

**REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS (DPWH)**

**PREPARATORY SURVEY  
FOR EXPRESSWAY PROJECTS  
IN  
MEGA MANILA REGION**

**CENTRAL LUZON LINK EXPRESSWAY PROJECT (Phase I)**

**FINAL REPORT  
APPENDIX DRAWINGS**

**NOVEMBER 2012**

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**CTI ENGINEERING INTERNATIONAL CO., LTD**

**MITSUBISHI RESEARCH INSTITUTE, INC.**

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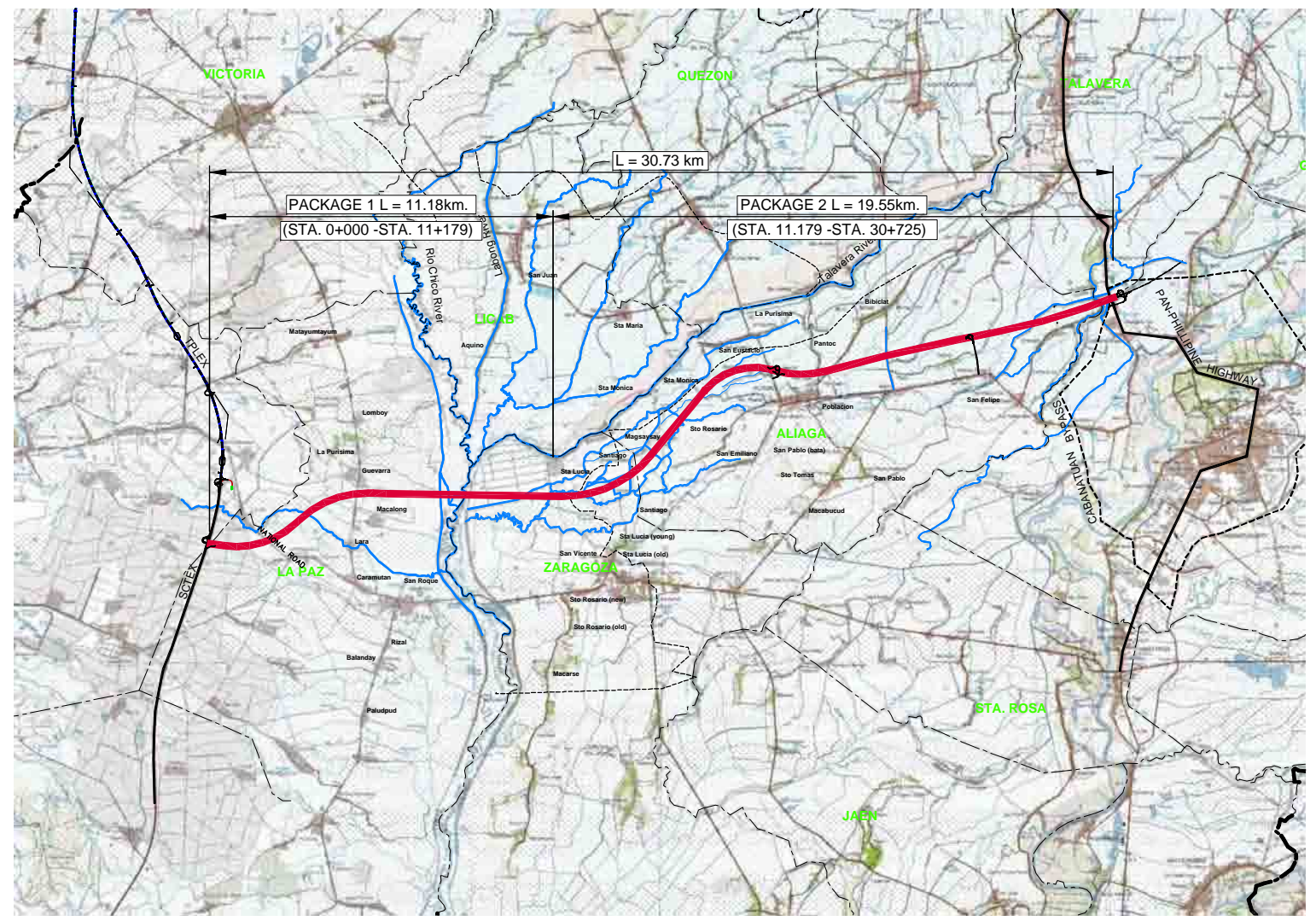
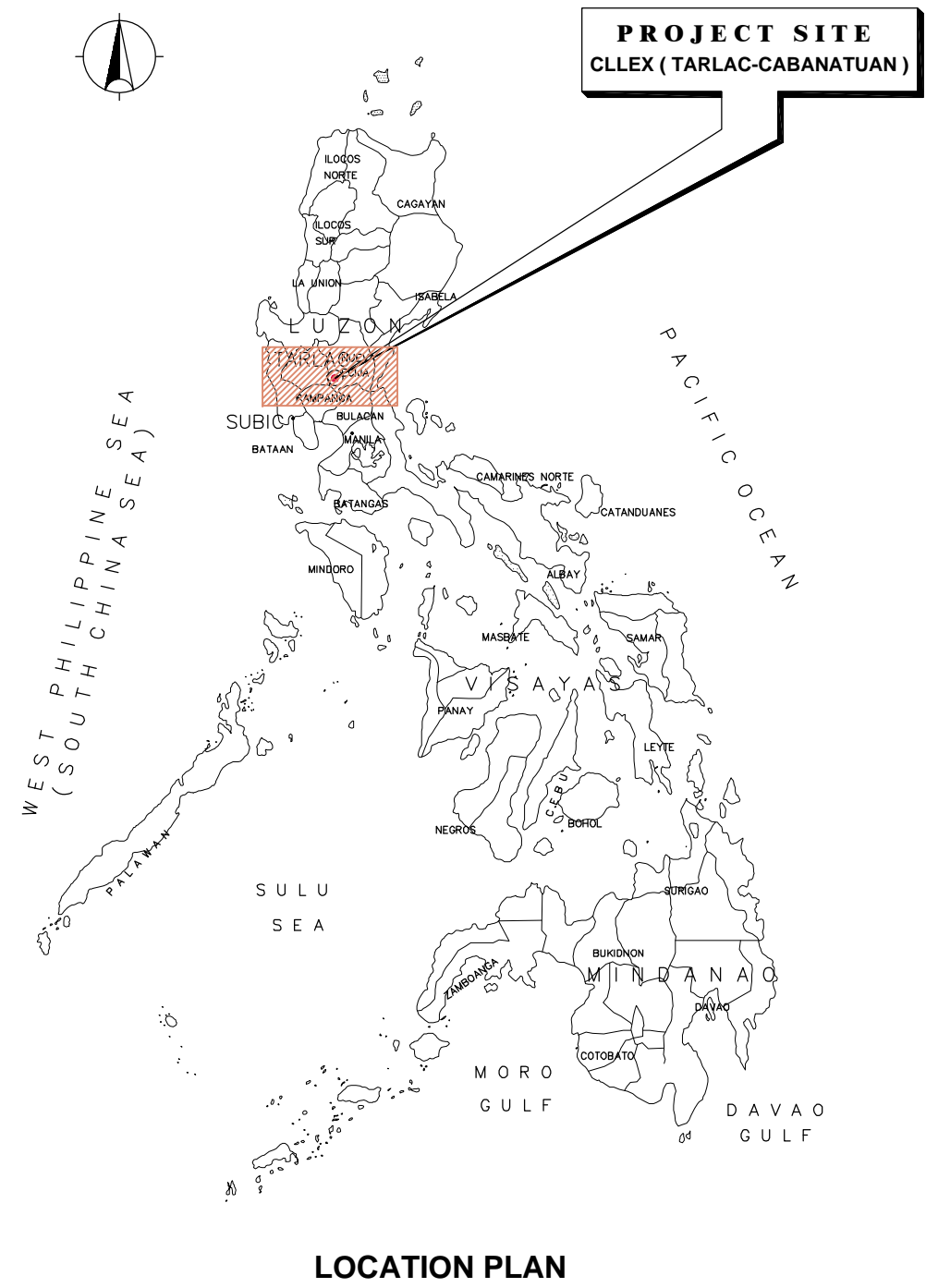
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# A. LOCATION MAP

CLLEX ( TARLAC - CABANATUAN)



VICINITY PLAN

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
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# B. ESTIMATED OF QUANTITIES

CLLEX ( TARLAC - CABANATUAN)

## ESTIMATED QUANTITIES (4 LANE-ULTIMATE STAGE)

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY			
			Main Highway	Bridge & Viaduct	Interchange	Total
<b>1.0</b>	<b>GENERAL REQUIREMENTS</b>					
<b>A</b>	<b>FACILITIES FOR THE ENGINEER</b>	l.s.	1.00			1.00
<b>B</b>	<b>OTHER GENERAL REQUIREMENTS</b>					
SPL B.2.1	Construction Health and Safety	l.s.	1.00			1.00
SPL B.2.2	Mobilization / Demobilization (1.0% of Civil Works)	l.s.	1.00			1.00
SPL B.3.1	Environmental Monitoring Action Plan	l.s.	1.00			1.00
SPL 2000	Traffic Management During Construction	l.s.	1.00			1.00
SPL 3000	Day Work	PS.	1.00			1.00
<b>2.0</b>	<b>MAIN HIGHWAY</b>					
<b>C</b>	<b>EARTHWORKS</b>					
100(1)	Clearing and Grubbing	ha	171.00		24.00	195.00
101(1)a	Removal of Structure and Obstruction (Fence)	lm	440.00			440.00
101(1)d	Removal of Structure and Obstruction (Shoulder Pavement)	sq.m	2,875.00			2,875.00
102(1)	Unsuitable Excavation	cu.m.	699,345.50		118,161.10	817,506.60
103(1)	Structure Excavation, Common Material	cu.m.		47,133.00		47,133.00
103(1)	Structure Excavation, Common Material, Below O.W.L	cu.m.		32,606.50		32,606.50
103(3)	Foundation Back fill	cu.m.		43,050.60		43,050.60
104(1)e	Embankment from Borrow Material	cu.m.	3,936,491.88		284,676.24	4,221,168.13
105(1)	Subgrade Preparation	sq.m				-
<b>D</b>	<b>SUBBASE AND BASE COURSE</b>					
200	Aggregate Subbase Course	cu.m.	325,795.00	19,009.00	37,845.89	382,649.89
202	Crushed Aggregate Base Course	cu.m.	156,919.00		26,117.31	183,036.31
206	Cement Treated Base Course	cu.m.	94,266.00		8,291.70	102,557.70
<b>E</b>	<b>SURFACE COURSES</b>					
301(1)	Bituminous Prime Coat, MC-701 (0.45 L/m2)	tonne	2,014.00	2.46	269.30	2,285.76
302(2)	Bituminous Tack Coat, Emulsified Asphalt, SS-1 (1.0 L/m2)	tonne	229.00	15.10	26.09	270.19
310 (1)	Bituminous Concrete Binder Course, Hot Laid (t=50mm)	sq.m	629,370.00		84,156.97	713,526.97
310 (2)	Bituminous Concrete Surface Course, Hot Laid (t=50mm)	sq.m	507,637.00	38,926.50	57,968.23	604,531.73
311	Portland Cement Concrete Pavement t=300 mm	sq.m			5,900.00	5,900.00
<b>F</b>	<b>BRIDGE STRUCTURE CONSTRUCTION</b>					
400(17)b	Concrete Piles cast in Drilled Holes (1200mm) excluding Re-Bar	l.m.		10,036.00		10,036.00
400(17)h	Concrete Piles cast in Drilled Holes (2000mm) excluding Re-Bar	l.m.		48.00		48.00
401(1)	Railing, ( Concrete Bridge Railing)	l.m.		7,234.00		7,234.00
404 (1)	Reinforcing Steel, Grade 60 (Bridge)	kg		17,705,357.70		17,705,357.70
405(1)	Lean Concrete, 17Mpa	cu.m.		2,054.40		2,054.40
405(1)a	Structural Concrete Class AA 28Mpa for Pile Cap	cu.m.		6,407.30		6,407.30
405(1)b	Structural Concrete Class AA 28Mpa for Column	cu.m.		2,325.70		2,325.70
405(1)c	Structural Concrete Class AA 28Mpa for Coping	cu.m.		5,679.50		5,679.50
405(1)d	Structural Concrete Class AA 28Mpa for Diaphragm	cu.m.		871.40		871.40
405(1)e	Structural Concrete Class AA 28Mpa for Deck Slab	cu.m.		9,255.10		9,255.10
405(1)f	Structural Concrete Class AA 28Mpa for Abutment, Wingwall	cu.m.		7,271.80		7,271.80
405(1)g	Structural Concrete Class AA 28Mpa for Approach Slab	cu.m.		720.00		720.00
405(1)h	Structural Concrete Class AA 28Mpa for Girder	cu.m.		688.80		688.80
405(1)i	Structural Concrete Class AA 21Mpa for Parapet, Curb, Median	cu.m.		1,926.00		1,926.00
405(1)j	Structural Concrete Class AA 28Mpa for Box Culvert	cu.m.		76,328.00		76,328.00
405(1)k	Non Shrink Grout 41Mpa including wiremesh for Girder Riser	cu.m.		33.50		33.50
406(1)a	PSC Member (AASHTO Girder Type V) L = 23.5m	each		5.00		5.00
406(1)b	PSC Member (AASHTO Girder Type V) L = 28.5m	each		10.00		10.00
406(1)c	PSC Member (AASHTO Girder Type V) L = 30m	each		18.00		18.00
406(1)d	PSC Member (AASHTO Girder Type V) L = 33.5 m	each		354.00		354.00
406(1)e	PSC Member (AASHTO Girder Type V) L = 35 m	each		20.00		20.00
412(1)b	Elastomeric Bearing Pad ( 606 x 306 x 60mm)	pcs		814.00		814.00
SPL 414(d)	Rubber Filler (400 x 150 x 50mm)	each		1,708.00		1,708.00
SPL 414(e)	Hard Rubber Filler & Restrainer Bolts Dia 30mm	sets		377.00		377.00
SPL 416(1)a	Pile Dynamic Analysis	each		26.00		26.00
SPL 416(1)b	Pile Integrity Test	each		520.00		520.00

