400	1500	900	1750	500
1200 x 1200	1200	1200	2150	1500	4250	3750	5450	1900	1200	2125	700
1500 x 1500	1500	1500	2450	1800	5000	4500	6500	2000	1500	2500	750

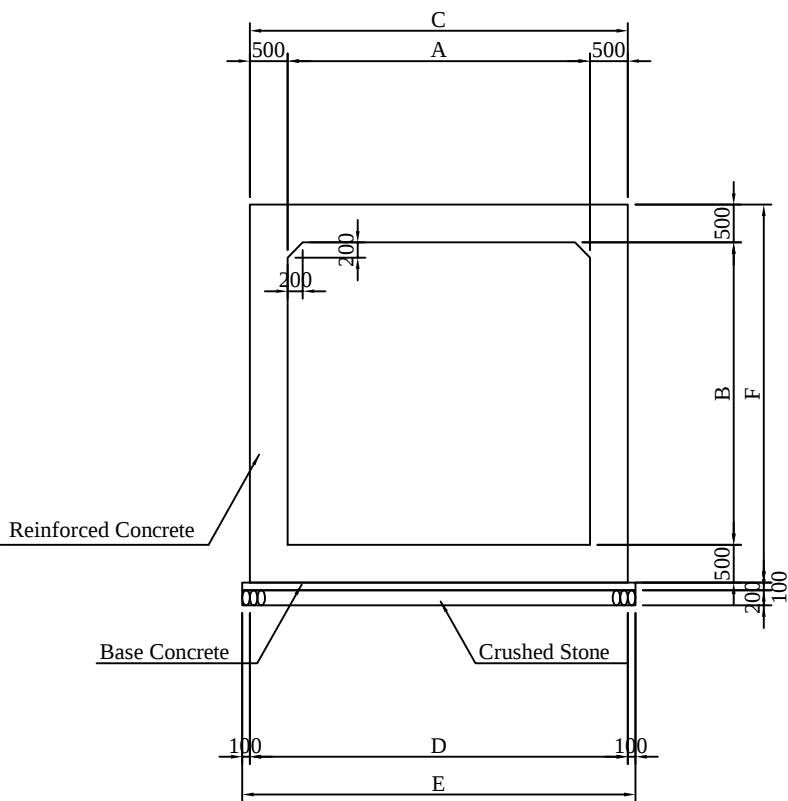
DIMENSION TABLE, 2 Cell Type

TYPE	A	B	T	t1	L	l1	B1	B2	B3	b1	b2
900 x 900	900	900	1850	1200	3500	3000	5900	1500	2400	1750	500
1200 x 1200	1200	1200	2150	1500	4250	3750	7250	1900	3000	2125	700
1500 x 1500	1500	1500	2450	1800	5000	4500	8600	2000	3300	2500	750

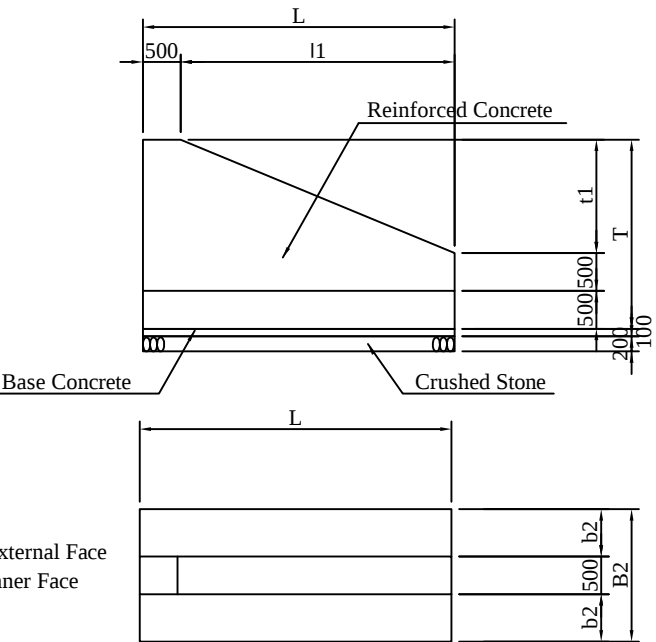
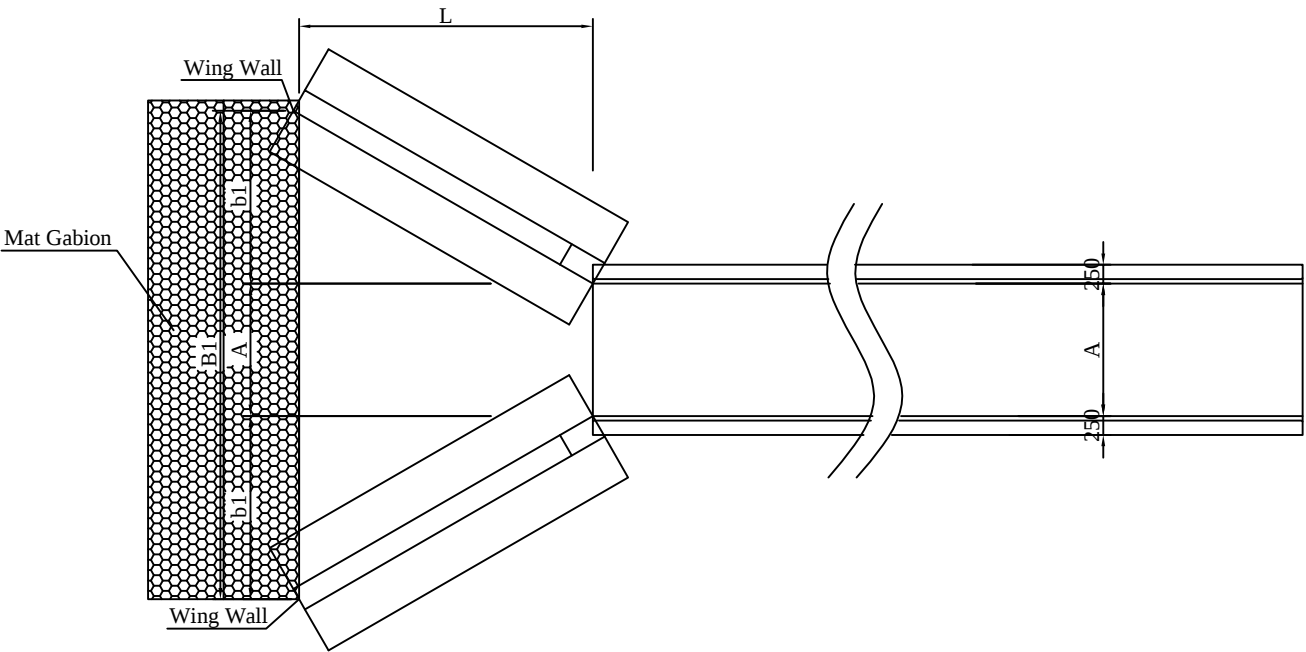
DRAINAGE STRUCTURE (7) SCALE A3 1:100

Box Culvert Inlet / Outlet

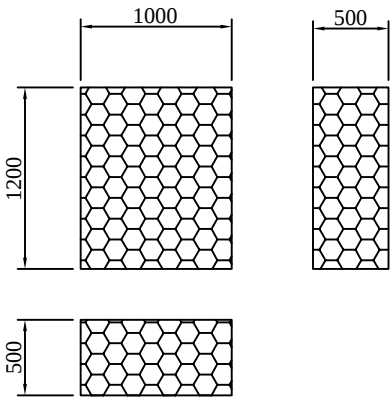
Box Culvert



TYPE	A	B	C	D	E	F
2000 x 2000	2000	2000	3000	3000	3200	3000
2500 x 2500	2500	2500	3500	3500	3700	3500
3000 x 3000	3000	3000	4000	4000	4200	4000
3500 x 3500	3500	3500	4500	4500	4700	4500
4500 x 4500	4500	4500	5500	5500	5700	5500
6000 x 4500	6000	4500	7000	7000	7200	7000

