

Department of Agrarian Reform
The Republic of the Philippines

**BASIC DESIGN STUDY
ON
THE BRIDGE CONSTRUCTION PROJECT
FOR EXPANDED AGRARIAN REFORM
COMMUNITIES DEVELOPMENT
IN THE REPUBLIC OF THE PHILIPPINES**

**DRAWINGS
(UMIRAY BRIDGE)**

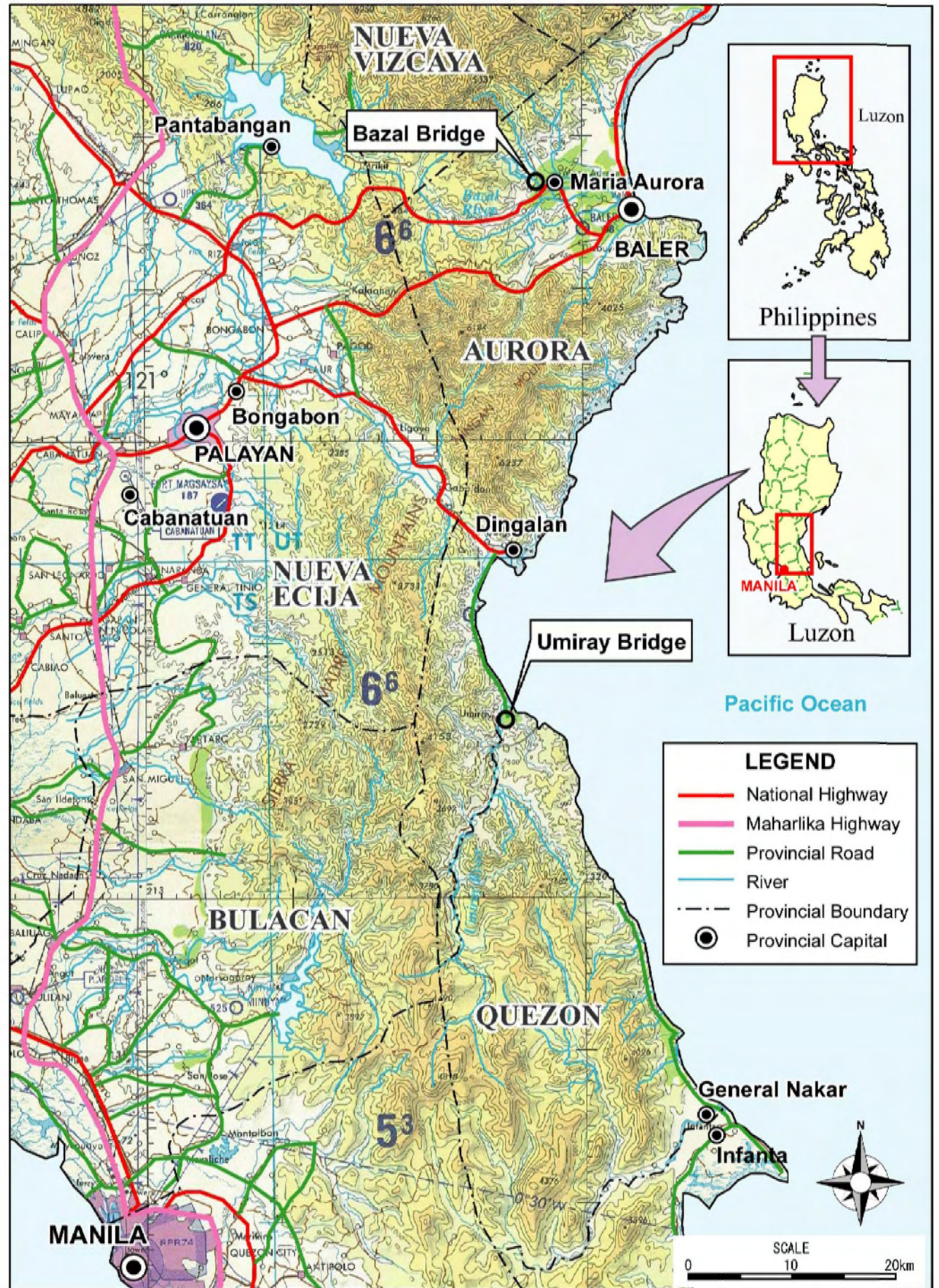
September 2008

JAPAN INTERNATIONAL COOPERATION AGENCY

CTI ENGINEERING INTERNATIONAL CO., LTD.

LIST OF DRAWINGS (UMIRAY BRIDGE)