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY			
			Main Highway	Bridge & Viaduct	Interchange	Total
SPL 417(1)b	Cast Iron Deck Drain	each		762.00		762.00
SPL 417(2)a	Collector Pipe ( 150mm dia PVC )	l.m.		647.00		647.00
SPL 417(2)b	Collector Pipe ( 200mm dia PVC )	l.m.		4,767.00		4,767.00
SPL 418(a)	Expansion Joint, Type A ( M80 Multiplex )	l.m.		447.00		447.00
SPL 420	Cofferdam	PS		1.00		1.00
<b>G</b>	<b>DRAINAGE AND SLOPE PROTECTION STRUCTURES</b>					
500(1)a	RCPC, 610 mm dia.	l.m.	6,608.00			6,608.00
500(1)c	RCPC, 1220 mm dia.	l.m.	9,120.00			9,120.00
502(1)	Manholes	each	315.00			315.00
504(5)a	Grouted Riprap Class A (Slope Protection)	cu.m	24,097.00	3,782.00		27,879.00
504(5)b	Grouted Riprap Class A (Side Ditch)	cu.m	56,613.00			56,613.00
600a	Rolled Gutter (Median) 600mm x 200mm	l.m.	15,732.00			15,732.00
600(1) b	Asphalt Curb Type B3	l.m.	57,480.00		6,943.00	64,423.00
603(3)a	Single Metal Beam Guardrail (w/Post)	l.m.	57,480.00		6,943.00	64,423.00
603(3)b	Double Metal Beam Guardrail (w/Post)	l.m.	28,740.00	60.00		28,800.00
603(3)c	Lane Divider K-650-GS	l.m.				-
604(2)	Fencing (Chain Link)	l.m.	64,735.00			64,735.00
610	Sodding	sq.m.				-
<b>H</b>	<b>MISCELLANEOUS STRUCTURES</b>					
605(1)a	Warning Signs	each	64.00		20.00	84.00
605(2)	Regulatory Signs	each	128.00		20.00	148.00
605(3)a	Informatory Signs (3.50m x 2.00m)	each	40.00		5.00	45.00
605(3)b	Informatory Signs (4.50m x 2.50m)	each	10.00			10.00
612(1)	Reflectorized Thermoplastic Pavement Markings	sq.m.	43,822.00		3,257.00	47,079.00
612(2)	Reflectorized Studs 100x400x20	each			1,406.00	1,406.00
613	Seeding with Coconet	sq.m.	607,378.00		149,975.78	757,353.78
SPL	Installation of Fiber Optic	lm	30,420.00			30,420.00
SPL 1110	Toll Road Lighting	each	230.00		192.00	422.00
SPL200	Relocation of High-tension Electric Cable and Tower	each				1.00
<b>4.0</b>	<b>TOLL PLAZA AND SERVICE AREA</b>					
SPL 801	Truck Weighing Station	set			4.00	4.00
SPL 1041(3)a	Toll Island,	each			23.00	23.00
SPL 1041(4)	Crash Attenuators,	set			23.00	23.00
SPL 1000	Toll Booth (Type 1 )	each			15.00	15.00
SPL 1010	Toll Booth ( Maxi Type 2 )	each			8.00	8.00
SPL 1020	Toll Plaza	sq.m.			1,833.22	1,833.22
SPL 1030	Toll Collection System	l.s.			1.00	1.00
SPL 1040	Traffic Control System	l.s.			1.00	1.00
SPL 1050	Toll Plaza Lighting System	each			52.00	52.00
SPL 1120	Service Area including Lighting System and Toilet	l.s.			1.00	1.00
SPL 1130	Toll Operation Building	l.s.			1.00	1.00
SPL 1140	Toll House (4 unit)	Unit			4.00	4.00

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )		ESTIMATED QUANTITIES (4 LANE-ULTIMATE STAGE)	<b>B-01</b>
			SHEET NO.
			<b>1</b> OF <b>2</b>

**ESTIMATED QUANTITIES  
(2 LANE-INTERIM STAGE)**

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY			
			Main Highway	Bridge & C-Box	Interchange	Total
<b>1.0</b>	<b>GENERAL REQUIREMENTS</b>					
<b>A</b>	<b>FACILITIES FOR THE ENGINEER</b>	l.s.	1.00			1.00
<b>B</b>	<b>OTHER GENERAL REQUIREMENTS</b>					
SPL B.2.1	Construction Health and Safety	l.s.	1.00			1.00
SPL B.2.2	Mobilization / Demobilization (1.0% of Civil Works)	l.s.	1.00			1.00
SPL B.3.1	Environmental Monitoring Action Plan	l.s.	1.00			1.00
SPL 2000	Traffic Management During Construction	l.s.	1.00			1.00
SPL 3000	Day Work	PS.	1.00			1.00
<b>2.0</b>	<b>MAIN HIGHWAY</b>					
<b>C</b>	<b>EARTHWORKS</b>					
100(1)	Clearing and Grubbing	ha	171.00		23.63	194.63
101(1)a	Removal of Structure and Obstruction (Fence)	cu.m	440.00			440.00
101(1)d	Removal of Structure and Obstruction (Shoulder Pavement)	sq.m	2,875.00			2,875.00
102(1)	Unsuitable Excavation	cu.m.	699,345.50		118,161.10	817,506.60
103(1)	Structure Excavation, Common Material	cu.m.		43,622.00		43,622.00
103(1)	Structure Excavation, Common Material, Below O.W.L	cu.m.		20,454.50		20,454.50
103(3)	Foundation Back fill	cu.m.		33,186.10		33,186.10
104(1)e	Embankment from Borrow Material	cu.m.	2,855,032.00		284,676.00	3,139,708.00
105(1)	Subgrade Preparation	sq.m				-
<b>D</b>	<b>SUBBASE AND BASE COURSE</b>					
200	Aggregate Subbase Course	cu.m.	173,923.38	19,009.00	37,845.89	230,778.27
202	Crushed Aggregate Base Course	cu.m.	121,498.88		26,117.31	147,616.18
206	Cement Treated Base Course	cu.m.	71,895.83		8,291.70	80,187.52
<b>E</b>	<b>SURFACE COURSES</b>					
301(1)	Bituminous Prime Coat, MC-701 (0.45 L/m <sup>2</sup> )	tonne	1,533.78	2.46	269.30	1,805.54
302(2)	Bituminous Tack Coat, Emulsified Asphalt, SS-1 (1.0 L/m <sup>2</sup> )	tonne	167.02	9.20	26.09	202.30
310 (1)	Bituminous Concrete Binder Course, Hot Laid (t=50mm)	sq.m	479,305.50		84,156.97	563,462.47
310 (2)	Bituminous Concrete Surface Course, Hot Laid (t=50mm)	sq.m	371,145.00	25,784.00	57,968.23	454,897.23
311	Portland Cement Concrete Pavement t=300 mm	sq.m			5,900.00	5,900.00
<b>F</b>	<b>BRIDGE STRUCTURE CONSTRUCTION</b>					
400(17)b	Concrete Piles cast in Drilled Holes (1200mm) excluding Re-Bar	l.m.		6,276.00		6,276.00
400(17)h	Concrete Piles cast in Drilled Holes (2000mm) excluding Re-Bar	l.m.		48.00		48.00
401(1)	Railing, ( Concrete Bridge Railing)	l.m.		3,984.00		3,984.00
404 (1)	Reinforcing Steel, Grade 60 (Bridge)	kg		14,172,815.60		14,172,815.60
405(1)	Lean Concrete, 17Mpa	cu.m.		1,726.20		1,726.20
405(1)a	Structural Concrete Class AA 28Mpa for Pile Cap	cu.m.		3,308.30		3,308.30
405(1)b	Structural Concrete Class AA 28Mpa for Column	cu.m.		1,339.52		1,339.52
405(1)c	Structural Concrete Class AA 28Mpa for Coping	cu.m.		3,101.75		3,101.75
405(1)d	Structural Concrete Class AA 28Mpa for Diaphragm	cu.m.		529.82		529.82
405(1)e	Structural Concrete Class AA 28Mpa for Deck Slab	cu.m.		5,563.22		5,563.22
405(1)f	Structural Concrete Class AA 28Mpa for Abutment, Wingwall	cu.m.		7,271.78		7,271.78
405(1)g	Structural Concrete Class AA 28Mpa for Approach Slab	cu.m.		1,823.30		1,823.30
405(1)h	Structural Concrete Class AA 28Mpa for Girder	cu.m.		688.81		688.81
405(1)i	Structural Concrete Class AA 21Mpa for Parapet, Curb, Median	cu.m.		1,072.80		1,072.80
405(1)j	Structural Concrete Class AA 28Mpa for Box Culvert	cu.m.		72,197.00		72,197.00
405(1)k	Non Shrink Grout 41Mpa including wiremesh for Girder Riser	cu.m.		18.20		18.20
406(1)b	PSC Member (AASHTO Girder Type V) L = 30m	each		18.00		18.00
406(1)c	PSC Member (AASHTO Girder Type V) L = 33.5 m	each		182.00		182.00
406(1)d	PSC Member (AASHTO Girder Type V) L = 35 m	each		15.00		15.00
412(1)b	Elastomeric Bearing Pad ( 606 x 306 x 60mm)	pcs		470.00		470.00
SPL 414(d)	Rubber Filler (400 x 150 x 50mm)	each		940.00		940.00
SPL 414(e)	Hard Rubber Filler & Restrainer Bolts Dia 30mm	sets		221.00		221.00
SPL 416(1)a	Pile Dynamic Analysis	each		17.00		17.00
SPL 416(1)b	Pile Integrity Test	each		344.00		344.00
SPL 417(1)b	Cast Iron Deck Drain	each		434.60		434.60
SPL 417(2)a	Collector Pipe ( 150mm dia PVC )	l.m.		369.41		369.41

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY			
			Main Highway	Bridge & C-Box	Interchange	Total
SPL 417(2)b	Collector Pipe ( 200mm dia PVC )	l.m.		2,637.00		2,637.00
SPL 418(a)	Expansion Joint, Type A ( M80 Multiplex )	l.m.		315.00		315.00
SPL 420	Cofferdam	PS		1.00		1.00
<b>G</b>	<b>DRAINAGE AND SLOPE PROTECTION STRUCTURES</b>					
500(1)a	RCPC, 610 mm dia.	l.m.	3,304.00			3,304.00
500(1)c	RCPC, 1220 mm dia.	l.m.	6,080.00			6,080.00
502(1)	Manholes	each	315.00			315.00
504(5)a	Grouted Riprap Class A (Slope Protection)	cu.m	24,097.00	1,891.00		25,988.00
504(5)b	Grouted Riprap Class A (Side Ditch)	cu.m	56,613.00			56,613.00
600a	Rolled Gutter (Median) 600mm x 200mm	l.m.	5,500.00			5,500.00
600(1) b	Asphalt Curb Type B3	l.m.	34,544.00		6,943.32	41,487.32
603(3)a	Single Metal Beam Guardrail (w/Post)	l.m.	55,934.00		6,943.32	62,877.32
603(3)b	Double Metal Beam Guardrail (w/Post)	l.m.	5,297.00	60.00		5,357.00
603(3)c	Lane Divider K-650-GS	l.m.	16,525.00			16,525.00
604(2)	Fencing (Chain Link)	l.m.	64,735.00			64,735.00
610	Sodding	sq.m.				-
<b>H</b>	<b>MISCELLANEOUS STRUCTURES</b>					
605(1)a	Warning Signs	each	64.00		20.00	84.00
605(2)	Regulatory Signs	each	128.00		20.00	148.00
605(3)a	Informatory Signs (3.50m x 2.00m)	each	40.00		5.00	45.00
605(3)b	Informatory Signs (4.50m x 2.50m)	each	10.00			10.00
612(1)	Reflectorized Thermoplastic Pavement Markings	sq.m.	23,362.50		3,257.00	26,619.50
612(2)	Reflectorized Studs 100x400x20	each			1,406.00	1,406.00
613	Seeding with Coconet	sq.m.	607,378.00		149,975.78	757,353.78
SPL	Installation of Fiber Optic	lm	30,420.00			30,420.00
SPL 1110	Toll Road Lighting	each	230.00		191.58	421.58
SPL200	Relocation of High-tension Electric Cable and Tower	PS				1.00
<b>4.0</b>	<b>TOLL PLAZA AND SERVICE AREA</b>					
SPL 801	Truck Weighing Station	set			4.00	4.00
SPL 1041(3)a	Toll Island,	each			23.00	23.00
SPL 1041(4)	Crash Attenuators,	set			23.00	23.00
SPL 1000	Toll Booth (Type 1 )	each			15.00	15.00
SPL 1010	Toll Booth ( Maxi Type 2 )	each			8.00	8.00
SPL 1020	Toll Plaza	sq.m.			1,833.22	1,833.22
SPL 1030	Toll Collection System	l.s.			1.00	1.00
SPL 1040	Traffic Control System	l.s.			1.00	1.00
SPL 1050	Toll Plaza Lighting System	each			52.00	52.00
SPL 1120	Service Area including Lighting System and Toilet	l.s.			1.00	1.00
SPL 1130	Toll Operation Building	l.s.			1.00	1.00
SPL 1140	Toll House (4 unit)	Unit			4.00	4.00