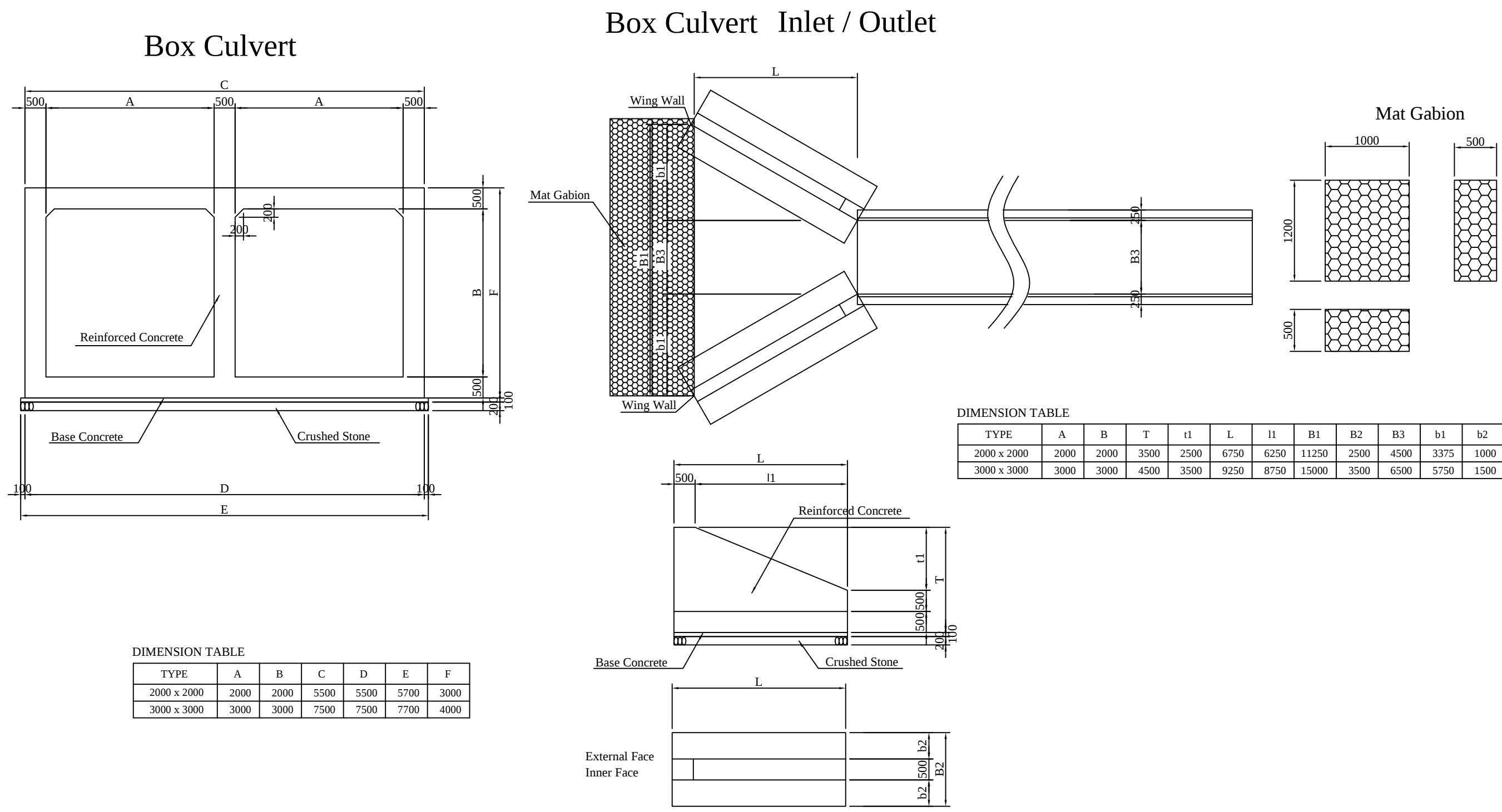


Mat Gabion



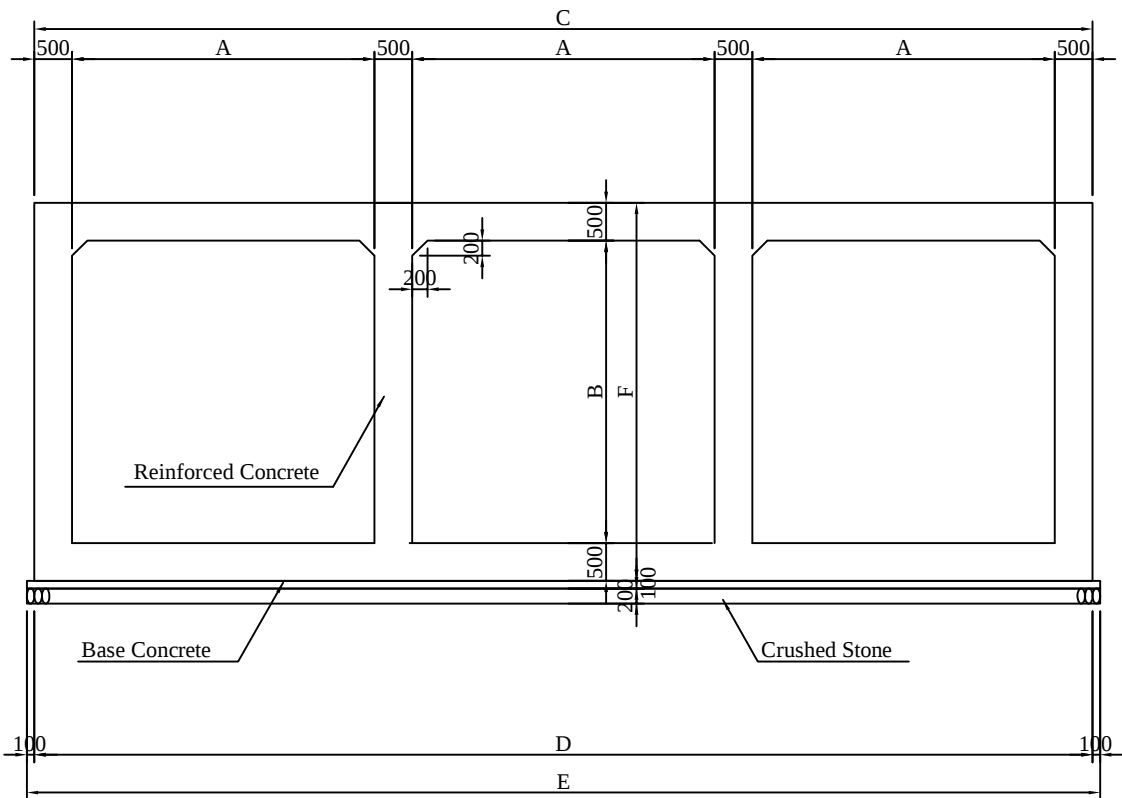
TYPE	A	B	T	t1	L	l1	B1	B2	b1	b2
2000 x 2000	2000	2000	3500	2500	6750	6250	8750	2500	3375	1000
2500 x 2500	2500	2500	4000	3000	8000	7500	10500	3000	4000	1250
3000 x 3000	3000	3000	4500	3500	9250	8750	12250	3500	4625	1500
3500 x 3500	3500	3500	5000	4000	10500	10000	14000	4000	5250	1750
4500 x 4500	4500	4500	6000	5000	13000	12500	15000	5000	5250	2250
6000 x 4500	6000	4500	7500	6500	16750	16250	15000	6500	4500	3000

DRAINAGE STRUCTURE (8) SCALE A3 1:100



DRAINAGE STRUCTURE (9) SCALE A3 1:100

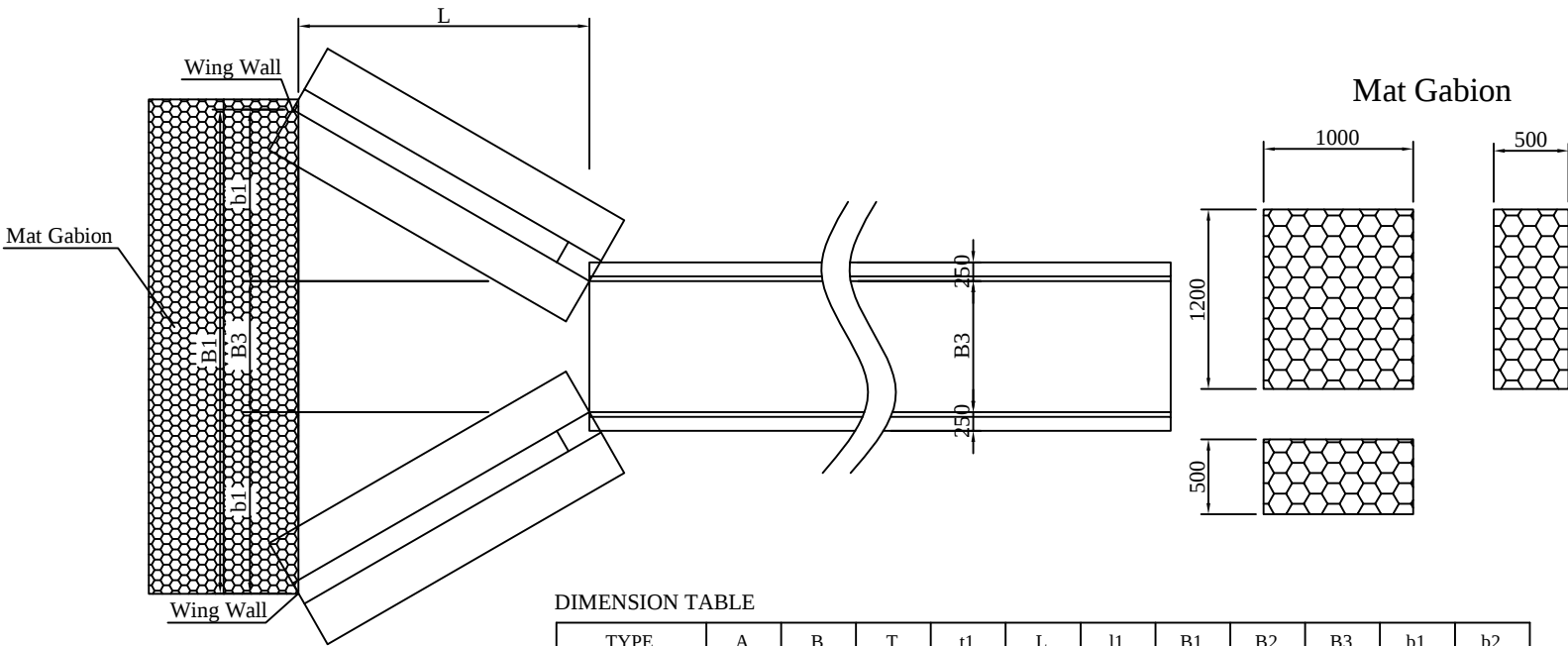
Box Culvert



DIMENSION TABLE

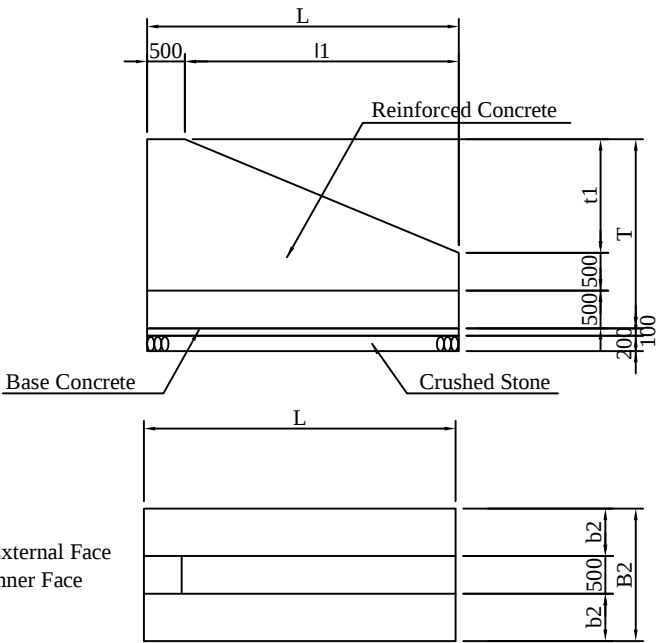
TYPE	A	B	C	D	E	F
2000 x 2000	2000	2000	8000	8000	8200	3000
3000 x 3000	3000	3000	11000	11000	11200	4000

Box Culvert Inlet / Outlet



DIMENSION TABLE

TYPE	A	B	T	t1	L	l1	B1	B2	B3	b1	b2
2000 x 2000	2000	2000	3500	2500	6750	6250	13750	2500	7000	3375	1000
3000 x 3000	3000	3000	4500	3500	9250	8750	15000	3500	10000	5750	1500



Japan International Cooperation Agency

Oriental Consultants Global Co., Ltd.