No.	Drawing Title	Scale	No.	Drawing Title	Scale
U01	Project Location Map	-	U21	Road Cross Section (3/6)	1/100
U02	Road Plan (1/2)	1/500	U22	Road Cross Section (4/6)	1/100
U03	Road Plan (2/2)	1/500	U23	Road Cross Section (5/6)	1/100
U04	Road Plan for Temporary Works	1/500	U24	Road Cross Section (6/6)	1/100
U05	Road Profile (1/2)	H=1/500, V=1/100	U25	Cross Section for Detour Road	1/100
U06	Road Profile (2/2)	H=1/500, V=1/100	U26	Cross Section for Temporary Road (1/3)	1/100
U07	Typical Cross Section of Road Section (1/2)	1/50	U27	Cross Section for Temporary Road (2/3)	1/100
U08	Typical Cross Section of Road Section (2/2)	1/50	U28	Cross Section for Temporary Road (3/3)	1/100
U09	Typical Cross Section of Temporary Works	1/50	U29	Drainage Facilities (1/2)	1/20
U10	General Drawing of Umiray Bridge	1/500	U30	Drainage Facilities (2/2)	1/20
U11	Structural Drawing of Superstructure (1/2)	1/150	U31	Road Signs	-
U12	Structural Drawing of Superstructure (2/2)	1/150	U32	Detail of Concrete Pavement	1/100
U13	Structural Drawing of A1 Abutment (1/2)	1/50	U33	Miscellaneous Details (1/2)	1/20
U14	Structural Drawing of A1 Abutment (2/2)	1/50	U34	Miscellaneous Details (2/2)	1/20
U15	Structural Drawing of A2 Abutment (1/2)	1/50			
U16	Structural Drawing of A2 Abutment (2/2)	1/50			
U17	Structural Drawing of P1-P4, P6-P9 Bridge Pier	1/50			
U18	Structural Drawing of P5 Bridge Pier	1/50			
U19	Road Cross Section (1/6)	1/100			
U20	Road Cross Section (2/6)	1/100			



DEPARTMENT OF AGRARIAN REFORM
THE REPUBLIC OF THE PHILIPPINES

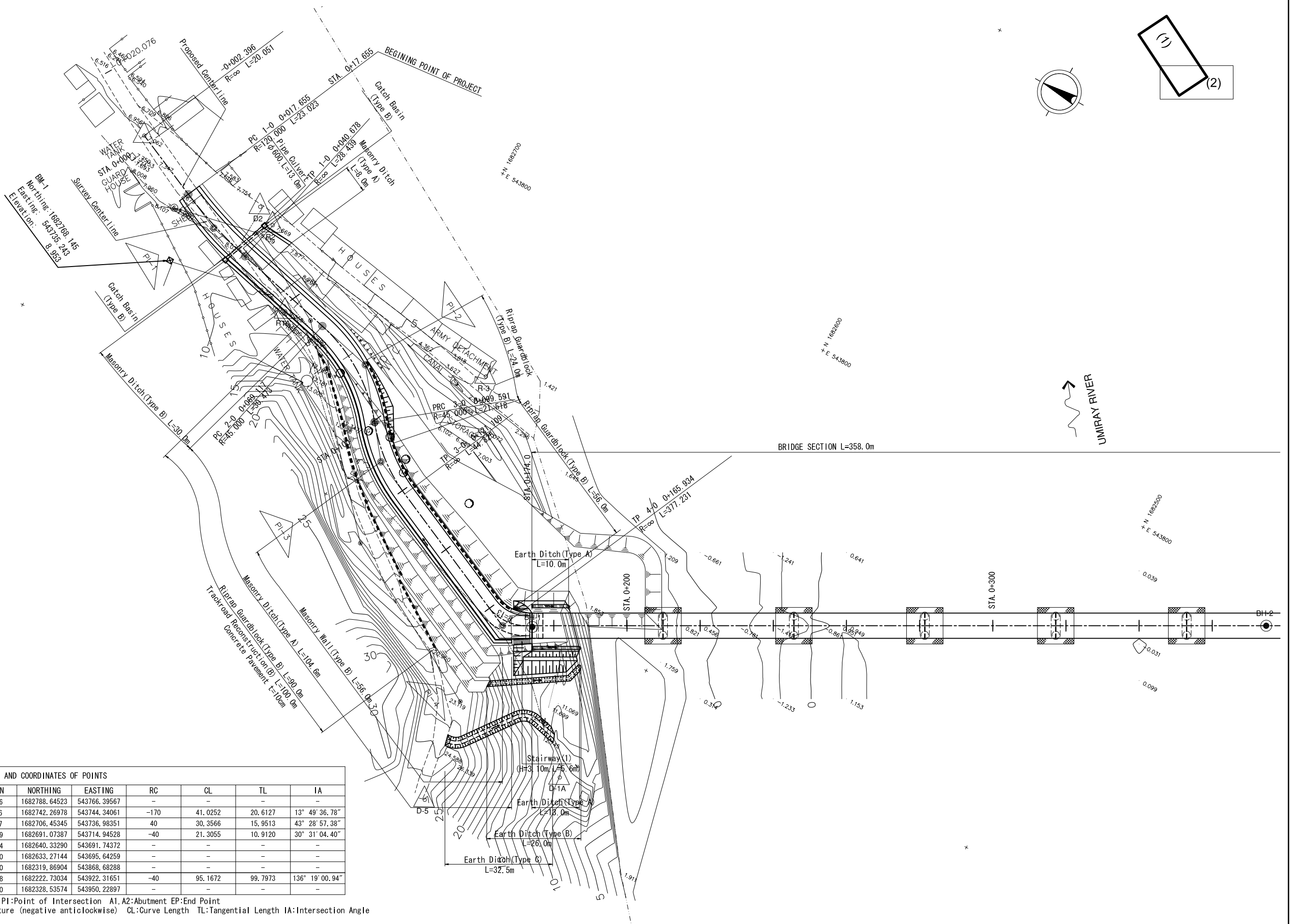
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TITLE : UMIRAY BRIDGE
LOCATION MAP