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )		ESTIMATED QUANTITIES (2 LANE-INTERIM STAGE)	<b>B-02</b>
			SHEET NO.
			<b>2</b> OF <b>2</b>

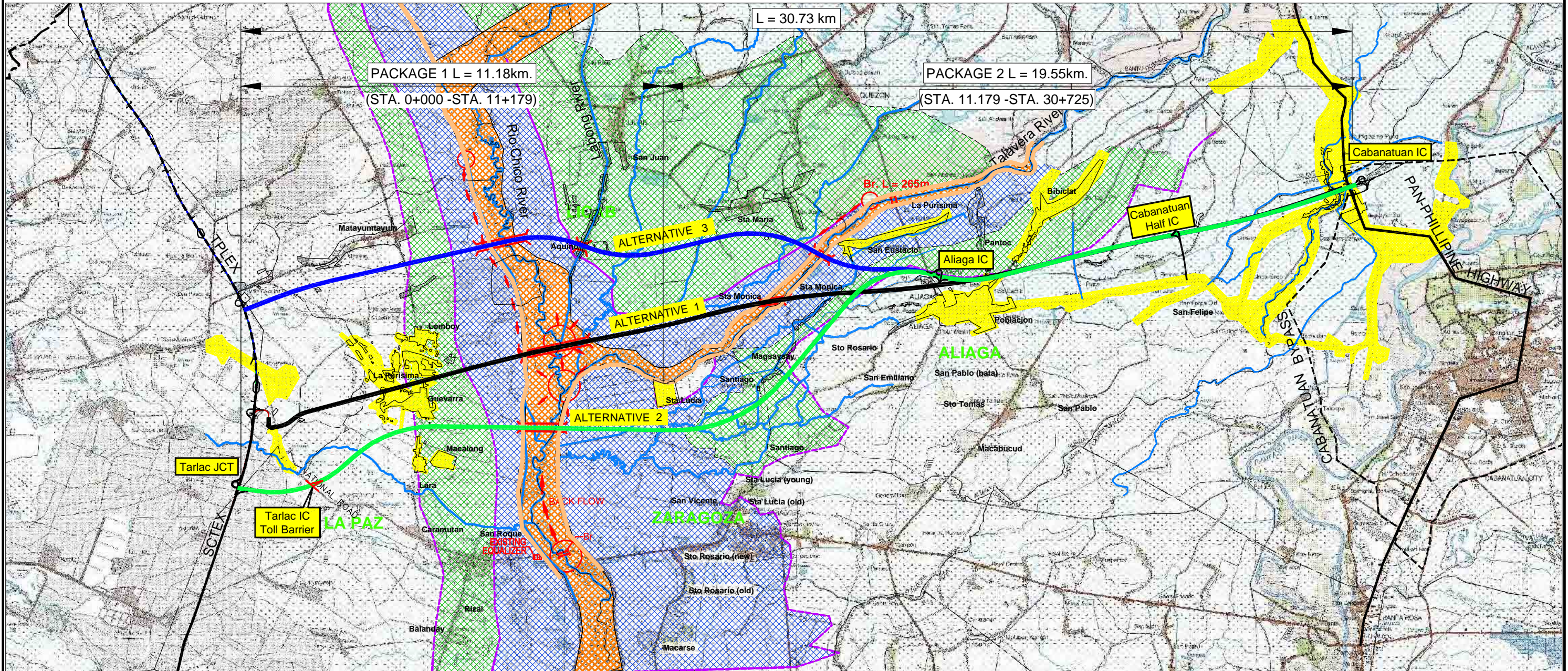


# C. GENERAL ROUTE PLAN

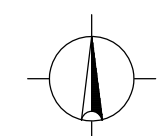
CLLEX ( TARLAC - CABANATUAN)

# Central Luzon Link Expressway

Scale 1:50,000



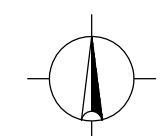
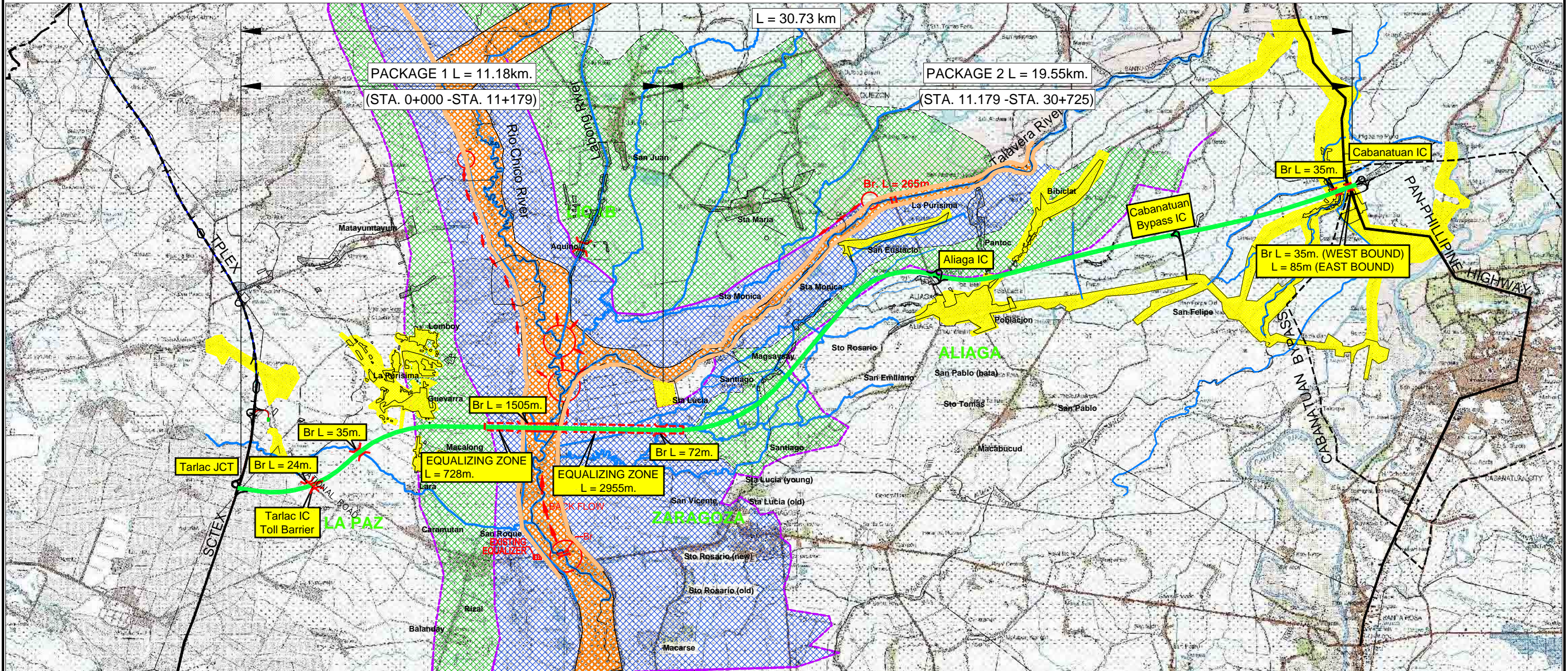
LEGEND:	
EXPRESSWAY	
HOUSE and BLDG.	
RiverFlowArea	
Primary Flood Line	(Frequent Flood Area 1/1 - 1/20 Assumed)
Secondary Flood Line	(Past Max. Flood Area Ondoy, Peping)



<p>PROJECT TITLE</p> <p style="text-align: center;"><b>Preparatory survey for expressway project in Mega Manila Region</b></p> <p style="text-align: center;"><b>CLLEX ( TARLAC - CABANATUAN )</b></p>	<p>SCALE</p> <p>A1 = As Shown A3 = Half Scale</p>	<p>SHEET CONTENT</p> <p style="text-align: center;"><b>GENERAL ROUTE PLAN</b> <b>(ALTERNATIVE ROUTES)</b></p>	<p>DRAWING NO.</p> <p style="text-align: center;">C-01</p> <hr/> <p>SHEET NO.</p> <p style="text-align: center;">1 OF 1</p>
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# Central Luzon Link Expressway

Scale 1:50,000

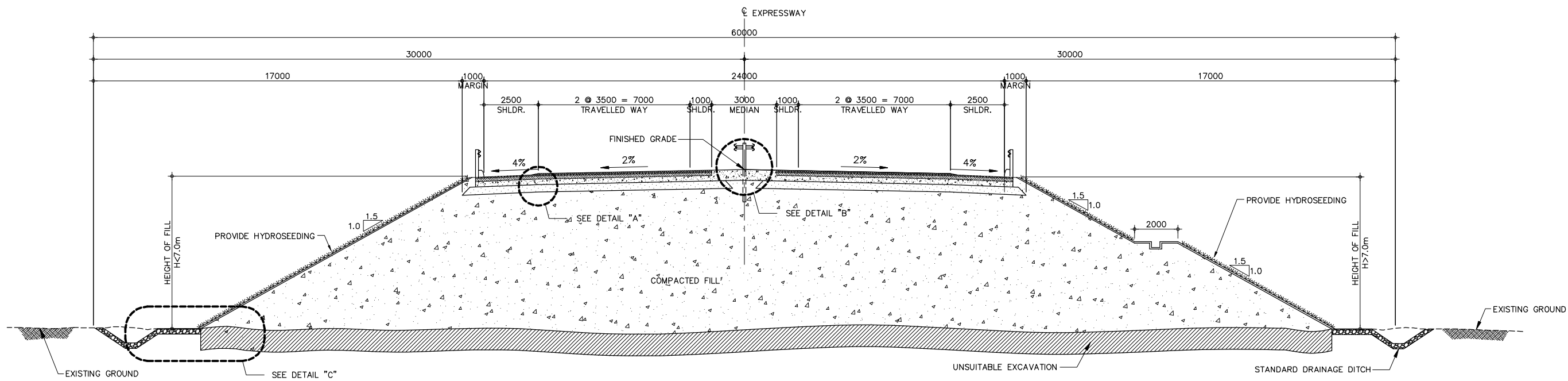


LEGEND:	
EXPRESSWAY	
HOUSE and BLDG.	
RiverFlowArea	
Primary Flood Line	(Frequent Flood Area 1/1 - 1/20 Assumed)
Secondary Flood Line	(Past Max. Flood Area Ondoy, Peping)

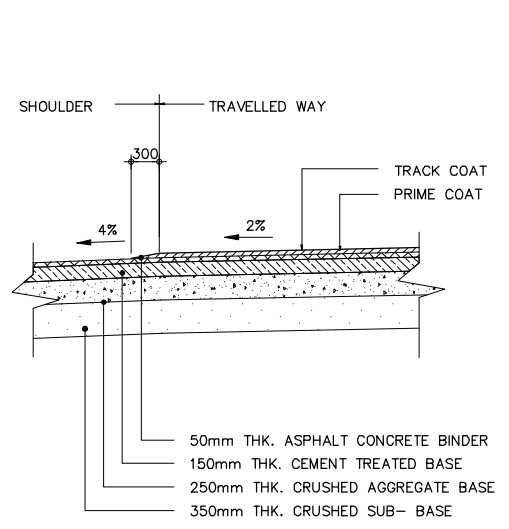
<p>PROJECT TITLE</p> <p style="text-align: center;"><b>Preparatory survey for expressway project in Mega Manila Region</b></p> <p style="text-align: center;"><b>CLLEX ( TARLAC - CABANATUAN )</b></p>	<p>SCALE</p> <p>A1 = As Shown A3 = Half Scale</p>	<p>SHEET CONTENT</p> <p style="text-align: center;"><b>GENERAL ROUTE PLAN</b> <b>(RECOMMENDED ROUTE)</b></p>	<p>DRAWING NO.</p> <p style="text-align: center;">C-02</p> <hr/> <p>SHEET NO.</p> <p style="text-align: center;">1 OF 1</p>
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# D. TYPICAL CROSS SECTION

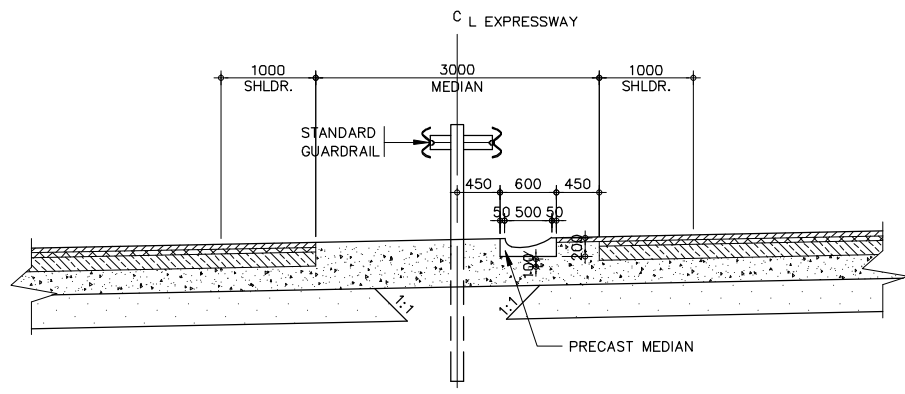
CLLEX ( TARLAC - CABANATUAN)