Eight-Japan Engineering Consultants Inc.



National Road Administration (ANE)

Kokusai Kogyo Co., Ltd.

NAME

SIGNATURE

DATE

PREPARED BY

CHECKED BY

APPROVED BY

PROJECT TITLE:

Preparatory Survey for Nacala Corridor
Road Network Upgrading Project

DRAWING TITLE:

DRAINAGE STRUCTURE (9)

SCALE

SHEET NO.

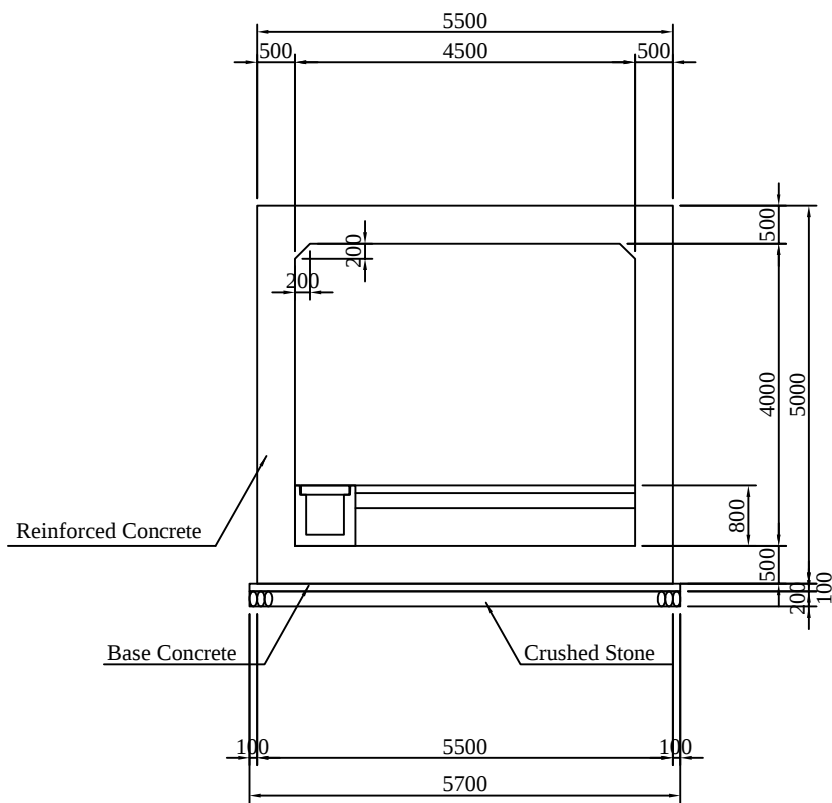
DRAWING NO.

REV. NO.

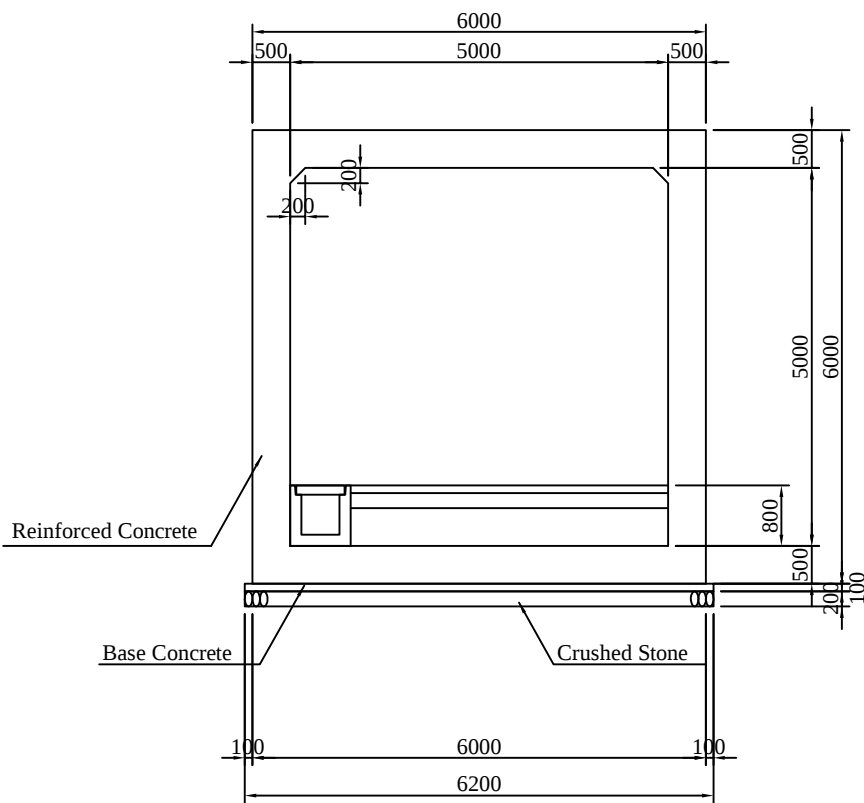
E-9

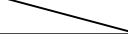
BOX CULVERT SCALE A3 1:100

Type - 1



Type - 2



 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project	DRAWING TITLE: BOX CULVERT			
	 Eight-Japan Engineering Consultants Inc.		NAME				SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		SIGNATURE						E-10	
 National Road Administration (ANE)			DATE							

Guardrail Placing Details

Front Elevation

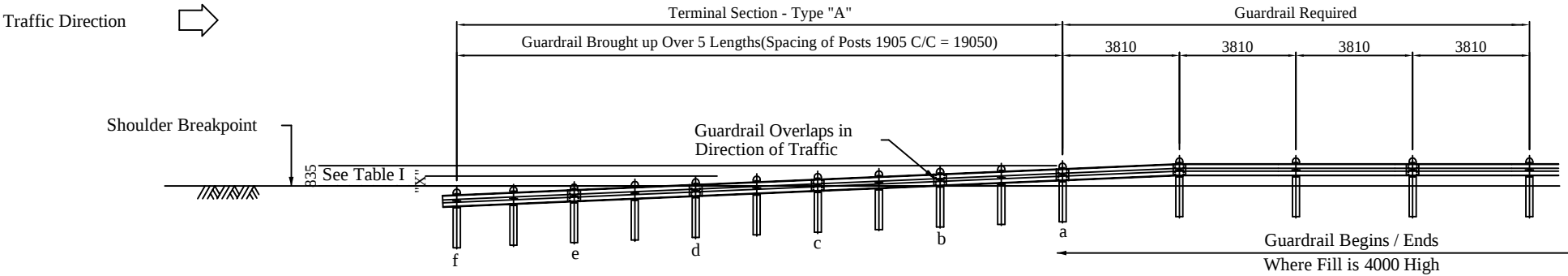
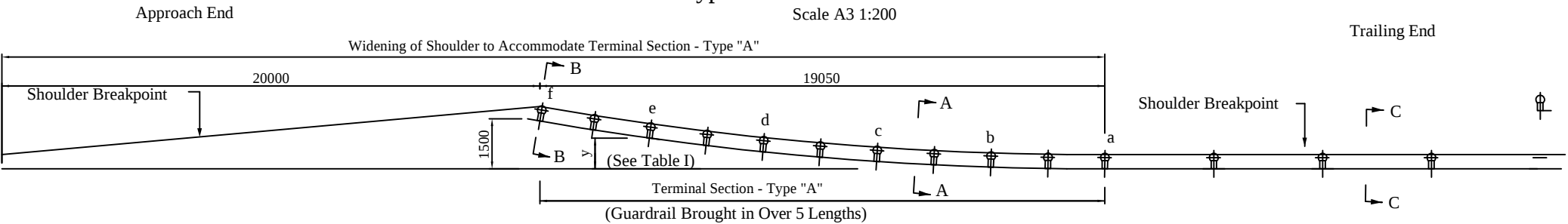


Table I		
Placing of Poles at Parabolic Terminal Sections		
	Horizontal Off - Sets for Parabolic Terminal Sections Y (mm)	Vertical Off-Sets for Parabolic Terminal Section (Measured from Top of Post) X (mm)
a	0	0
b	60	33
c	240	133
d	540	299
e	960	531
f	1500	835

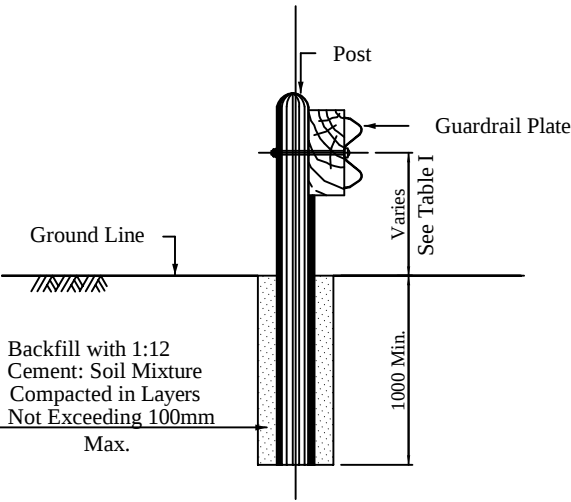
Plan
Typical Details of Terminal Sections