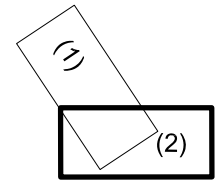
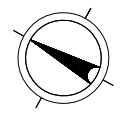
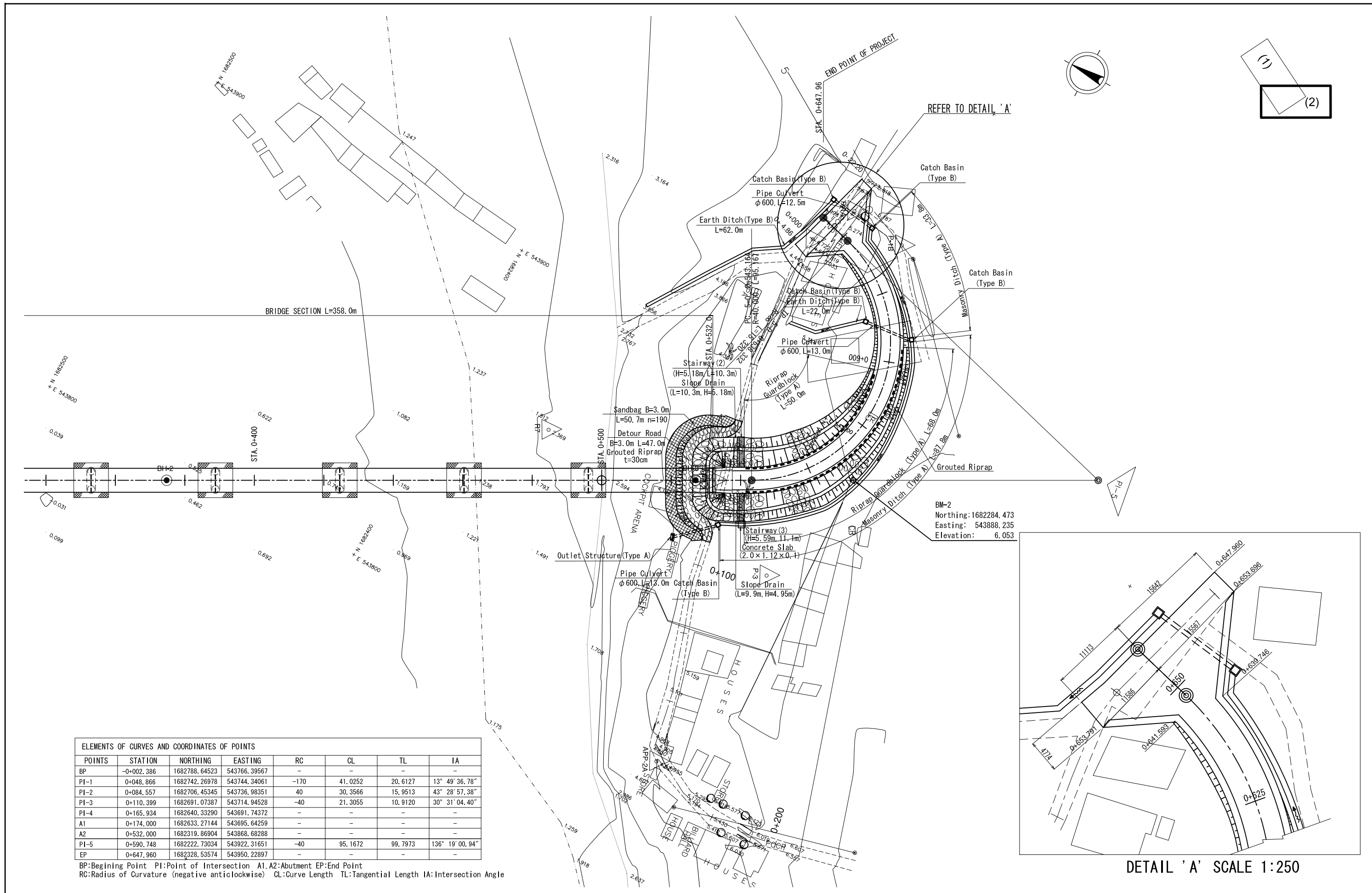
SCALE
Not on Scale