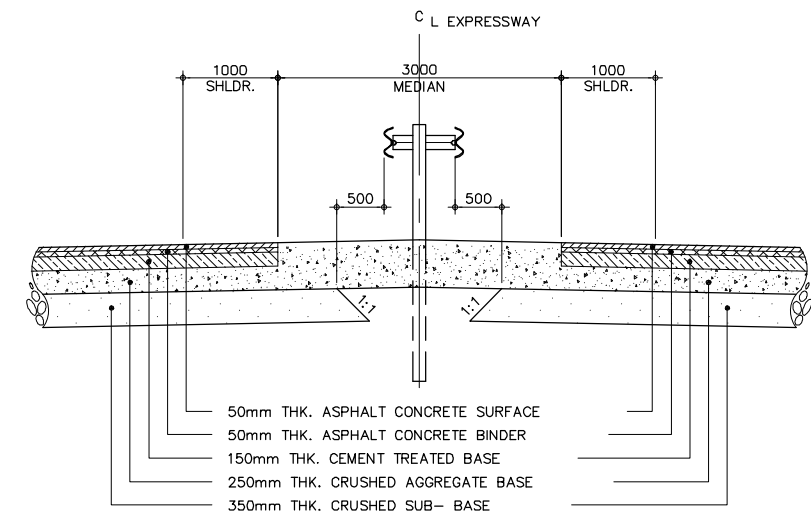
**1** TYPICAL ROADWAY SECTION  
a SCALE 1:100



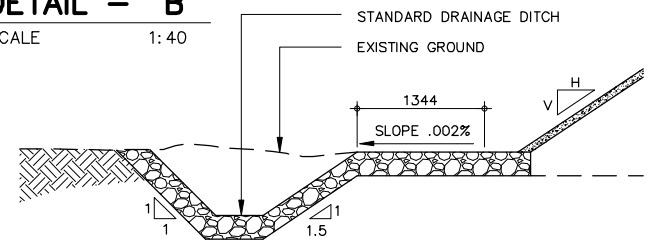
**1** DETAIL - "A"  
b SCALE 1:40



**1** DETAIL - "B"  
c SCALE 1:40

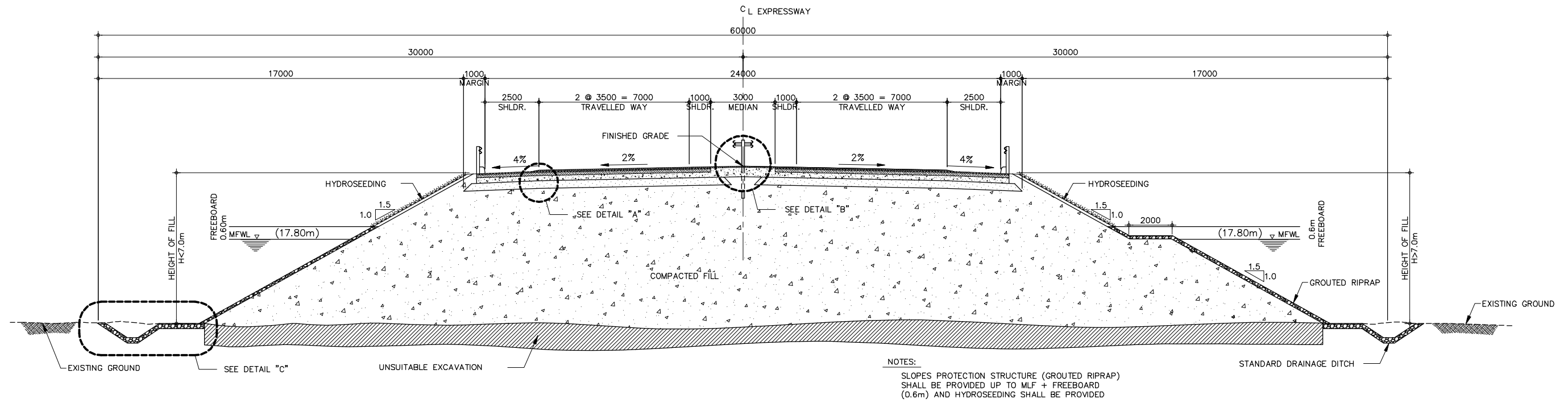


**1** DETAIL - "B-2"  
d SCALE 1:40

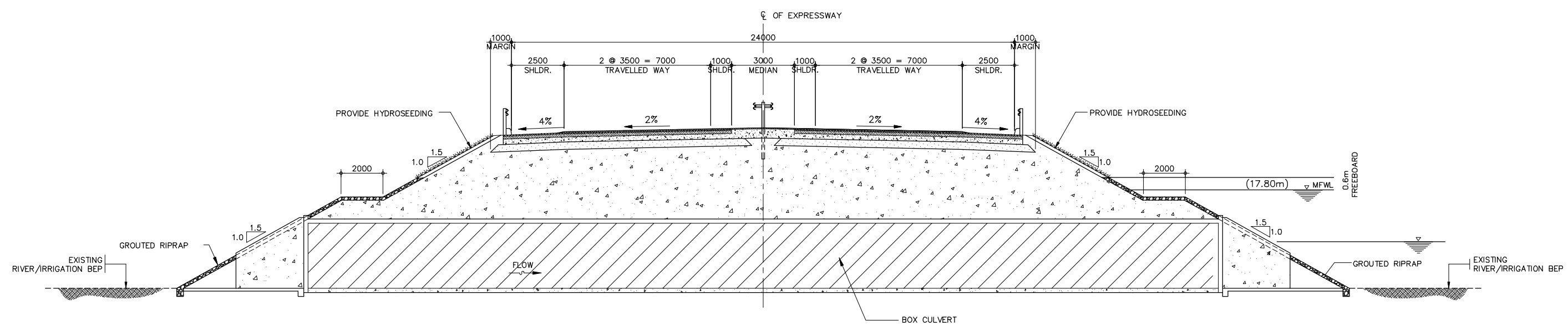


**1** DETAIL - "C"  
e SCALE 1:40

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	AS SHOWN (A1) HALF SCALE (A3)	TYPICAL CROSS SECTION MAIN EXPRESSWAY	D-01
			SHEET NO.
			1 OF 5

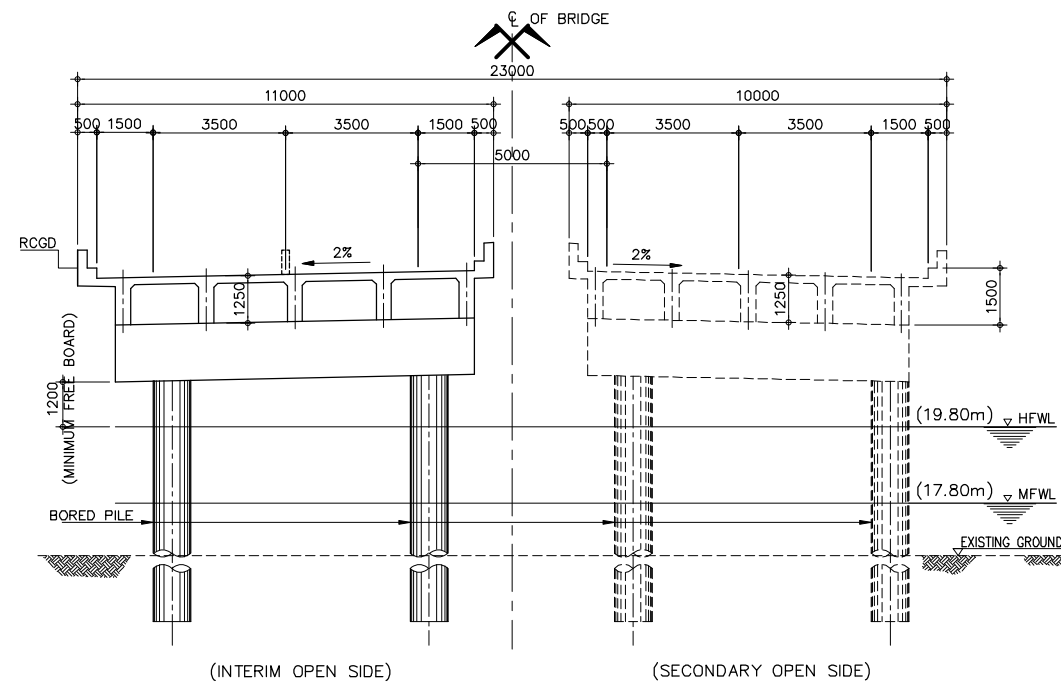


**2A** TYPICAL ROADWAY SECTION (EQUALIZING ZONE)  
SCALE 1:100

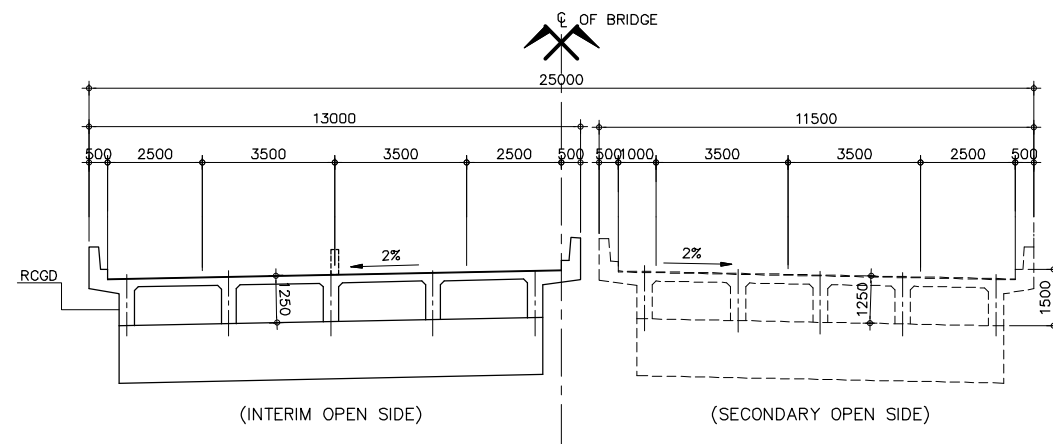


**2B** TYPICAL ROADWAY SECTION (EQUALIZING ZONE (BOX CULVERT))  
SCALE 1:100

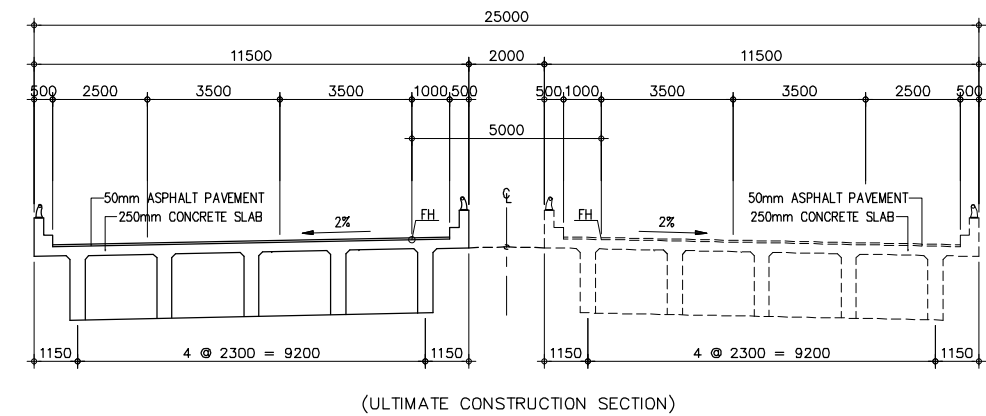
PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	AS SHOWN (A1) HALF SCALE (A3)	TYPICAL CROSS SECTION EQUALIZING ZONE	D-02
			SHEET NO.
			2 OF 5