Scale A3 1:200

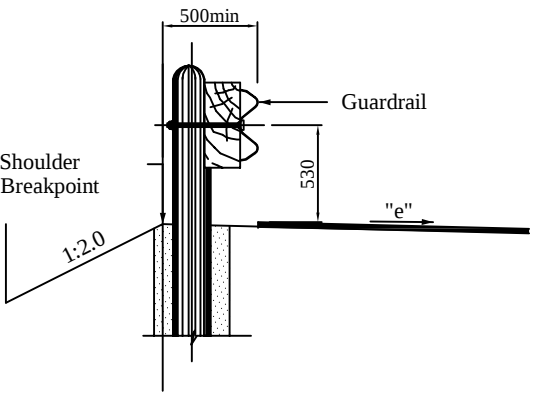


Without Concrete Side Drain

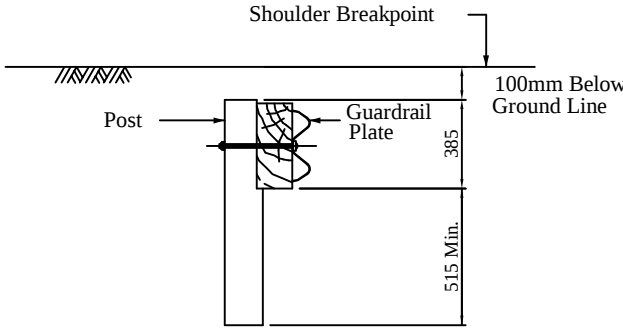
Section A-A
Scale A3 1:40



Section C-C
Scale A3 1:40

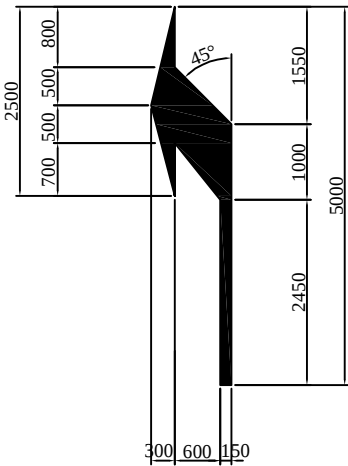


Section B-B
Scale A3 1:40

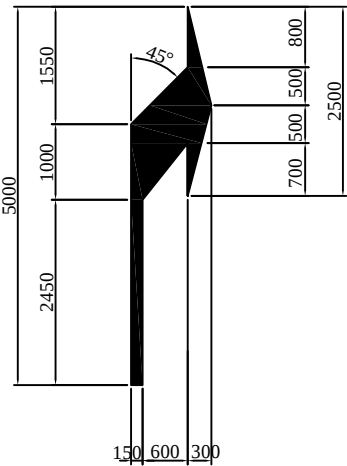


 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project	DRAWING TITLE: Guardrail Placing Details			
	 Eight-Japan Engineering Consultants Inc.		NAME				SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		SIGNATURE						E-12	
 National Road Administration (ANE)		DATE								

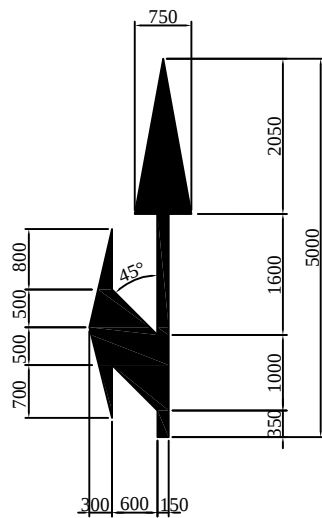
Traffic Marking



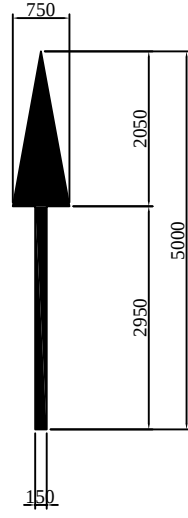
Left-Turn Scale A3 1:100



Right-Turn Scale A3 1:100

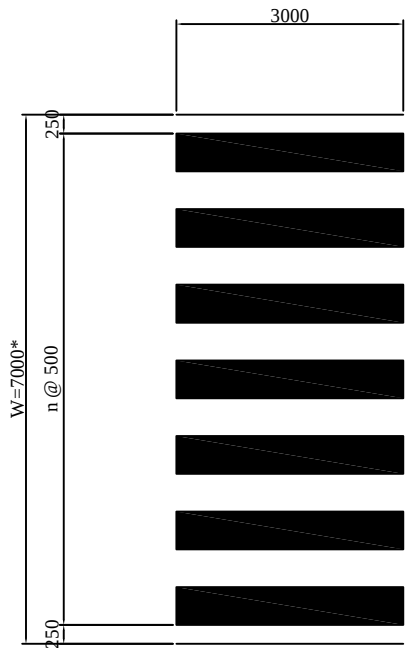


Straight-Left-Turn Scale A3 1:100



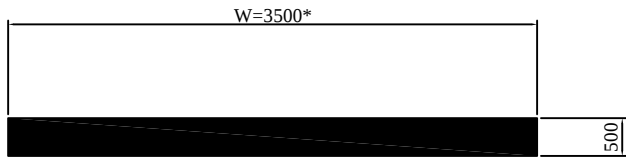
Straight Scale A3 1:100

Arrows Mark



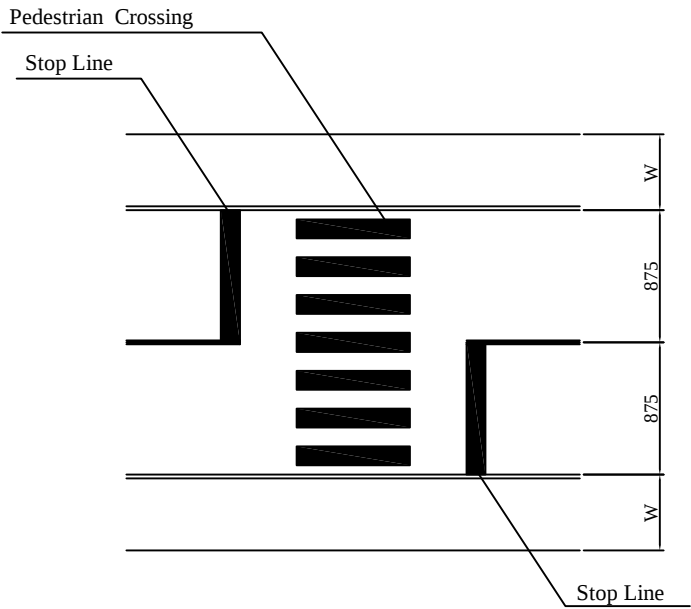
Notes:
1. Widths of the pedestrian Crossing in Malema and Cuamba are shown in Drawing of the Traffic Marking (2),(3)

Pedestrian Crossing Scale A3 1:100

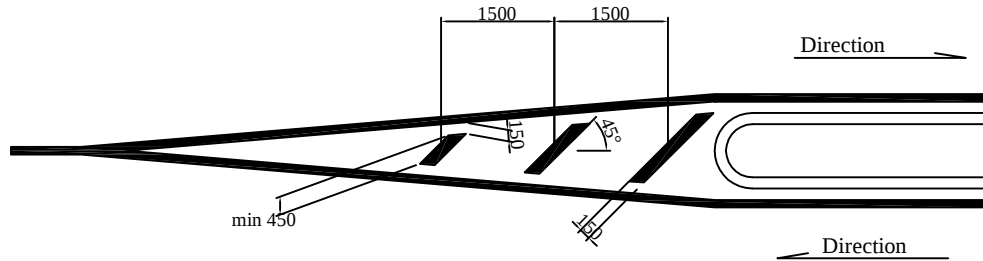


Notes:
Widths of the Stop Line in Intersection are shown in Drawing of the Traffic Marking (3)

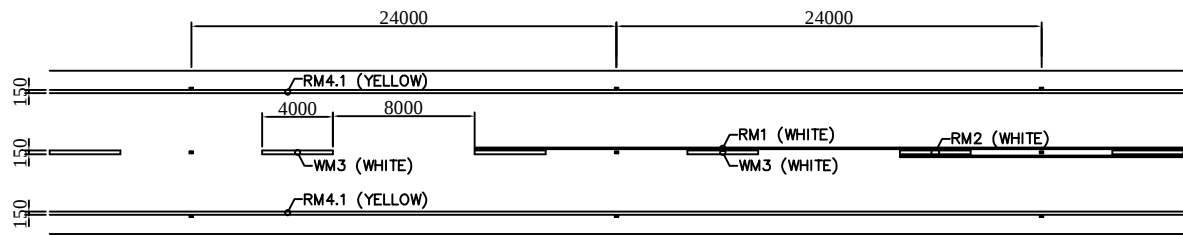
Stop Line Scale A3 1:100



Arrangement Plan of Pedestrian Crossing Scale A3 1:500

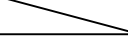


Zebra - White Scale A3 1:100

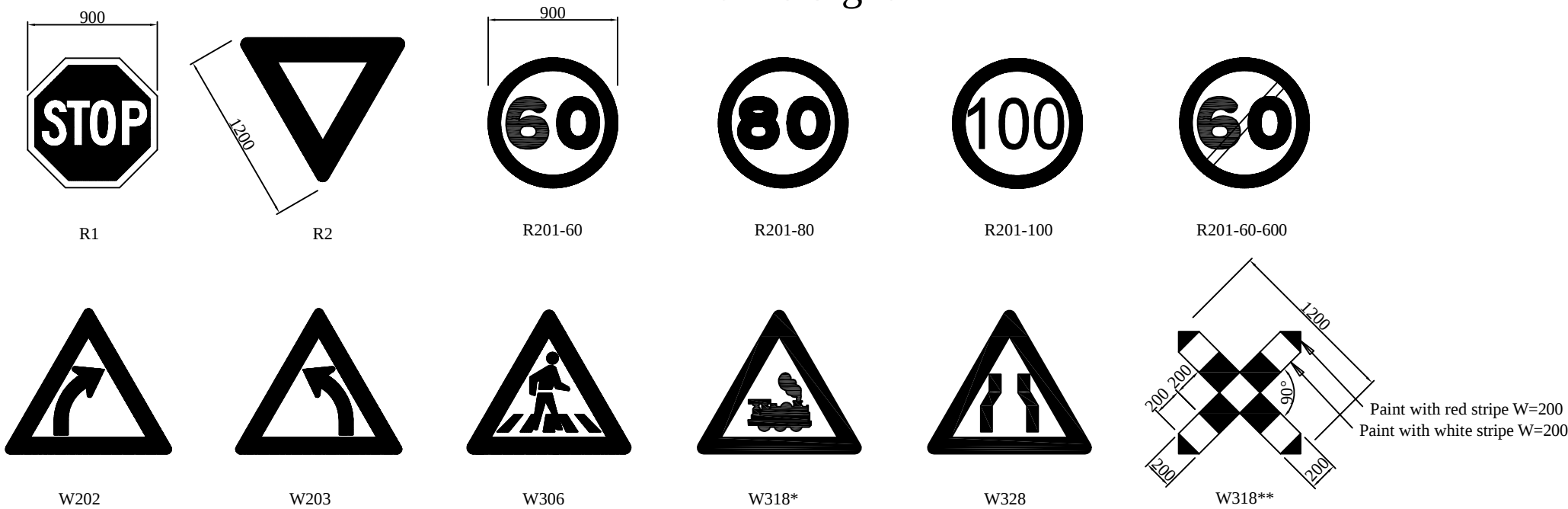


NOTE:
50mm PREFERRED SEPERATION BETWEEN ROAD MARKINGS AND ROAD STUDS.