Drawing No.
U01



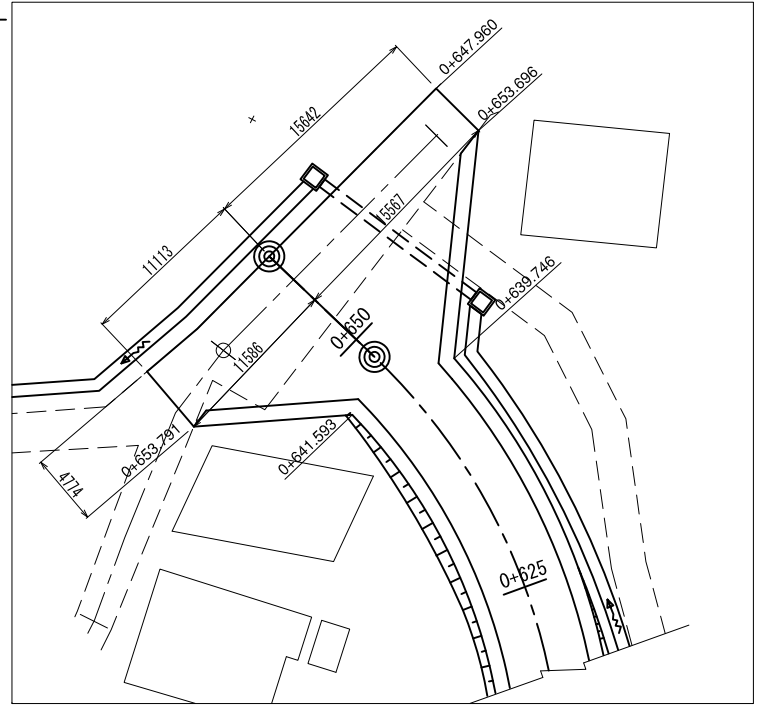
ELEMENTS OF CURVES AND COORDINATES OF POINTS							
POINTS	STATION	NORTHING	EASTING	RC	CL	TL	IA
BP	-0+002.386	1682788.64523	543766.39567	-	-	-	-
PI-1	0+048.866	1682742.26978	543744.34061	-170	41.0252	20.6127	13° 49' 36.78"
PI-2	0+084.557	1682706.45345	543736.98351	40	30.3566	15.9513	43° 28' 57.38"
PI-3	0+110.399	1682691.07387	543714.94528	-40	21.3055	10.9120	30° 31' 04.40"
PI-4	0+165.934	1682640.33290	543691.74372	-	-	-	-
A1	0+174.000	1682633.27144	543695.64259	-	-	-	-
A2	0+532.000	1682319.86904	543868.68288	-	-	-	-
PI-5	0+590.748	1682222.73034	543922.31651	-40	95.1672	99.7973	136° 19' 00.94"
EP	0+647.960	1682328.53574	543950.22897	-	-	-	-

BP: Beginning Point PI: Point of Intersection A1, A2: Abutment EP: End Point
 RC: Radius of Curvature (negative anticlockwise) CL: Curve Length TL: Tangential Length IA: Intersection Angle



REFER TO DETAIL 'A'

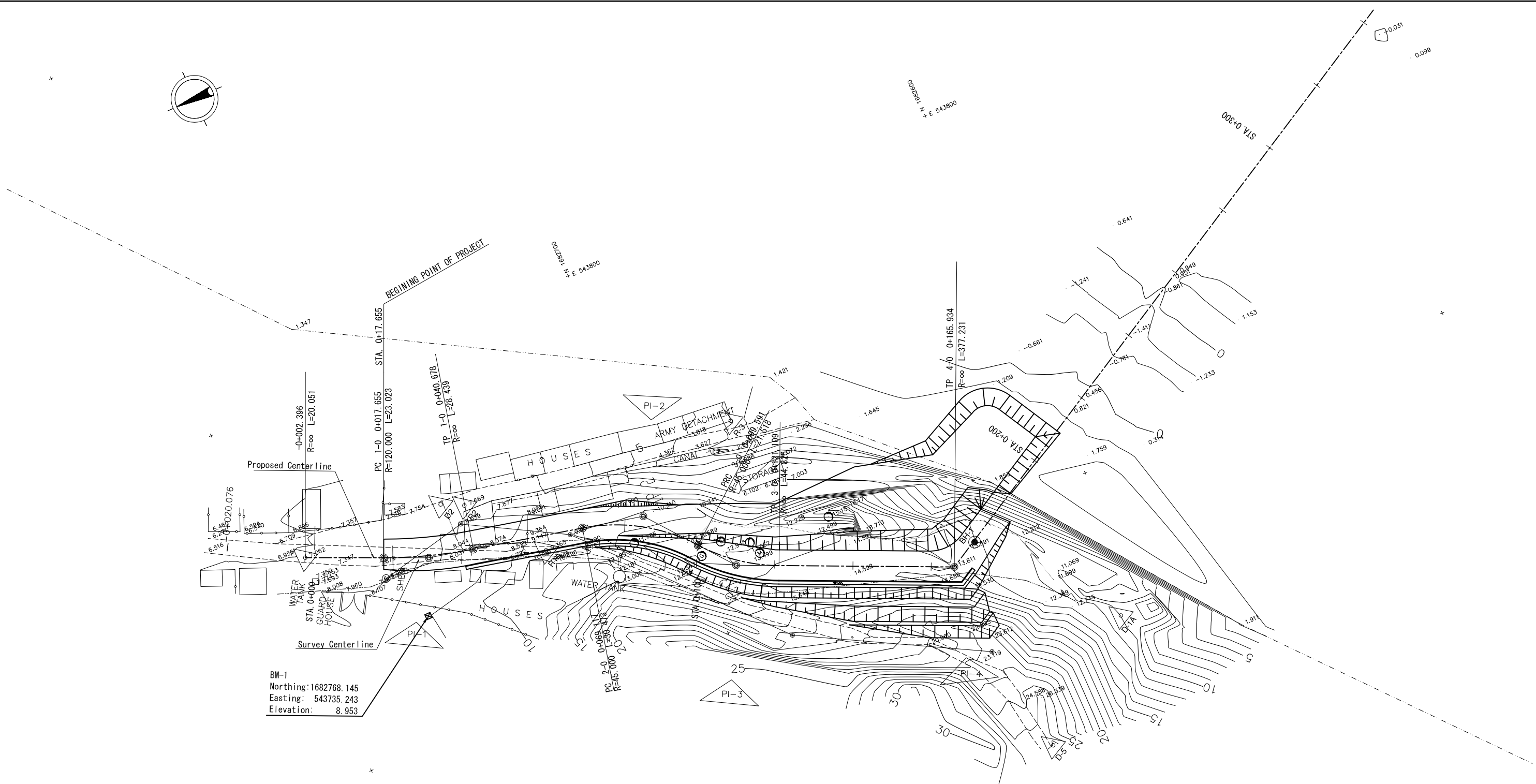
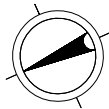
BM-2
 Northing: 1682284.473
 Easting: 543888.235
 Elevation: 6.053