**3A** TYPICAL CROSS SECTION (VIADUCT)  
SCALE 1:100

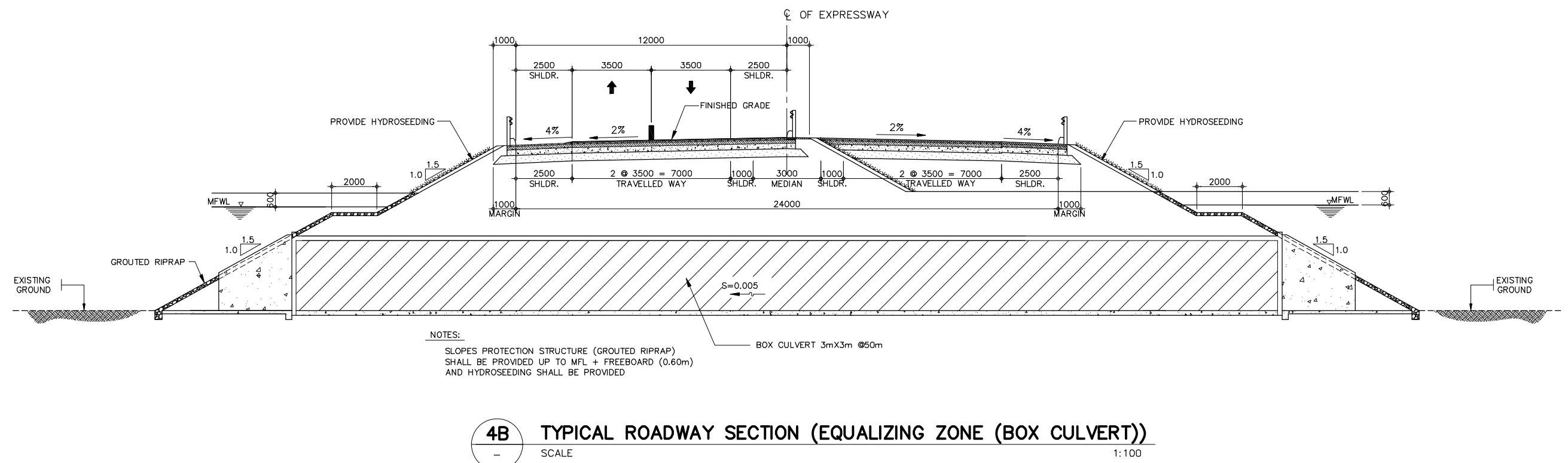
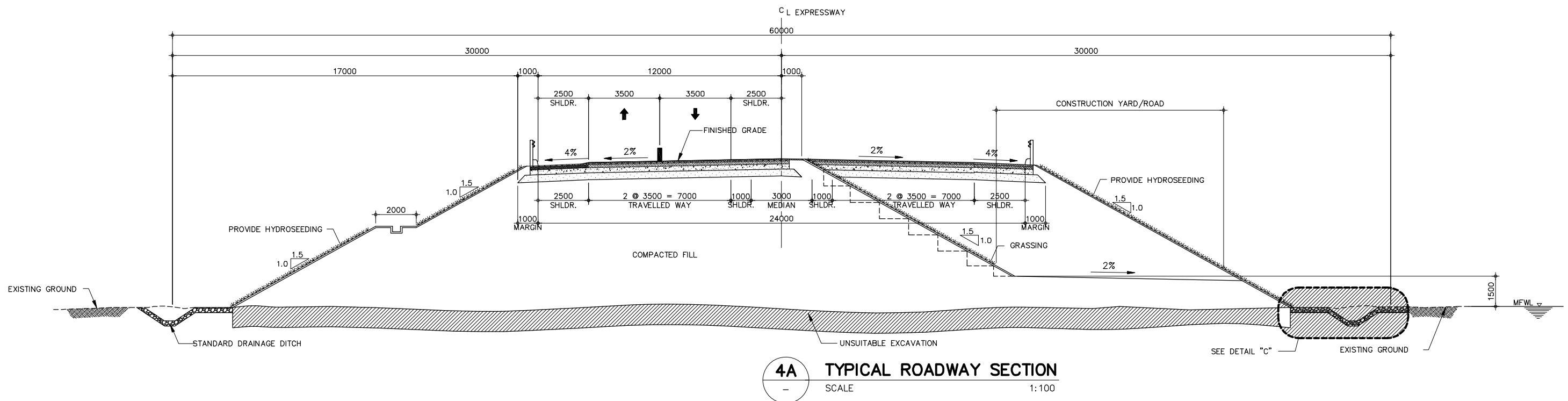


**3B** TYPICAL CROSS SECTION (SMALL/MIDIUM BRIDGE INTERIM SECTION)  
SCALE 1:100



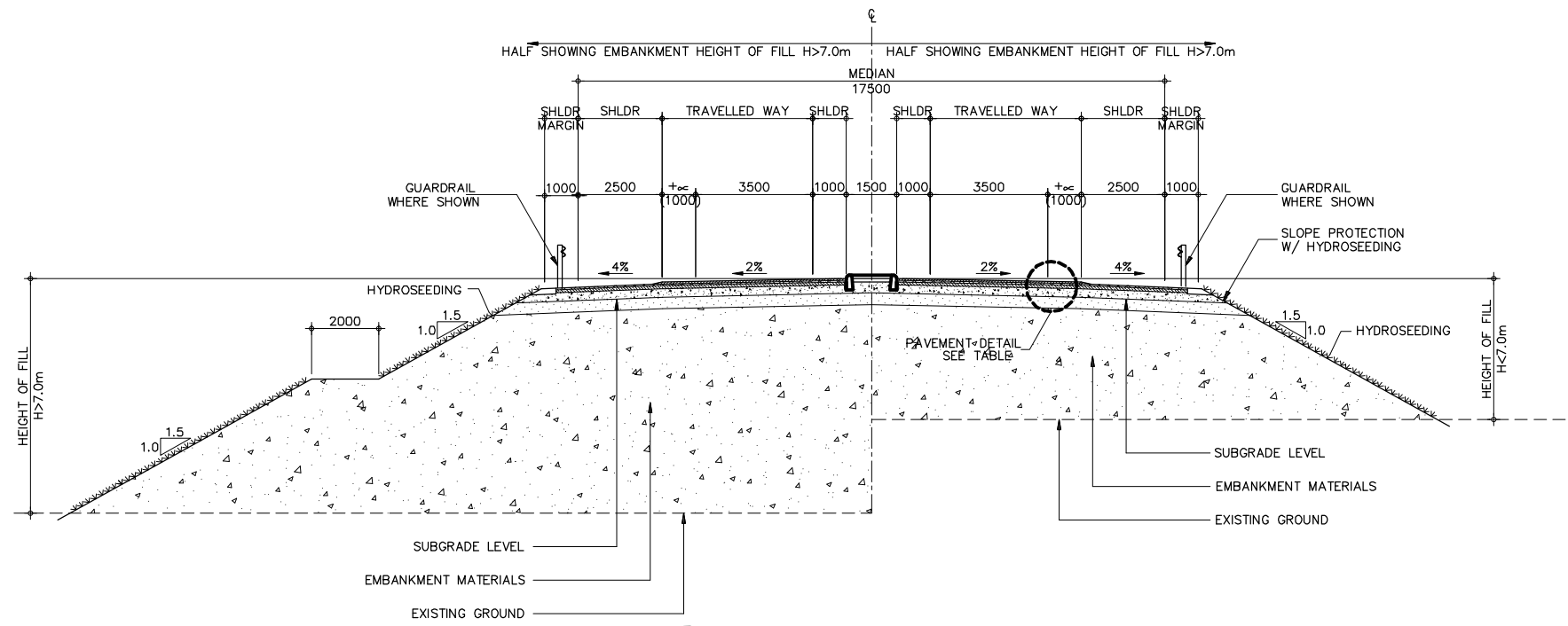
**3C** TYPICAL CROSS SECTION (SMALL/MIDIUM BRIDGE ULTIMATE SECTION)  
SCALE 1:100

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	AS SHOWN (A1) HALF SCALE (A3)	TYPICAL CROSS SECTION BRIDGE & VIADUCT	D-03
			SHEET NO.
			3 OF 5

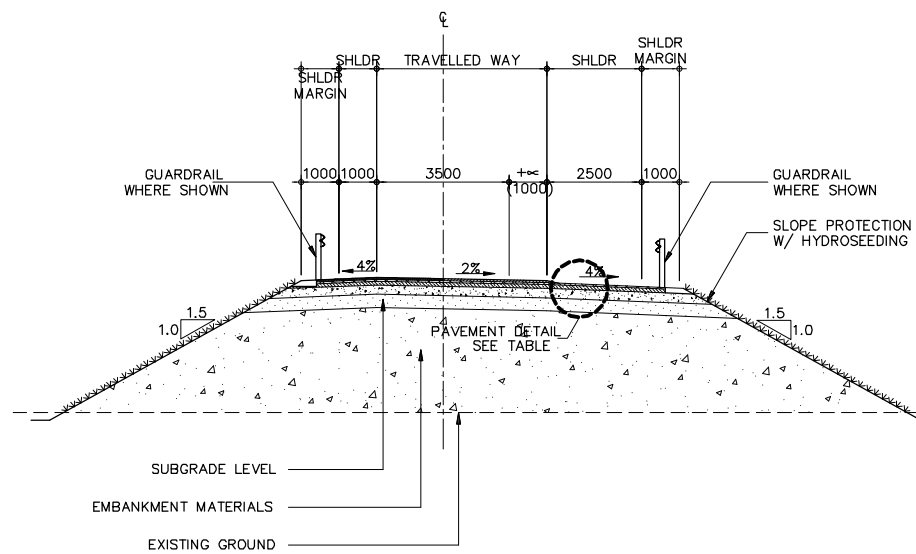


PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	AS SHOWN (A1) HALF SCALE (A3)	TYPICAL CROSS SECTION INTERIM 2-LANES	D-04
			SHEET NO.
			4 OF 5

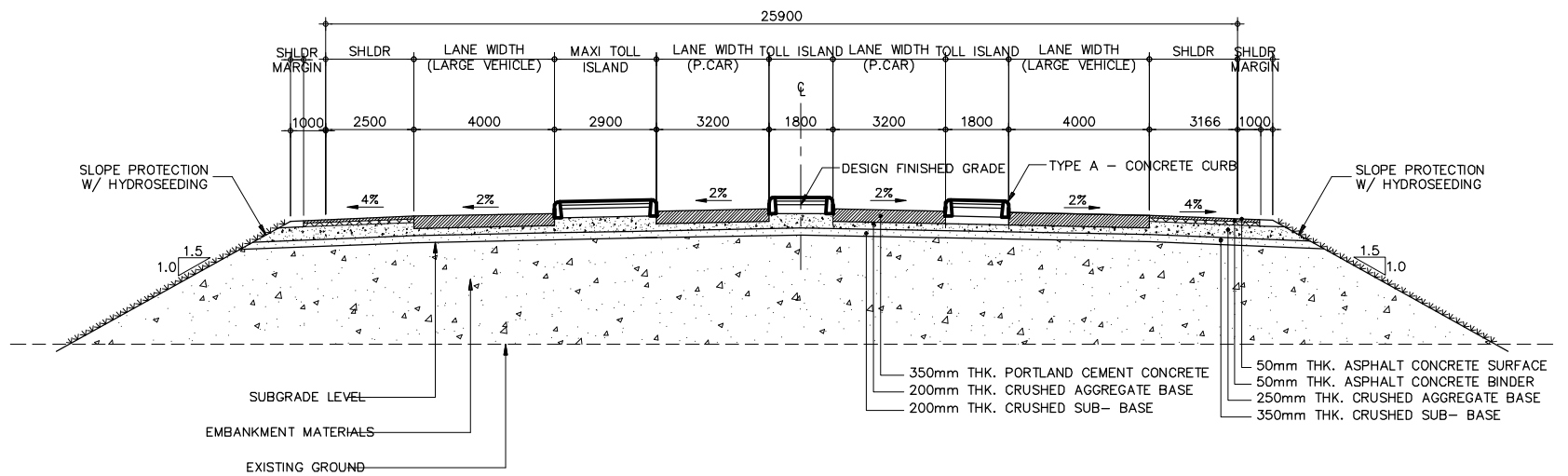




**5A SECTION @ LOOP RAMP**  
SCALE 1:100



**5B SECTION @ LOOP RAMP**  
SCALE 1:100



**5C SECTION @ TOLL PLAZA**  
SCALE 1:100

PAVEMENT THICKNESS TABLE

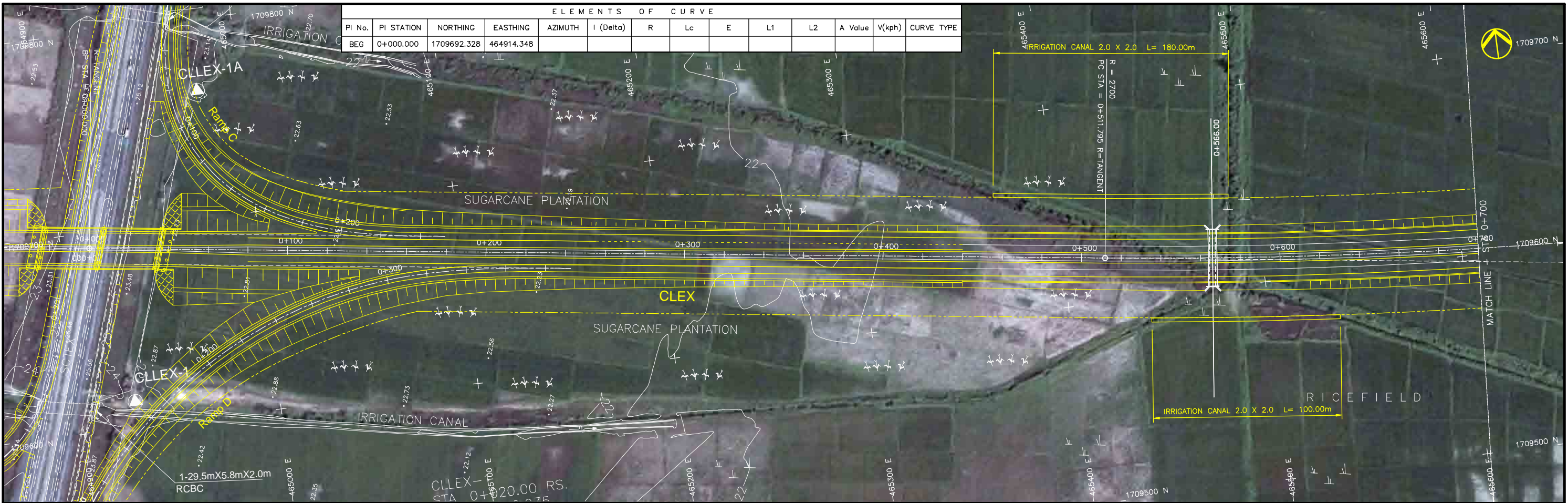
LAYER	TRAVELLED WAY	SHOULDER
SURFACE COURSE	50mm THK. ASPHALT CONCRETE SURFACE COURSE	
BINDER COURSE	50mm THK. ASPHALT CONCRETE BINDER COURSE	50mm THK. ASPHALT CONCRETE BINDER COURSE
BASE COURSE	100mm THK. CEMENT TREATED BASE COURSE	100mm THK. CEMENT TREATED BASE COURSE
	250mm THK. CRUSH AGGREGATE BASE COURSE	250mm THK. CRUSH AGGREGATE BASE COURSE
SUBBASE COURSE	350mm THK. AGGREGATE SUBBASE COURSE	350mm THK. AGGREGATE SUBBASE COURSE