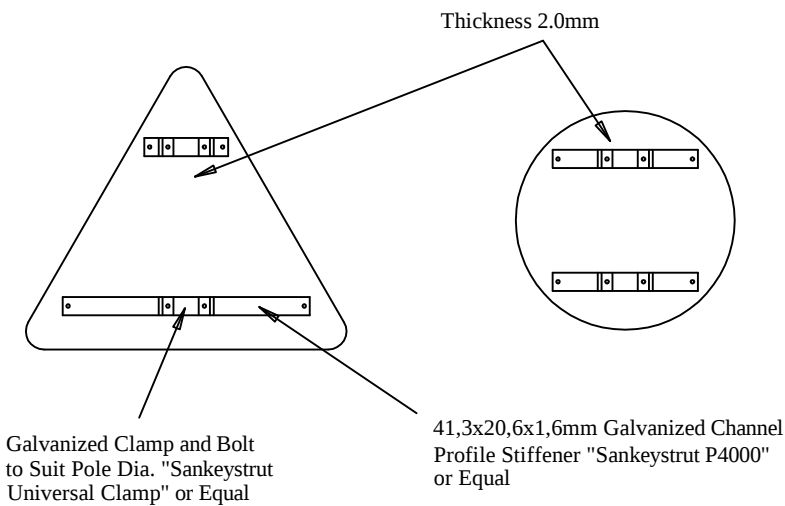
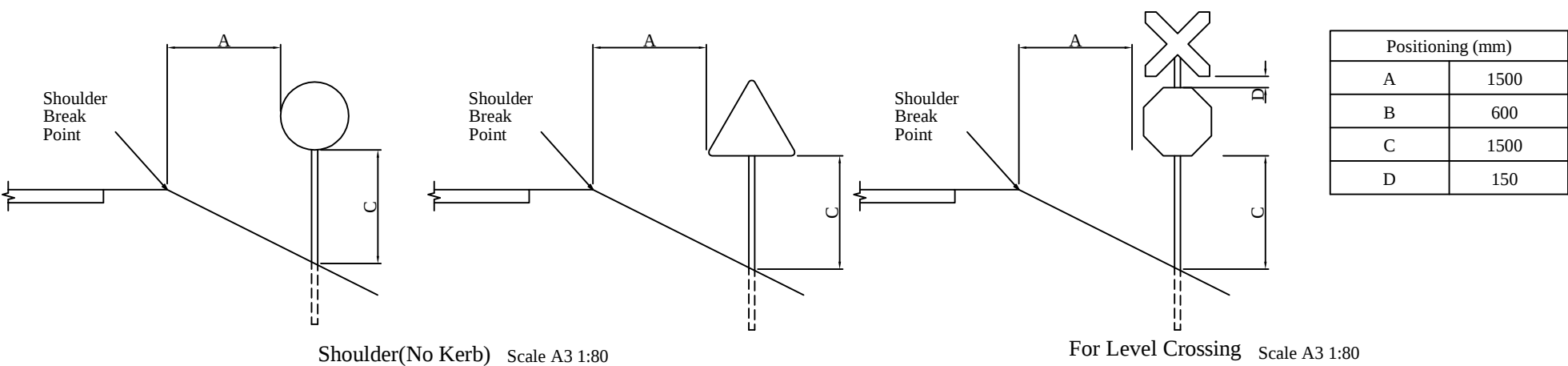
TYPICAL ROADSTUD USE ON TWO-WAY ROADS
NOT TO SCALE

 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project	DRAWING TITLE: Traffic Marking			
	 Eight-Japan Engineering Consultants Inc.		NAME				SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		SIGNATURE						E-13	
 National Road Administration (ANE)			DATE							

Traffic Signs

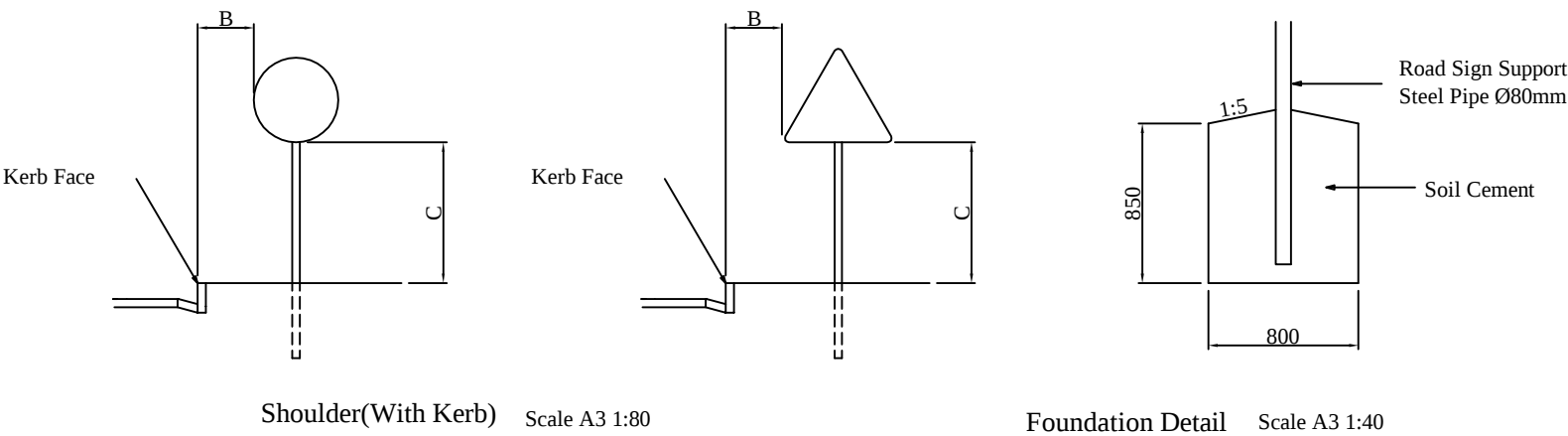


Regulatory And Warning Signs Scale A3 1:40

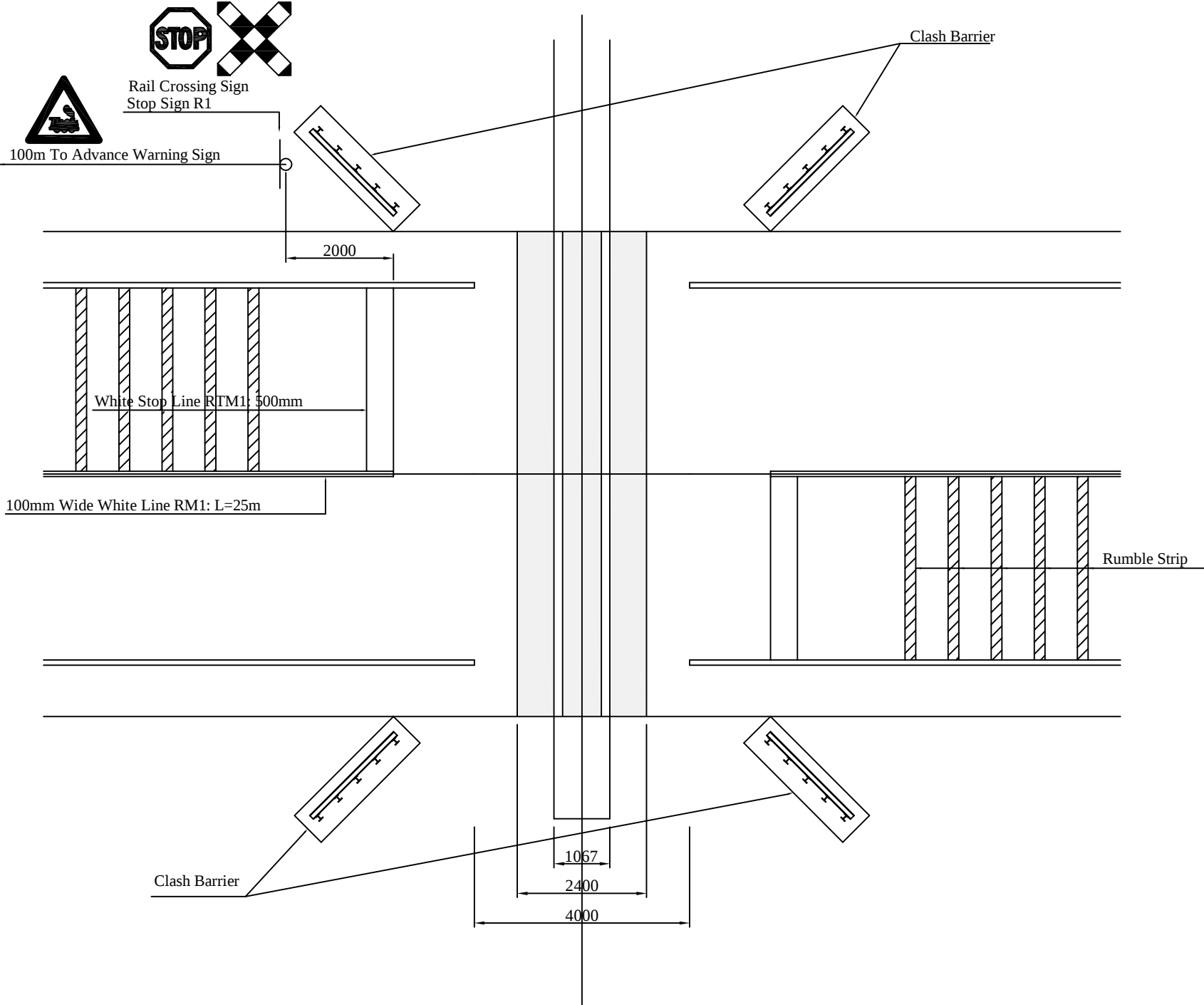


- Notes:
- 1. Details on This Drawing are Applicable to Road Signs Smaller than 1.5m Requiring a Single Support.
 - 2. All Steel Bolts and Nuts Shall Conform to Sabs 135 or Sabs 1143 and all Components Shall Have a Hot-Dip (Galvanized) Zink Coating as Specified in Sabs 763 for C1 Articles.
 - 3. W318* and W318** are not standardized in SATCC Standard.