DETAIL 'A' SCALE 1:250

ELEMENTS OF CURVES AND COORDINATES OF POINTS							
POINTS	STATION	NORTHING	EASTING	RC	CL	TL	IA
BP	-0+002.386	1682788.64523	543766.39567	-	-	-	-
PI-1	0+048.866	1682742.26978	543744.34061	-170	41.0252	20.6127	13° 49' 36.78"
PI-2	0+084.557	1682706.45345	543736.98351	40	30.3566	15.9513	43° 28' 57.38"
PI-3	0+110.399	1682691.07387	543714.94528	-40	21.3055	10.9120	30° 31' 04.40"
PI-4	0+165.934	1682640.33290	543691.74372	-	-	-	-
A1	0+174.000	1682633.27144	543695.64259	-	-	-	-
A2	0+532.000	1682319.86904	543868.68288	-	-	-	-
PI-5	0+590.748	1682222.73034	543922.31651	-40	95.1672	99.7973	136° 19' 00.94"
EP	0+647.960	1682328.53574	543950.22897	-	-	-	-

BP: Beginning Point PI: Point of Intersection A1, A2: Abutment EP: End Point
 RC: Radius of Curvature (negative anticlockwise) CL: Curve Length TL: Tangential Length IA: Intersection Angle



ELEMENTS OF CURVES AND COORDINATES OF POINTS

POINTS	STATION	NORTHING	EASTING	RC	CL	TL	IA
BP	-0+002.386	1682788.64523	543766.39567	-	-	-	-
PI-1	0+048.866	1682742.26978	543744.34061	-170	41.0252	20.6127	13° 49' 36.78"
PI-2	0+084.557	1682706.45345	543736.98351	40	30.3566	15.9513	43° 28' 57.38"
PI-3	0+110.399	1682691.07387	543714.94528	-40	21.3055	10.9120	30° 31' 04.40"
PI-4	0+165.934	1682640.33290	543691.74372	-	-	-	-
A1	0+174.000	1682633.27144	543695.64259	-	-	-	-
A2	0+532.000	1682319.86904	543868.68288	-	-	-	-
PI-5	0+590.748	1682222.73034	543922.31651	-40	95.1672	99.7973	136° 19' 00.94"
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BP: Beginning Point PI: Point of Intersection A1, A2: Abutment EP: End Point
 RC: Radius of Curvature (negative anticlockwise) CL: Curve Length TL: Tangential Length IA: Intersection Angle