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	AS SHOWN (A1) HALF SCALE (A3)	TYPICAL CROSS SECTION INTERCHANGES & RAMP	D-05
			SHEET NO.
			5 OF 5

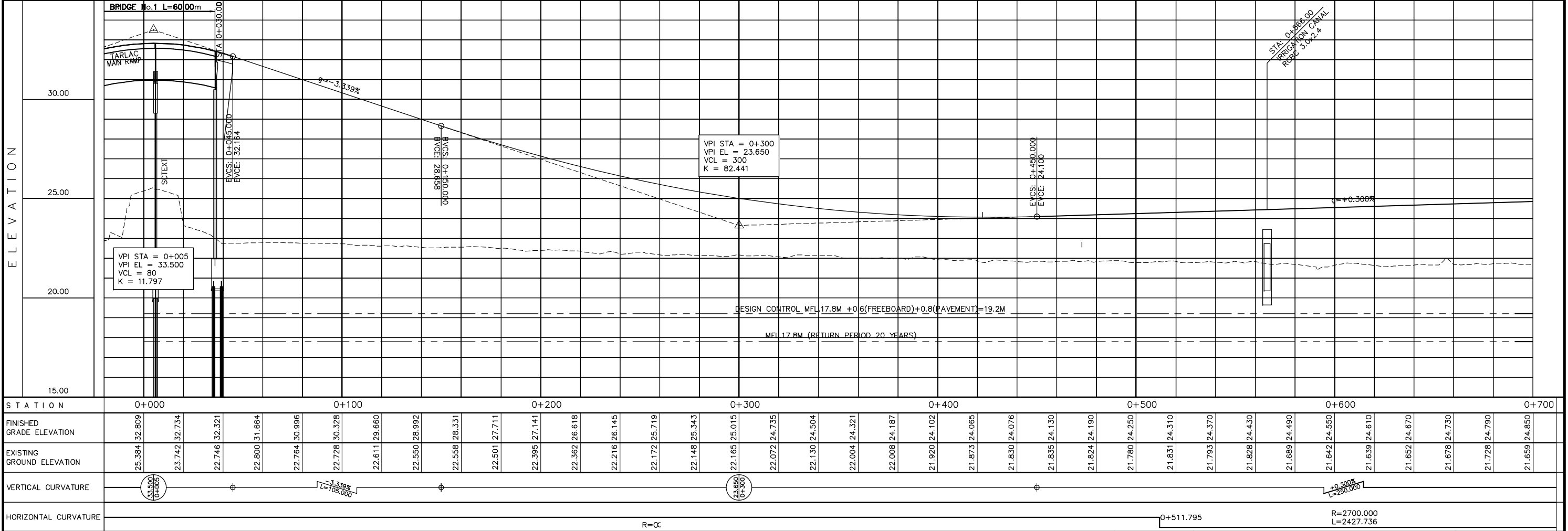
# E. PLAN AND PROFILE

ULTIMATE 4 LANES

CLLEX ( TARLAC - CABANATUAN)

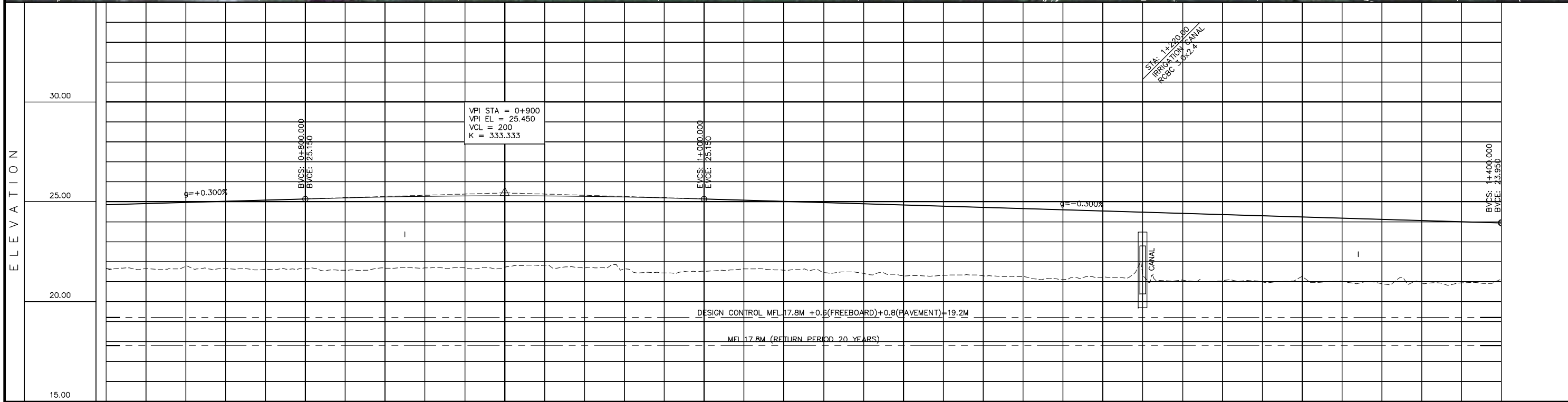


ELEMENTS OF CURVE													
PI No.	PI STATION	NORTHING	EASTING	AZIMUTH	I (Delta)	R	Lc	E	L1	L2	A Value	V(kph)	CURVE TYPE
BEG	0+000.000	1709692.328	464914.348										



STATION	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700
FINISHED GRADE ELEVATION	32.809	32.734	32.321	31.864	30.996	30.328	29.660	28.992
EXISTING GROUND ELEVATION	25.384	23.742	22.748	22.800	22.764	22.728	22.611	22.550
VERTICAL CURVATURE	R=105.000		R=105.000		R=2700.000		R=2427.736	

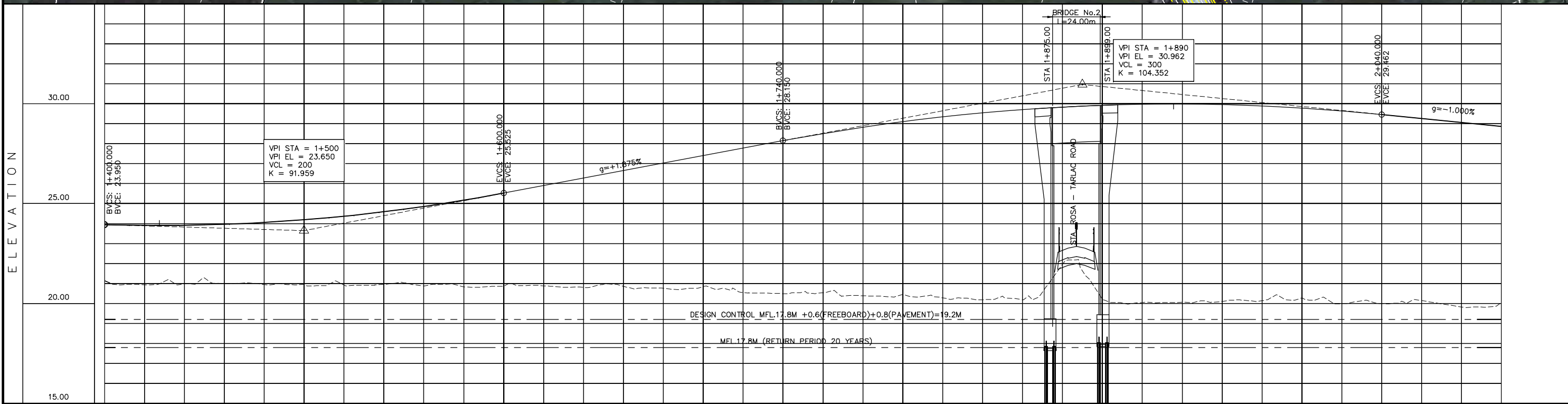
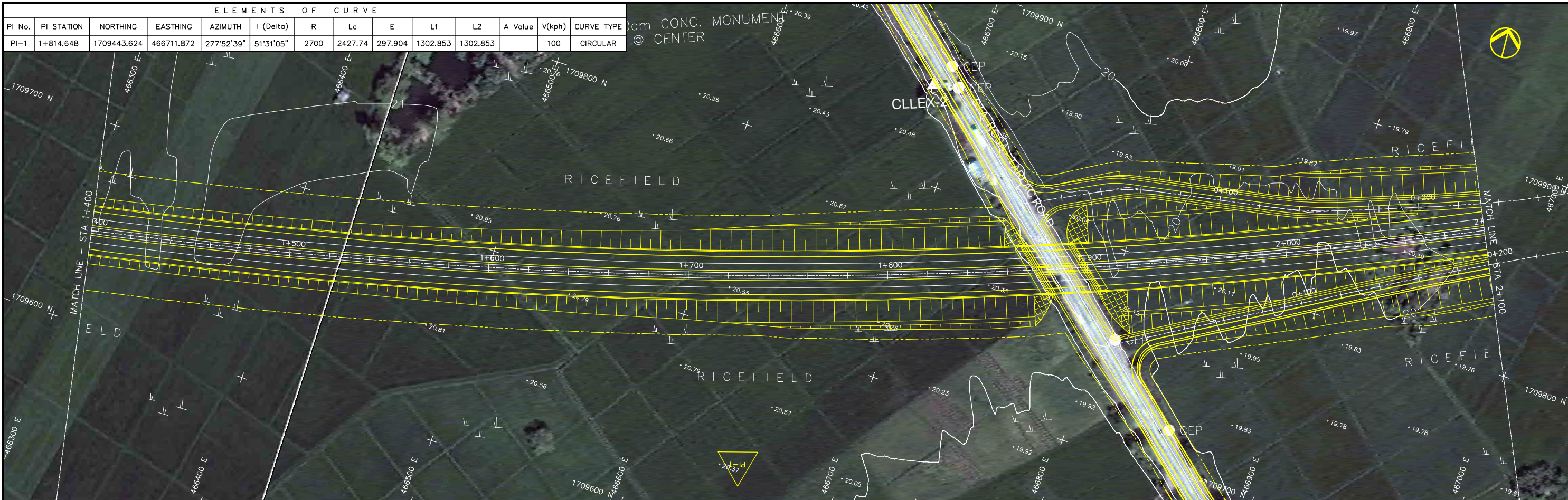
PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region <b>CLLEX ( TARLAC - CABANATUAN )</b>	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 0+000.000-STA 0+700.000	E-01 SHEET NO. 1 OF 44



STATION	0+700	0+800	0+900	1+000	1+100	1+200	1+300	1+400
FINISHED GRADE ELEVATION	21.658	24.850	25.150	25.150	24.850	24.490	24.130	23.950
EXISTING GROUND ELEVATION	21.657	24.910	25.030	25.276	24.790	24.430	24.070	23.950
VERTICAL CURVATURE	+0.300% L=250.000		23.850 0+850		-0.300% L=400.000			
HORIZONTAL CURVATURE					R=2700.000 L=2427.736			

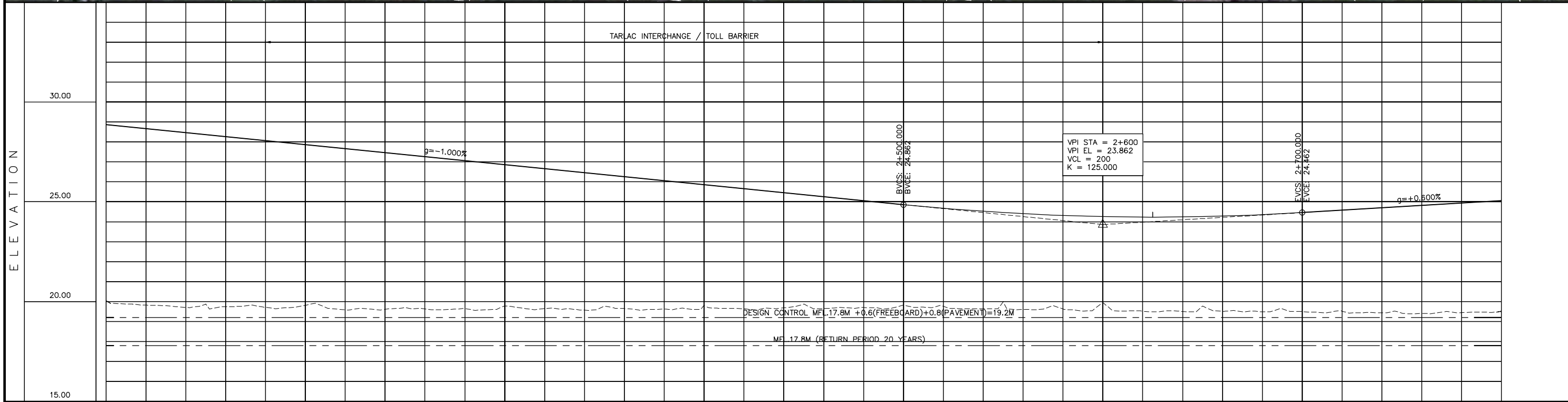
PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 0+700.000-STA 1+400.000	E-02 SHEET NO. 2 OF 44