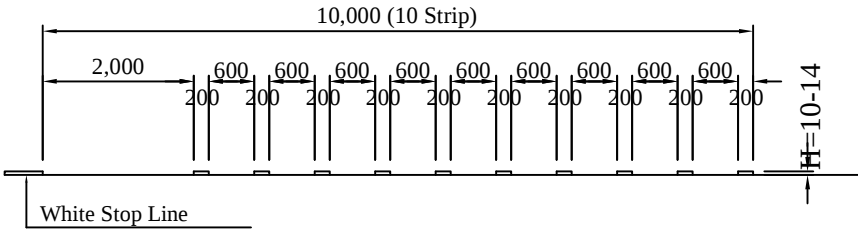
Typical Fixing Detail



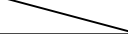
Level Crossing Details



General Layout of Level Crossing



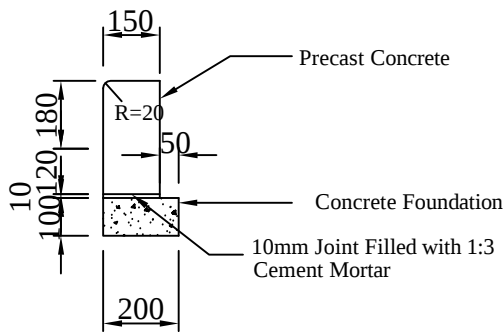
General Layout of Rumble Strip

 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project	DRAWING TITLE: Level Crossing Details			
	 Eight-Japan Engineering Consultants Inc.		NAME				SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		SIGNATURE						E-15	
 National Road Administration (ANE)			DATE							

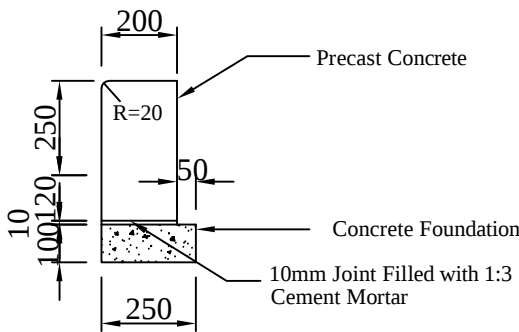
Ancillary Work (1)

Concrete Kerb Scale A3 1:20

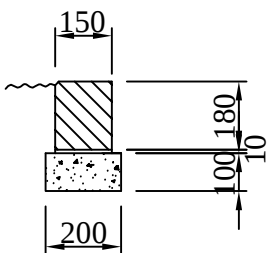
Shoulder Type



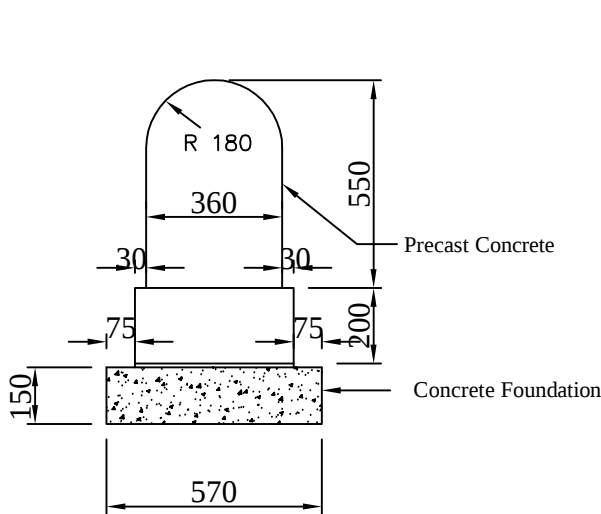
Center Median Type



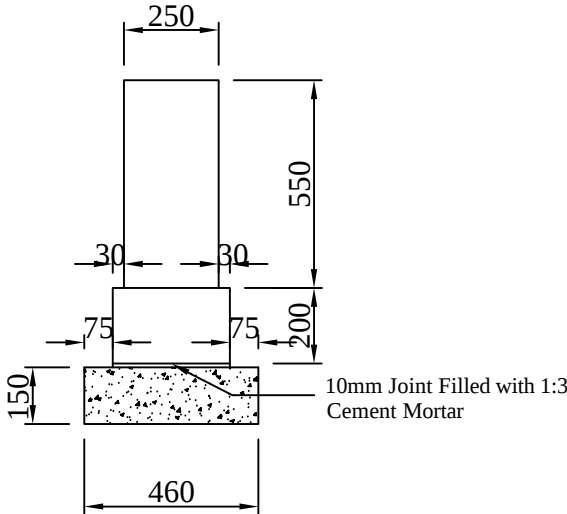
Planting Strip Type



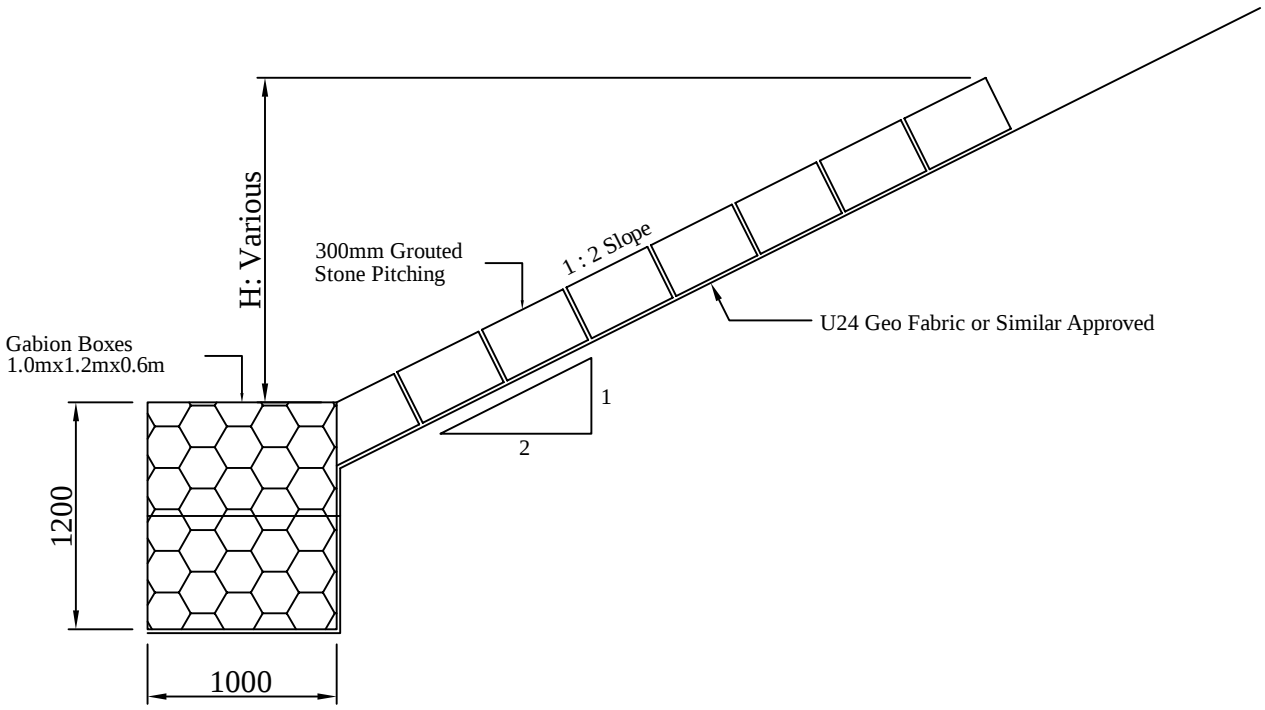
Typical Detail of A km-Marker Scale A3 1:20



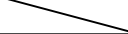
Plan



Side Elevation

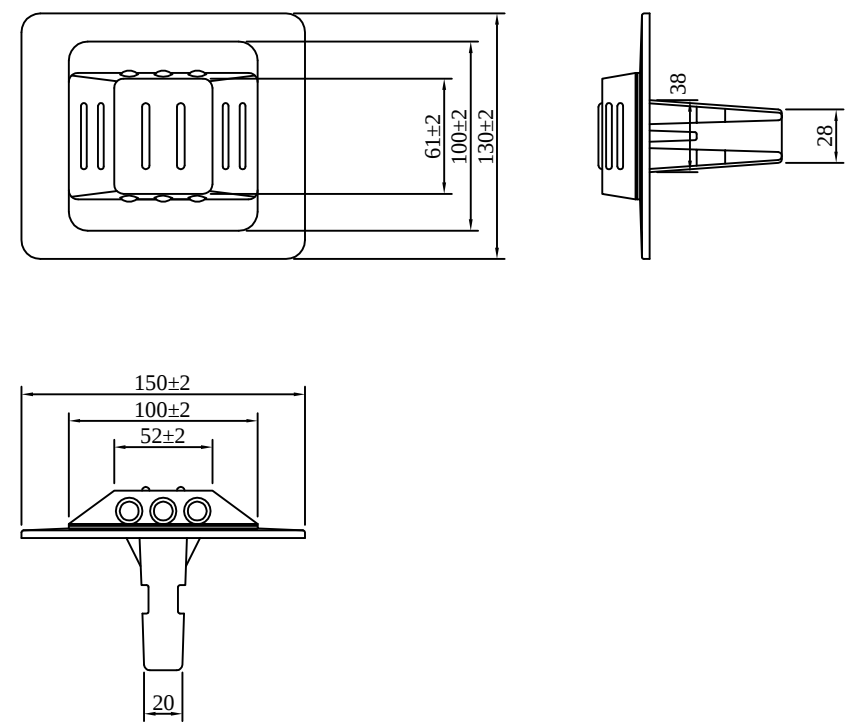


Typical Detail of Bank Erosion Protection Scale A3 1:40

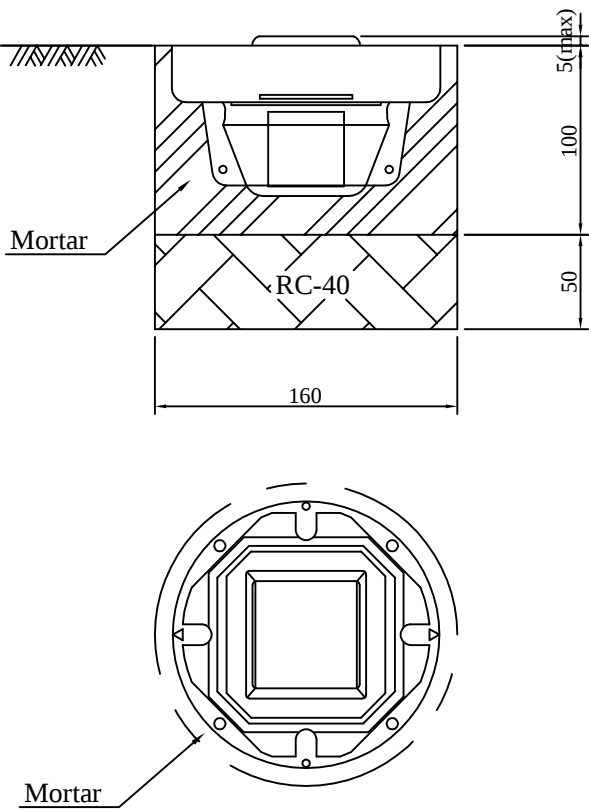
 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project	DRAWING TITLE: Ancillary Work (1)			
	 Eight-Japan Engineering Consultants Inc.		NAME				SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		SIGNATURE						E-16	
 National Road Administration (ANE)			DATE							