DEPARTMENT OF AGRARIAN REFORM
 THE REPUBLIC OF THE PHILIPPINES

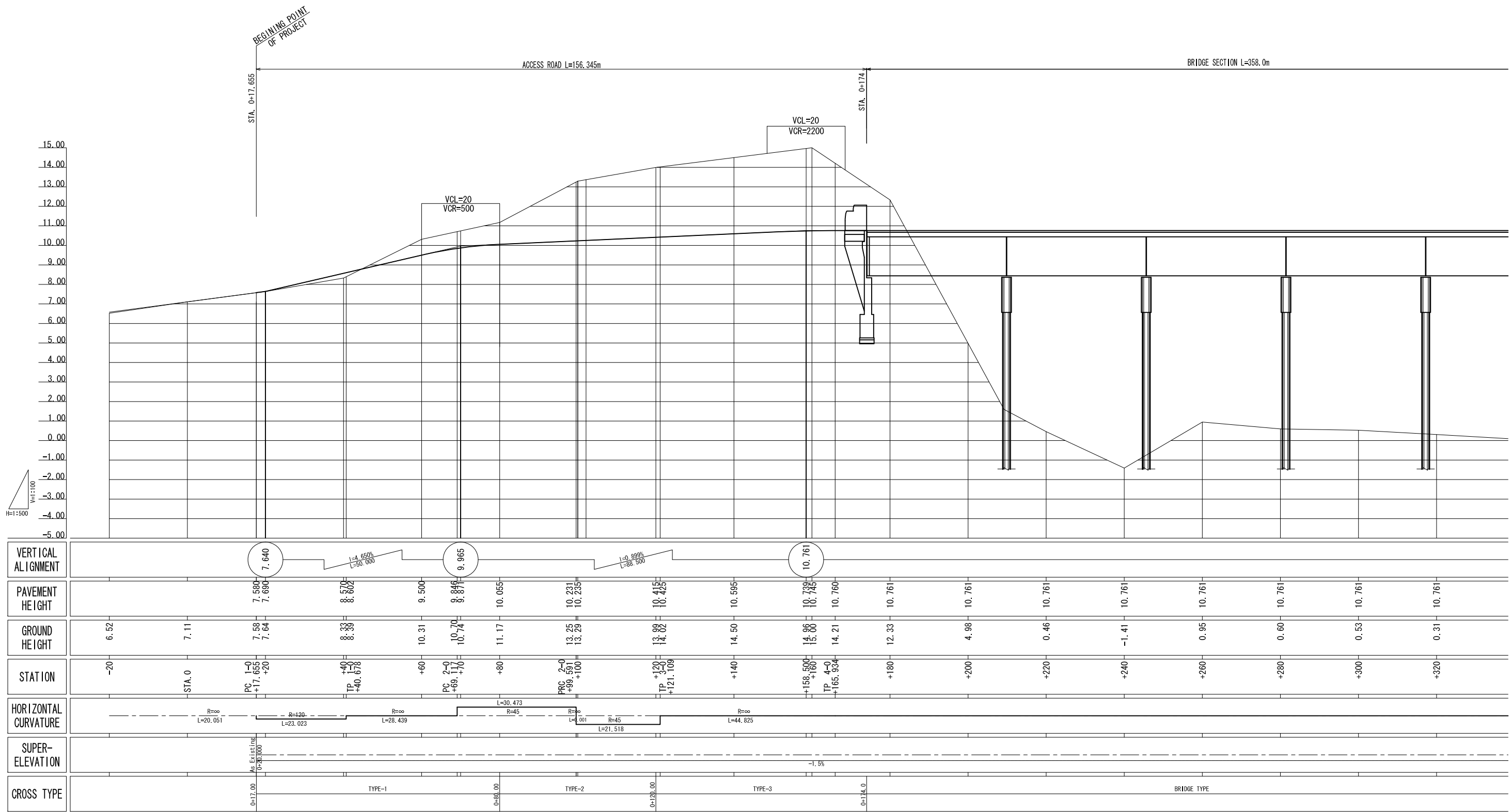
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 COMMUNITIES DEVELOPMENT

JAPAN INTERNATIONAL COOPERATION AGENCY
 CTI ENGINEERING INTERNATIONAL CO., LTD.