ELEMENTS OF CURVE													
PI No.	PI STATION	NORTHING	EASTING	AZIMUTH	I (Delta)	R	Lc	E	L1	L2	A Value	V(kph)	CURVE TYPE
PI-1	1+814.648	1709443.624	466711.872	277°52'39"	51°31'05"	2700	2427.74	297.904	1302.853	1302.853		100	CIRCULAR



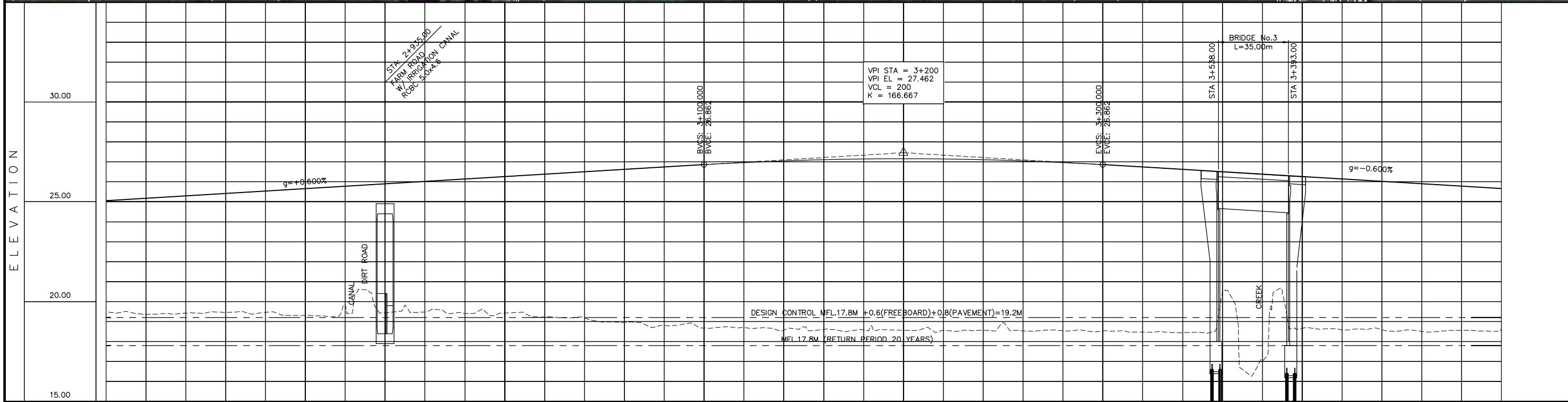
STATION	1+400	1+500	1+600	1+700	1+800	1+900	2+000	2+100
FINISHED GRADE ELEVATION	23.950	23.912	23.966	24.058	24.194	24.373	24.596	24.862
EXISTING GROUND ELEVATION	21.146	20.936	20.966	21.004	20.954	20.963	20.930	20.961
VERTICAL CURVATURE		23.650 1+500		1.875% L=140.000		30.962 1+890		-1.000% L=460.000
HORIZONTAL CURVATURE					R=2700.000 L=2427.736			

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 1+400.000-STA 2+100.000	E-03 SHEET NO. 3 OF 44



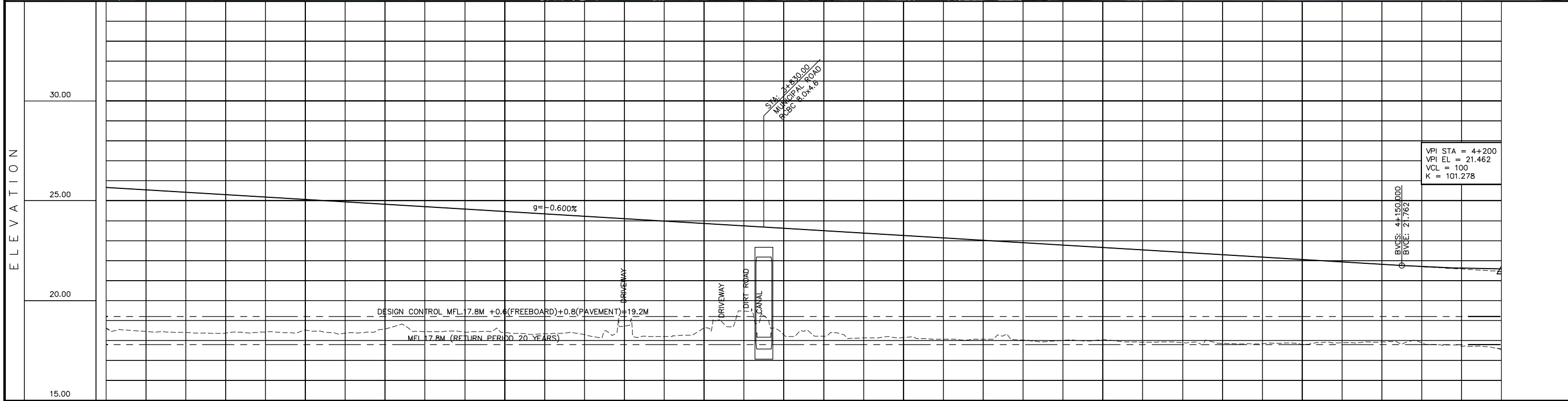
STATION	2+100	2+200	2+300	2+400	2+500	2+600	2+700	2+800
FINISHED GRADE ELEVATION	20.045	28.862	28.662	28.462	28.262	28.062	27.862	27.662
EXISTING GROUND ELEVATION	19.824	19.713	19.750	19.712	19.814	19.592	19.615	19.634
VERTICAL CURVATURE								
HORIZONTAL CURVATURE								

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 2+100.000-STA 2+800.000	E-04
			SHEET NO. 4 OF 44



STATION	2+800	2+900	3+000	3+100	3+200	3+300	3+400	3+500
FINISHED GRADE ELEVATION	25.062	25.182	25.302	25.422	25.542	25.662	25.782	25.902
EXISTING GROUND ELEVATION	19.498	19.366	19.426	19.461	19.461	19.304	19.876	19.441
VERTICAL CURVATURE	+0.600% L=400.000						-0.600% L=400.000	
HORIZONTAL CURVATURE	R=2700.000 L=2427.736		R=∞				R=3000.000 L=2305.362	

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 2+800.000-STA 3+500.000	E-05 SHEET NO. 5 OF 44

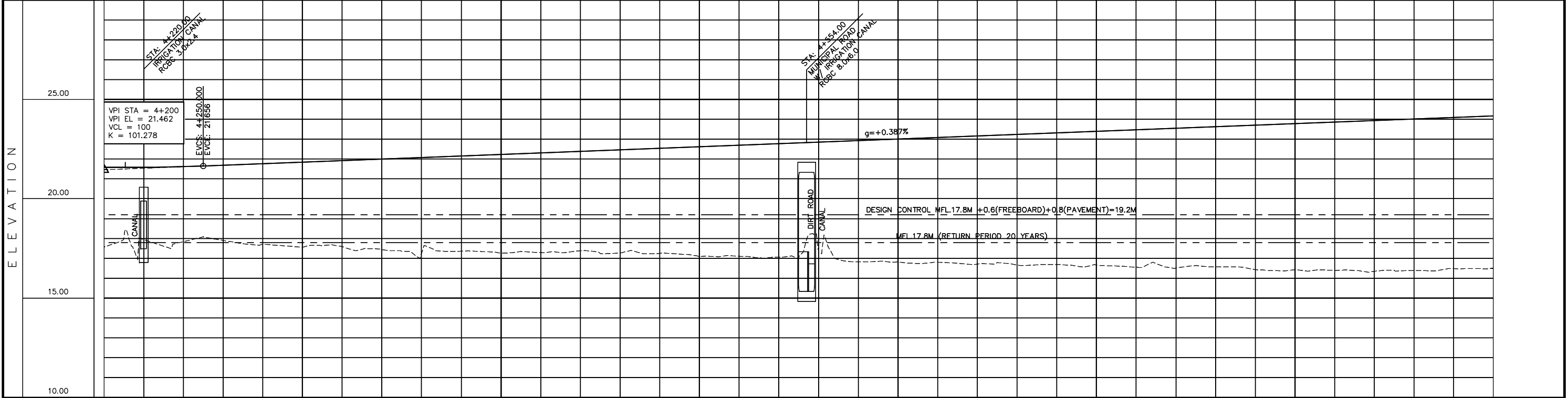
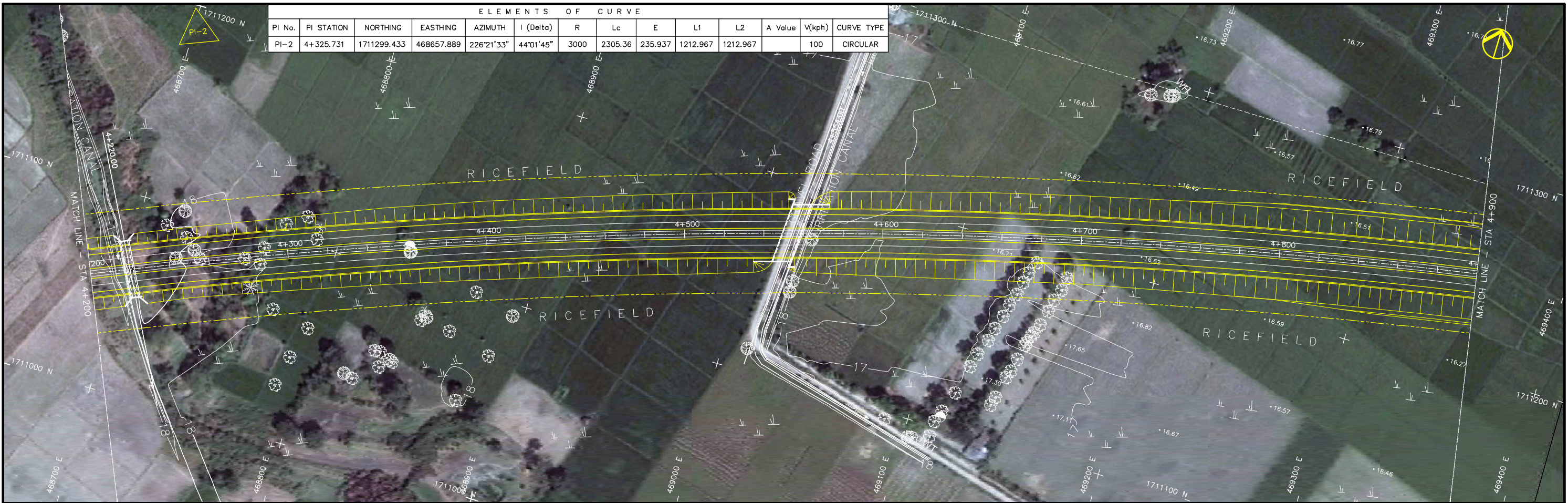


STATION	3+500	3+600	3+700	3+800	3+900	4+000	4+100	4+200
FINISHED GRADE ELEVATION	25.662	25.542	25.422	25.302	25.182	25.062	24.942	24.822
EXISTING GROUND ELEVATION	18.602	18.456	18.402	18.380	18.433	18.530	18.371	18.583
VERTICAL CURVATURE	$g = -0.600\%$							
HORIZONTAL CURVATURE	$R = 3000.000$ $L = 2305.362$							

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 3+500.000-STA 4+200.000	E-06
			SHEET NO. 6 OF 44

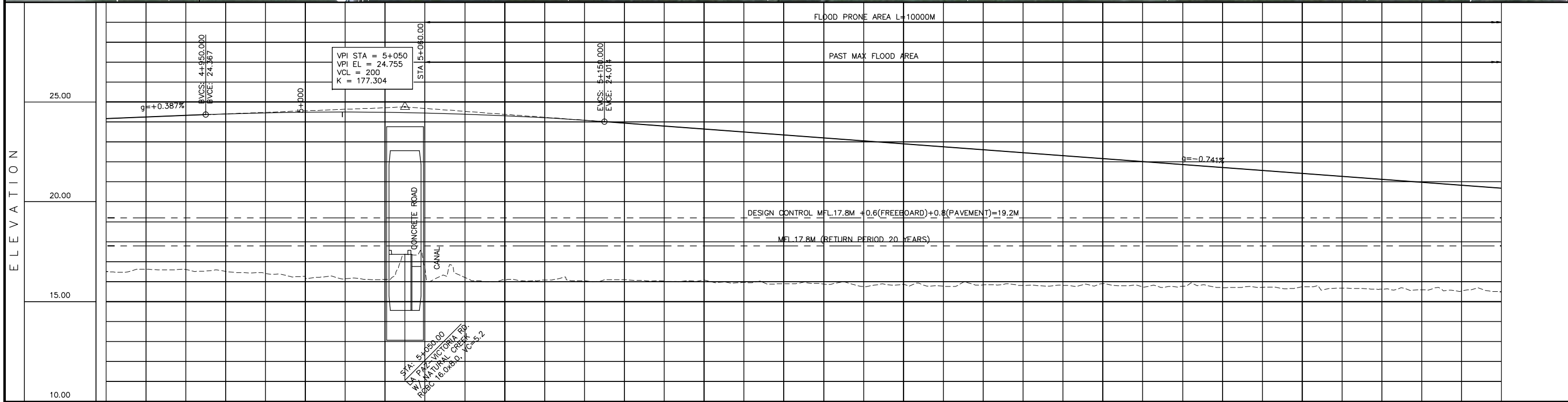


ELEMENTS OF CURVE													
PI No.	PI STATION	NORTHING	EASTING	AZIMUTH	I (Delta)	R	Lc	E	L1	L2	A Value	V(kph)	CURVE TYPE
PI-2	4+325.731	1711299.433	468657.889	226°21'33"	44°01'45"	3000	2305.36	235.937	1212.967	1212.967		100	CIRCULAR