Ancillary Work (2) Scale A3 1:4

Road Stud (Cat's-eye)

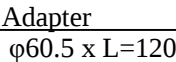


Road Stud (Light Emitting Road Stud)



 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.		PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project	DRAWING TITLE: Ancillary Work (2)			
	 Eight-Japan Engineering Consultants Inc.		NAME				SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		SIGNATURE						E-17	
 National Road Administration (ANE)			DATE							

Double Arms Type



Lighting Fixture and Lamp

High Pressure Sodium Lamp 220W

Street Light Pole
Taper 1/100 t=4.0

Wiring Aperture
600 x 130

GL
(PAVEMENT)

Plastic Flexible Conduit

with Power cable

Crush Stone

Reinforcement Bar

Concrete Base
24MPa

Crush Stone

SCALE A3 1:25



SCALE A3 1:25



1

National Road Administration (ANE)

NAME _____

SIGNATURE _____

DATI

PREPARED BY

CHECKED BY

APPROVED BY _____

PROJECT TITLE:

Preparatory Survey for Nacala Corridor Road Network Upgrading Project

DRAWING TITLE:

STREET LIGHT (2)

SCALE

SHEET NO.

DRAWING NO

REV. NO.

E-19

TRAFFIC SIGNAL DETAILS SCALE A3 1:50

Vehicle Signal Pole SCALE A3 1:50

Anchor Bolts SCALE A3 1:25

for Vehicle Signal Pole

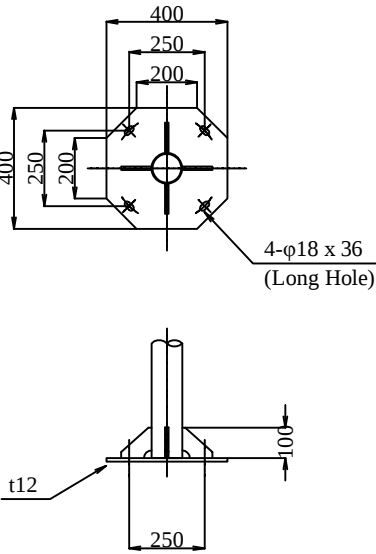
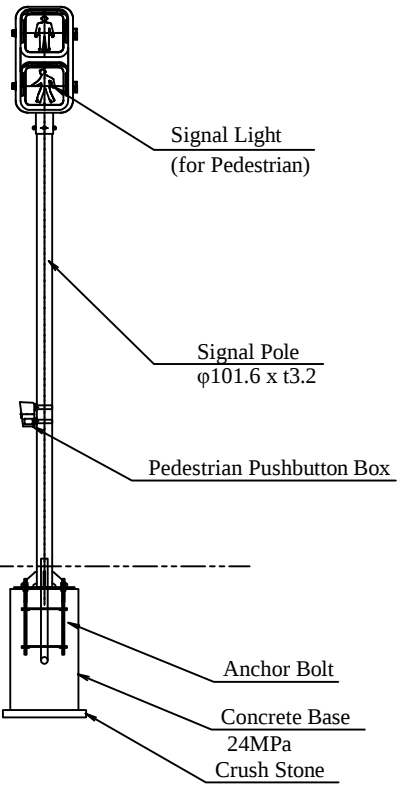
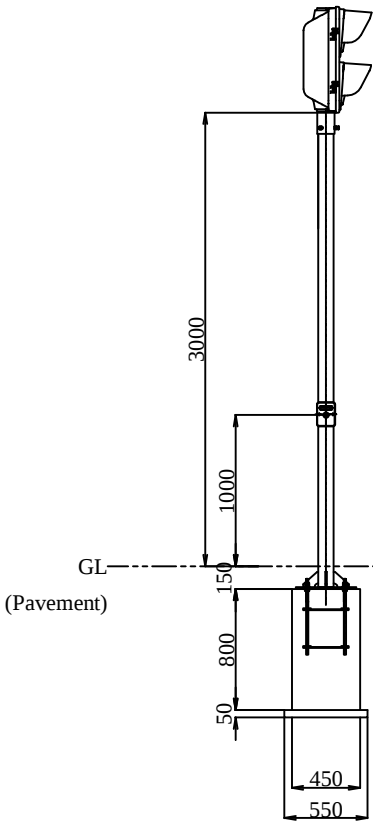
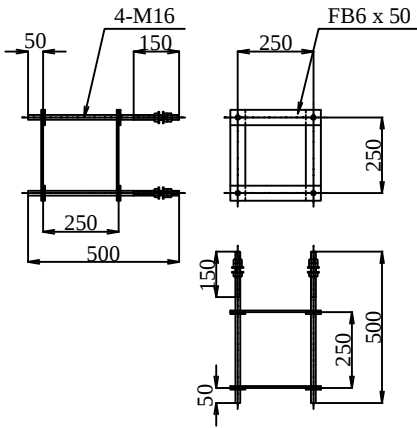
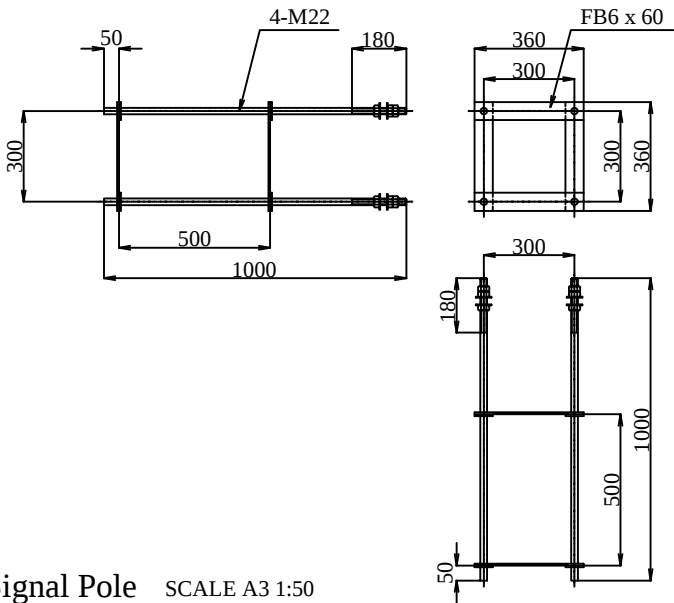
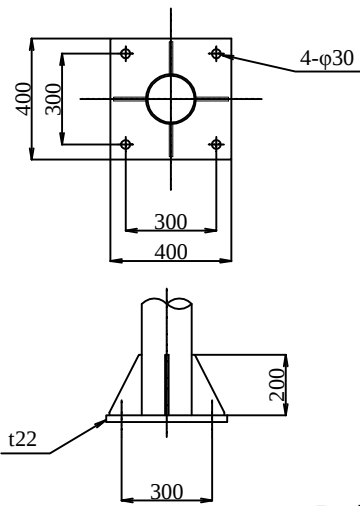
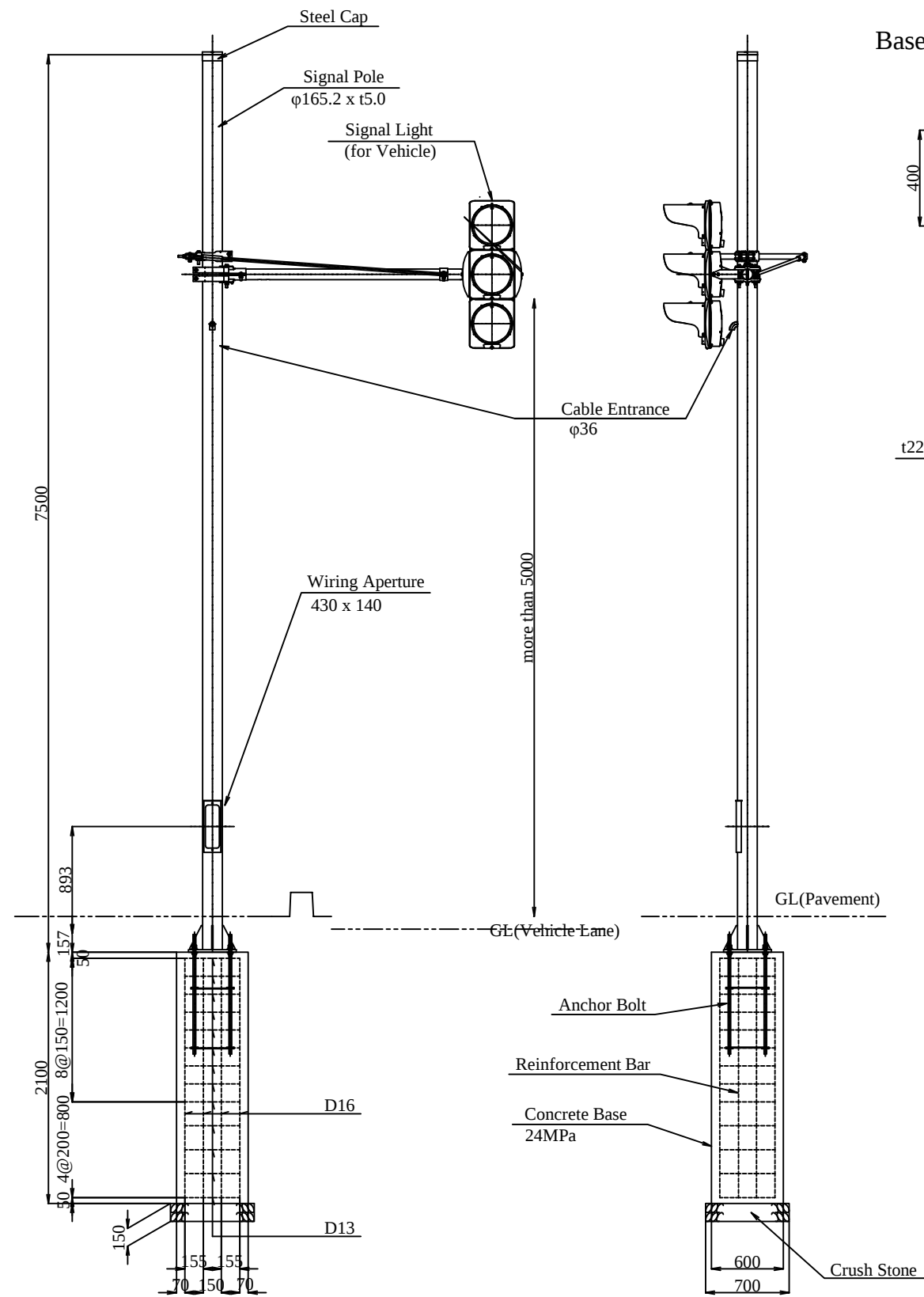
for Pedestrian Signal Pole