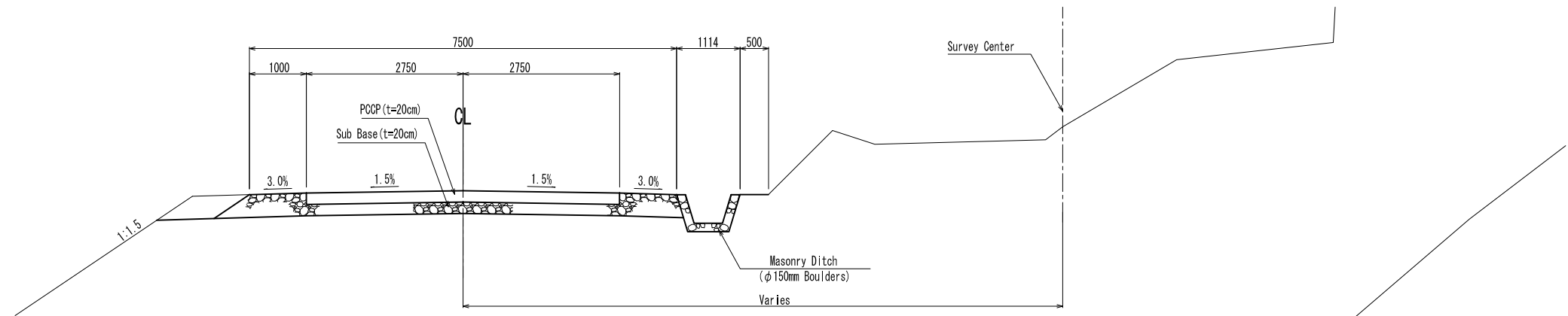
TITLE : UMIRAY BRIDGE
 ROAD PLAN FOR TEMPORARY WORKS

SCALE
 S=1:500

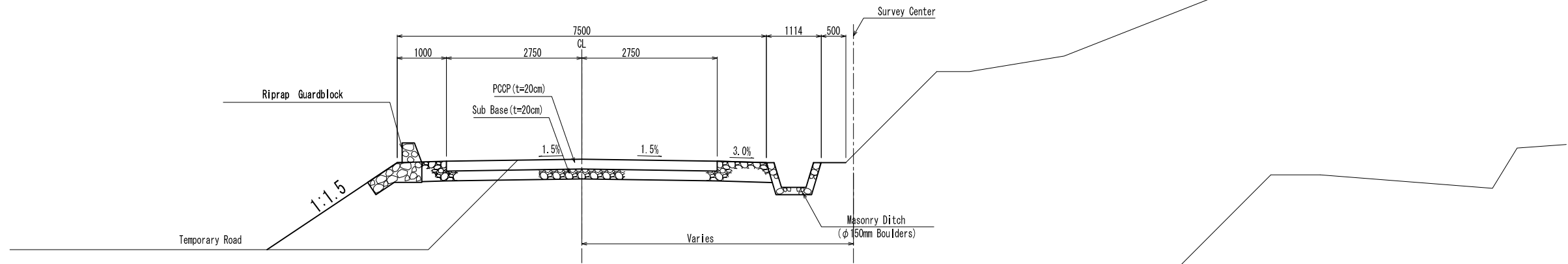
Drawing No.
 U04



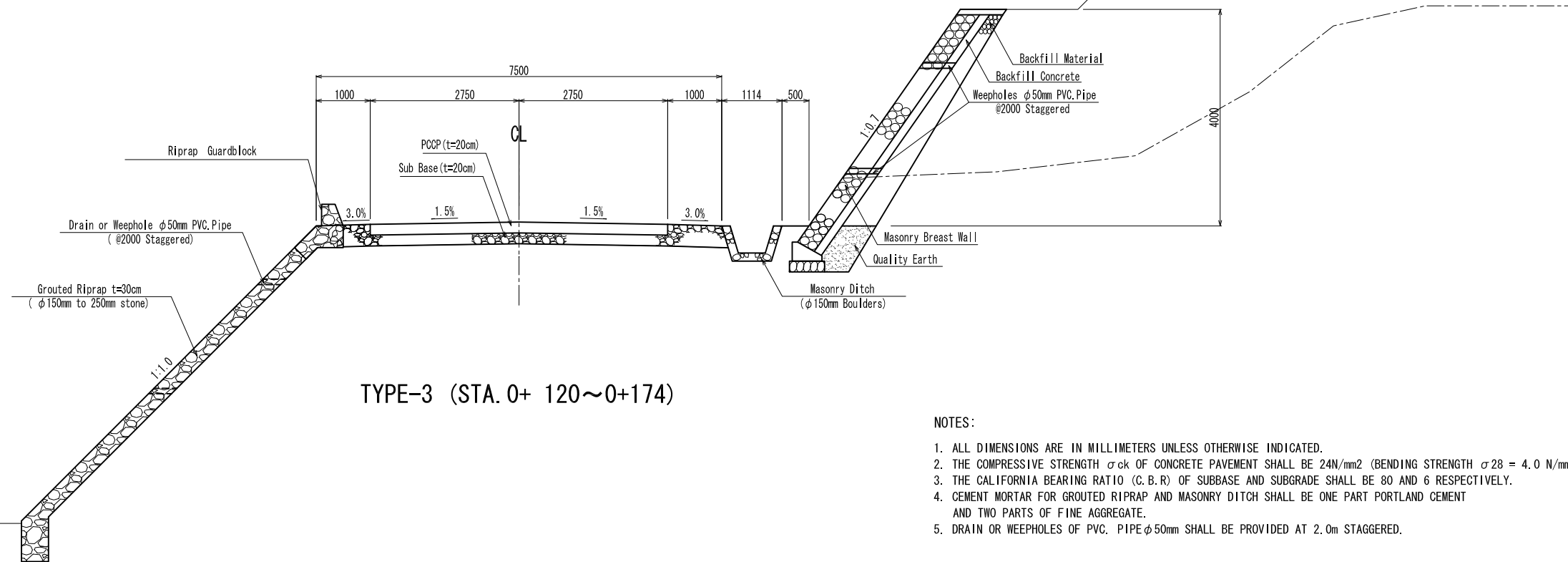
VERTICAL ALIGNMENT	7.640		9.965		10.761																
PAVEMENT HEIGHT	7.580 7.690	8.570 8.602	9.500	9.846 9.871	10.231 10.235	10.415 10.425	10.595	10.738 10.745	10.760	10.761	10.761	10.761	10.761	10.761	10.761	10.761	10.761				
GROUND HEIGHT	6.52	7.11	7.58 7.64	8.33 8.38	10.31	10.70 10.74	11.17	13.25 13.29	13.89 13.92	14.50	14.86 14.88	14.21	12.33	4.98	0.46	-1.41	0.95	0.60	0.53	0.31	
STATION	-20	STA. 0	PC 1-0 +17.655 +20	TP +40 +40.678	+60	PC 2-0 +69.117 +100	+80	PRC 2-0 +99.591 +100	TP +120 +121.109	+140	+168.500 +160	TP 4-0 +165.934	+180	+200	+220	+240	+260	+280	+300	+320	
HORIZONTAL CURVATURE	R=∞ L=20.051		R=120 L=23.023		R=∞ L=28.439		L=30.473 R=45		R=∞ L=4.001		R=45 L=21.518		R=∞ L=44.825								
SUPER-ELEVATION	As Existing 0+20.000		-1.5%																		
CROSS TYPE	0+17.00		TYPE-1				0+96.00		TYPE-2		0+120.00		TYPE-3		0+114.0		BRIDGE TYPE				



TYPE-1 (STA. 0+ 20~0+80)



TYPE-2 (STA. 0+80~0+120)



TYPE-3 (STA. 0+ 120~0+174)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. THE COMPRESSIVE STRENGTH σ_{ck} OF CONCRETE PAVEMENT SHALL BE 24N/mm² (BENDING STRENGTH $\sigma_{28} = 4.0$ N/mm²).
3. THE CALIFORNIA BEARING RATIO (C.B.R) OF SUBBASE AND SUBGRADE SHALL BE 80 AND 6 RESPECTIVELY.
4. CEMENT MORTAR FOR GROUTED RIPRAP AND MASONRY DITCH SHALL BE ONE PART PORTLAND CEMENT AND TWO PARTS OF FINE AGGREGATE.
5. DRAIN OR WEEPHOLES OF PVC. PIPE ϕ 50mm SHALL BE PROVIDED AT 2.0m STAGGERED.