Base Plate SCALE A3 1:25

Pedestrian Signal Pole SCALE A3 1:50

Base Plate

SCALE A3 1:25



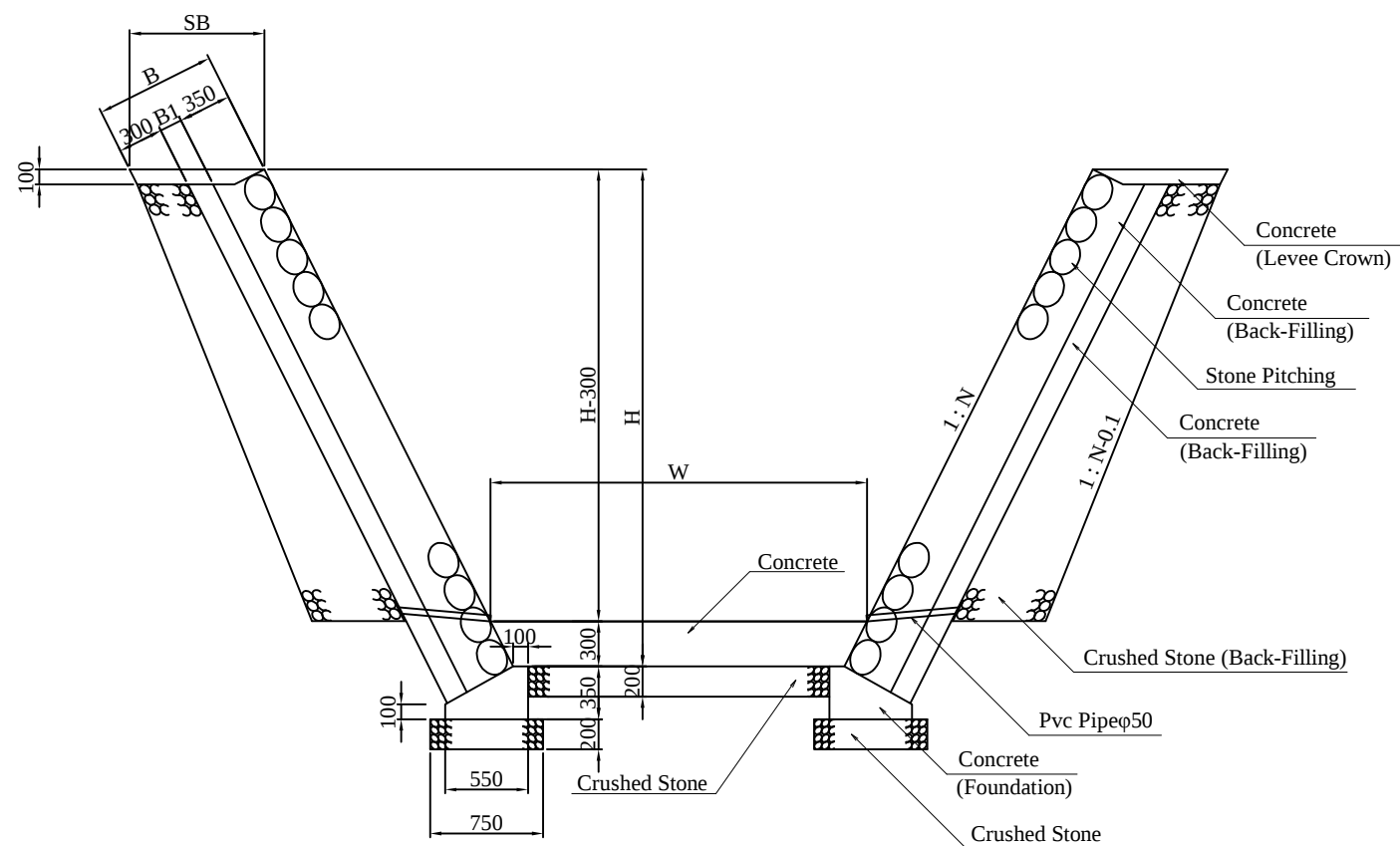
Note : 1) Concrete strength(MPa) indicates the compressive strength test value by the cylinder.

 Japan International Cooperation Agency	 Oriental Consultants Global Co., Ltd.	NAME	PREPARED BY	CHECKED BY	APPROVED BY	PROJECT TITLE: Preparatory Survey for Nacala Corridor Road Network Upgrading Project	DRAWING TITLE: TRAFFIC SIGNAL DETAILS			
	 Eight-Japan Engineering Consultants Inc.						SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		DATE						E-20	

RIVER WALL DETAILS

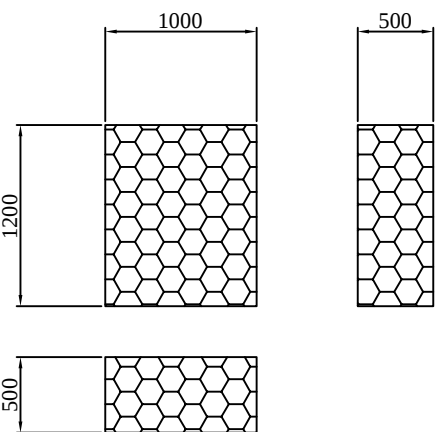
SCALE A3 1:50

Concrete Block Retaining Wall

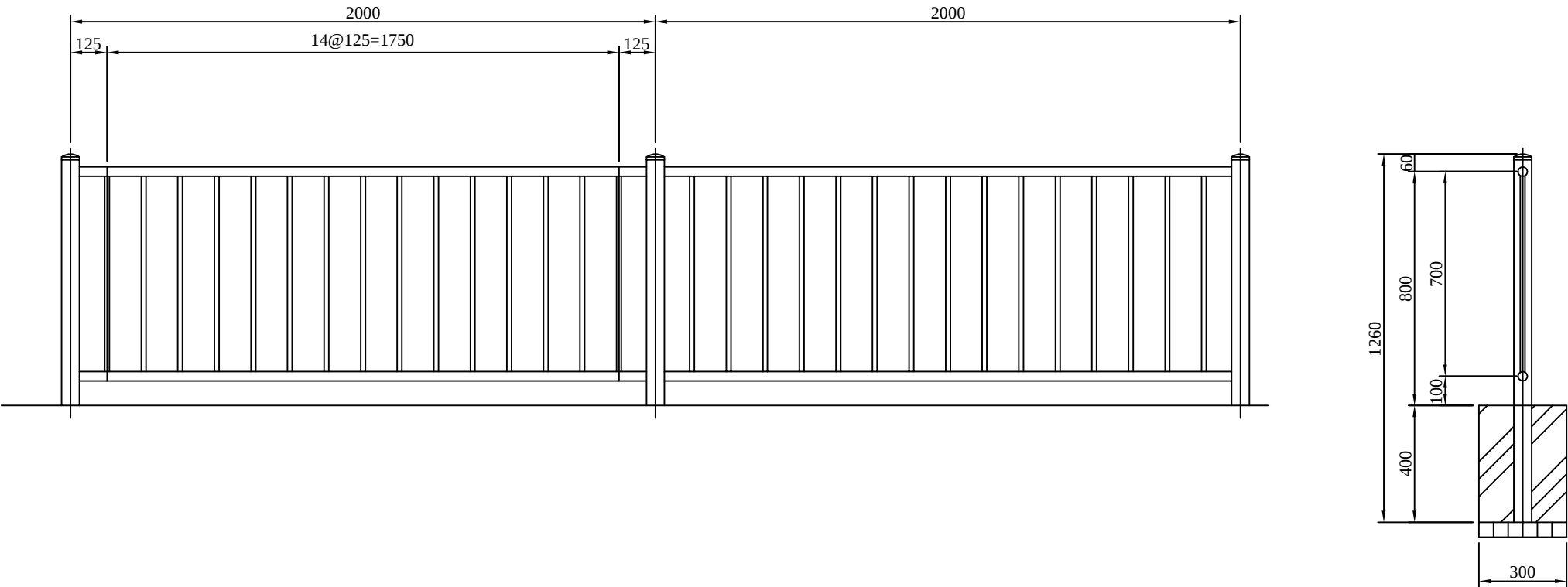


DIMENSION LIST					mm
H	B1	B	SB	N	
0~1.5	100	750	783	0.3	
1.5~3.0	100	750	808	0.4	
3.0~5.0	150	800	894	0.5	

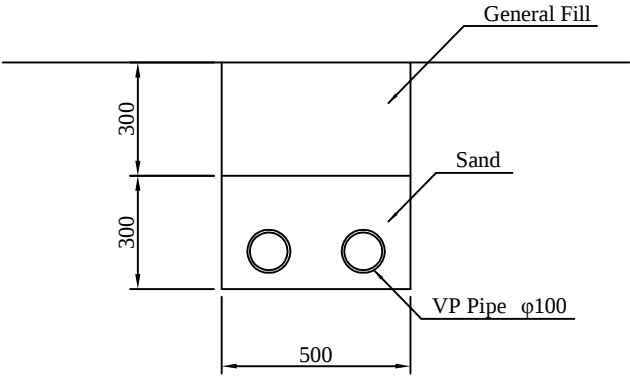
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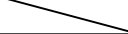


CROSSING PREVENTION FENCE SCALE A3 1:20



UTILITY PIPE



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	 Eight-Japan Engineering Consultants Inc.		NAME				SCALE	SHEET NO.	DRAWING NO.	REV. NO.
	 Kokusai Kogyo Co., Ltd.		SIGNATURE						E-22	
 National Road Administration (ANE)			DATE							