DEPARTMENT OF AGRARIAN REFORM
THE REPUBLIC OF THE PHILIPPINES

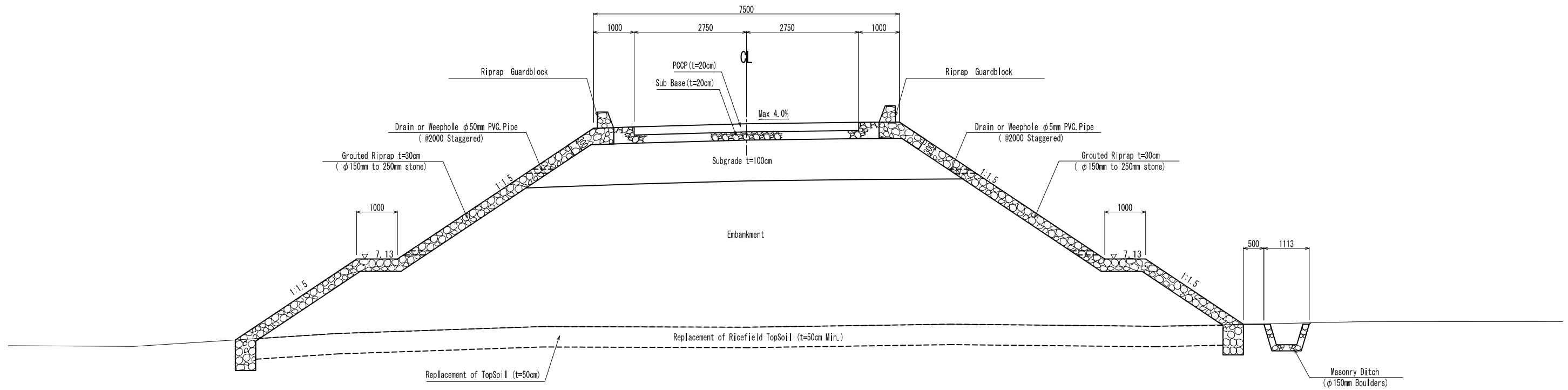
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COMMUNITIES DEVELOPMENT

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CTI ENGINEERING INTERNATIONAL CO., LTD.

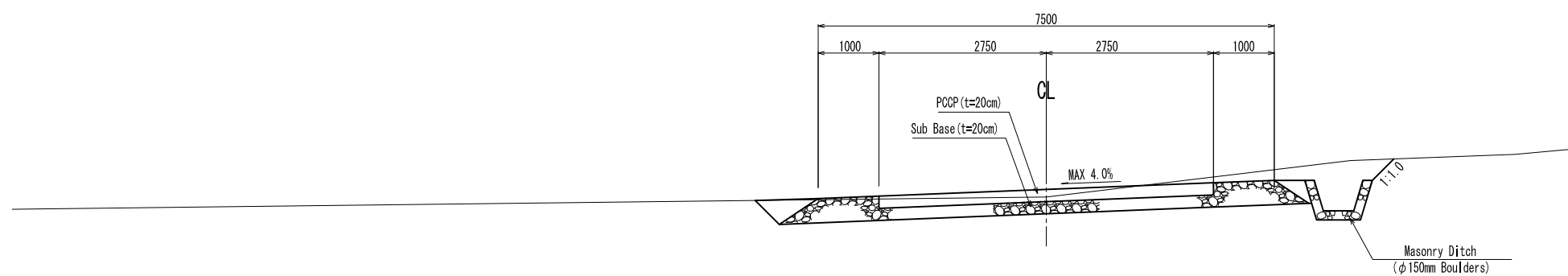
TITLE : UMIRAY BRIDGE
TYPICAL CROSS SECTION
OF ROAD SECTION(1/2)

SCALE
S=1:50

Drawing No.
U07



TYPE-4 (STA. 0+532~0+600)



TYPE-5 (STA. 0+600~0+647.96)

NOTES:

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3. THE CALIFORNIA BEARING RATIO (C. B. R.) OF SUBBASE AND SUBGRADE SHALL BE 80 AND 6 RESPECTIVELY.
4. CEMENT MORTAR FOR GROUTED RIPRAP AND MASONRY DITCH SHALL BE ONE PART PORTLAND CEMENT AND TWO PARTS OF FINE AGGREGATE.
5. DRAIN OR WEEPHOLES OF PVC. PIPE ϕ 50mm SHALL BE PROVIDED AT 2.0m STAGGERED.

DEPARTMENT OF AGRARIAN REFORM THE REPUBLIC OF THE PHILIPPINES	BASIC DESIGN STUDY ON THE BRIDGE CONSTRUCTION PROJECT FOR EXPANDED AGRARIAN REFORM COMMUNITIES DEVELOPMENT	JAPAN INTERNATIONAL COOPERATION AGENCY CTI ENGINEERING INTERNATIONAL CO., LTD.	TITLE : UMIRAY BRIDGE TYPICAL CROSS SECTION OF ROAD SECTION(2/2)	SCALE	Drawing No.
				S=1:50	U08