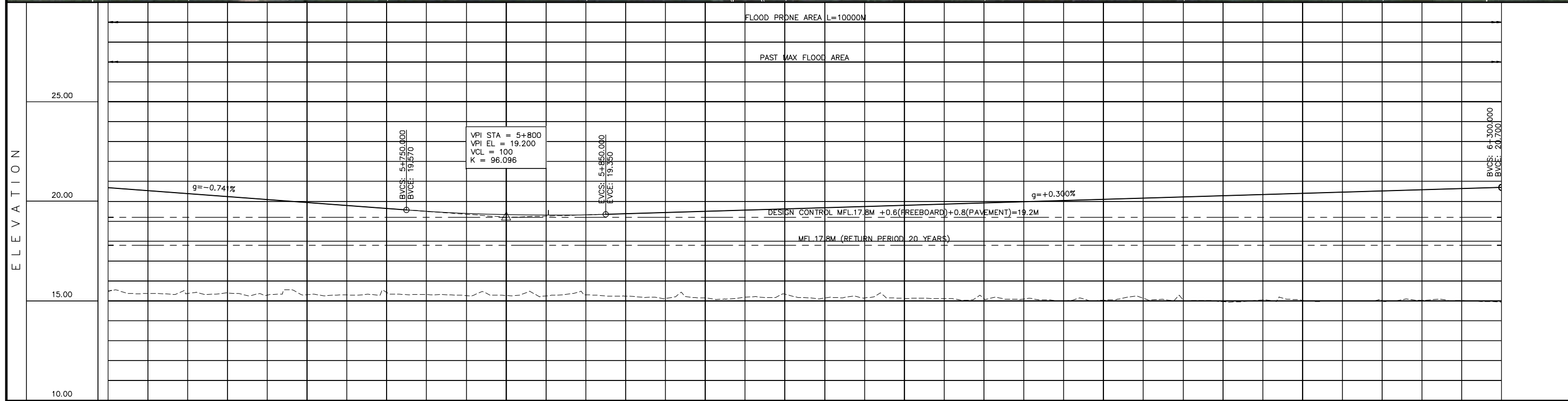
STATION	4+200	4+300	4+400	4+500	4+600	4+700	4+800	4+900
FINISHED GRADE ELEVATION	17.573 21.585	17.953 21.584	17.856 21.622	17.905 21.694	17.711 21.772	17.555 21.849	17.592 21.927	17.447 22.004
EXISTING GROUND ELEVATION	17.573 21.585	17.953 21.584	17.856 21.622	17.905 21.694	17.711 21.772	17.555 21.849	17.592 21.927	17.447 22.004
VERTICAL CURVATURE								
HORIZONTAL CURVATURE	R=3000.000 L=2305.362							

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 4+200.000-STA 4+900.000	E-07
			SHEET NO.
			7 OF 44



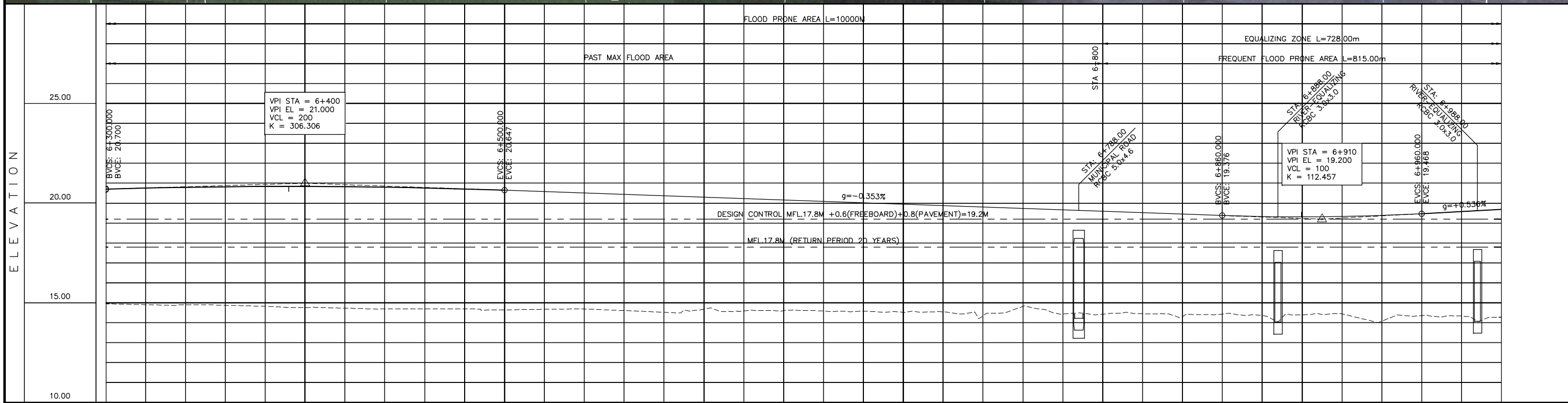
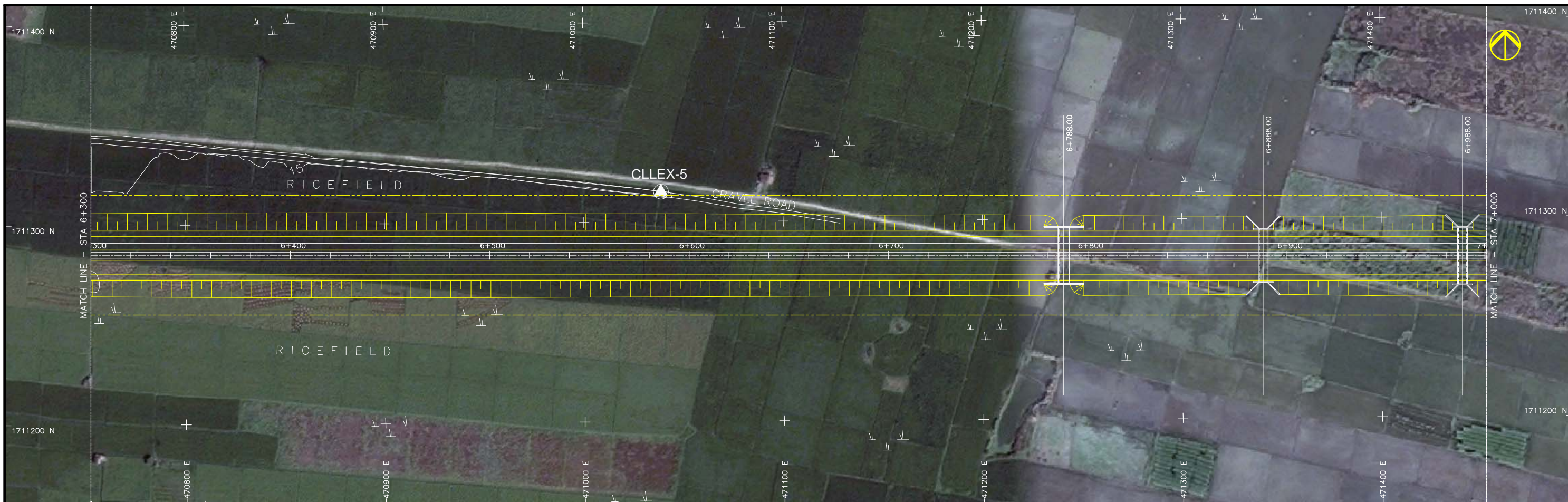
STATION	4+900	5+000	5+100	5+200	5+300	5+400	5+500	5+600
FINISHED GRADE ELEVATION	24.174	24.251	24.329	24.403	24.458	24.491	24.500	24.488
EXISTING GROUND ELEVATION	16.509	16.618	16.612	16.519	16.413	16.249	16.147	16.114
VERTICAL CURVATURE	+0.387% L=100.000		24.755 5+050		-0.741% L=600.000			
HORIZONTAL CURVATURE	R=3000.000 L=2305.362				5+418.126		R=∞	

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 4+900.000-STA 5+600.000	E-08 SHEET NO. 8 OF 44



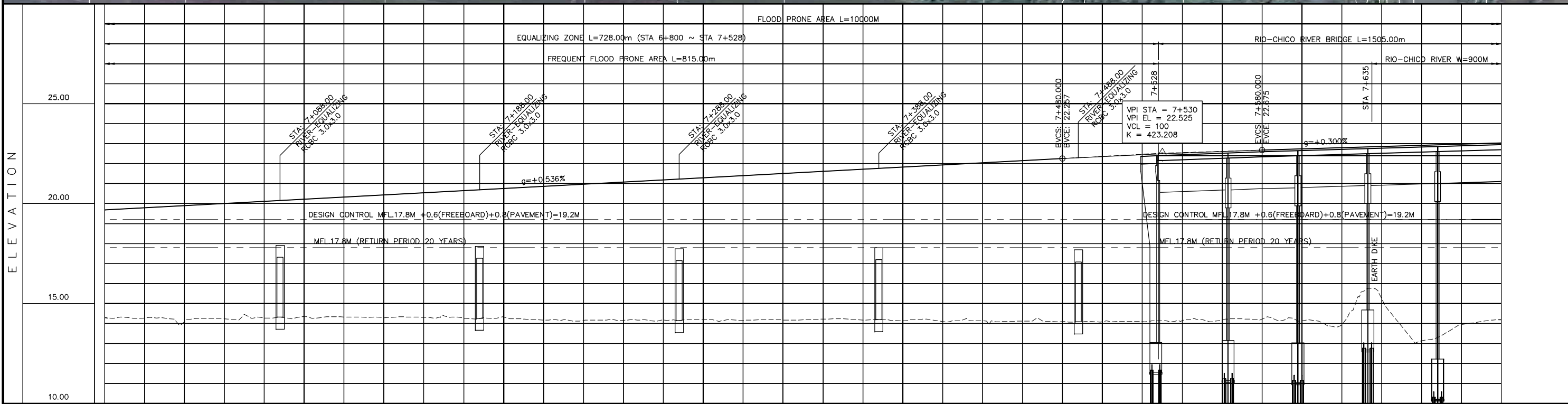
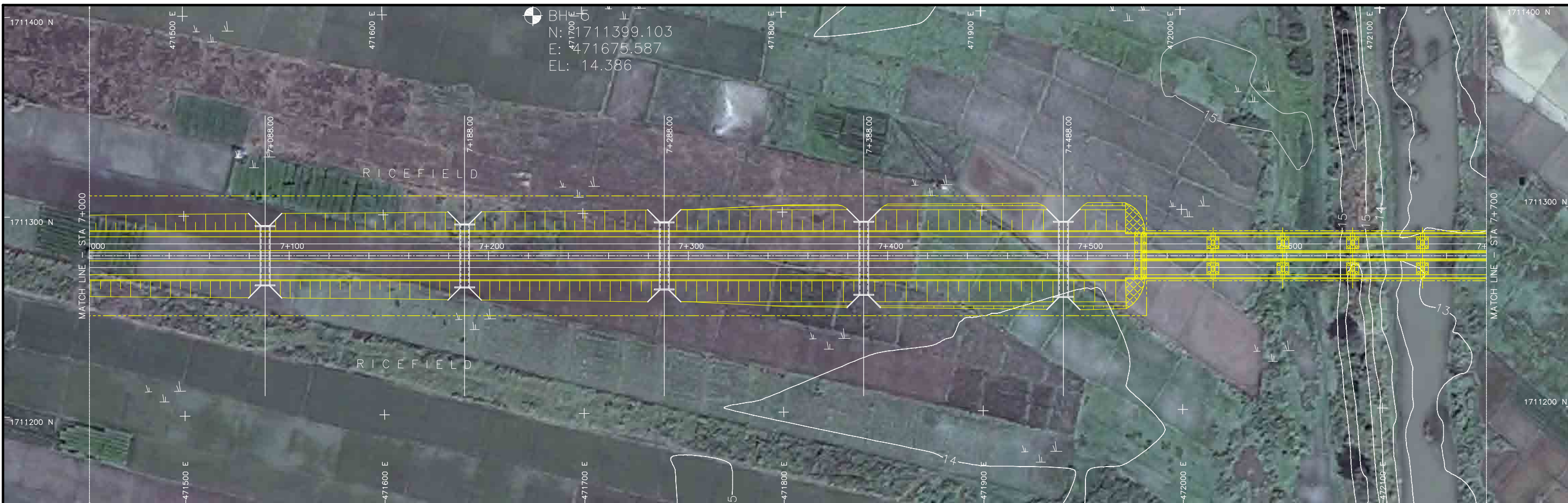
STATION	5+600	5+700	5+800	5+900	6+000	6+100	6+200	6+300
FINISHED GRADE ELEVATION	20.661	20.533	20.385	20.237	20.089	19.941	19.793	19.644
EXISTING GROUND ELEVATION	15.493	15.372	15.376	15.397	15.293	15.307	15.297	15.430
VERTICAL CURVATURE	-0.741% L=600.000		19.200 5+800		+0.300% L=450.000			
HORIZONTAL CURVATURE	R=∞							

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 5+600.000-STA 6+300.000	E-09
			SHEET NO.
			9 OF 44



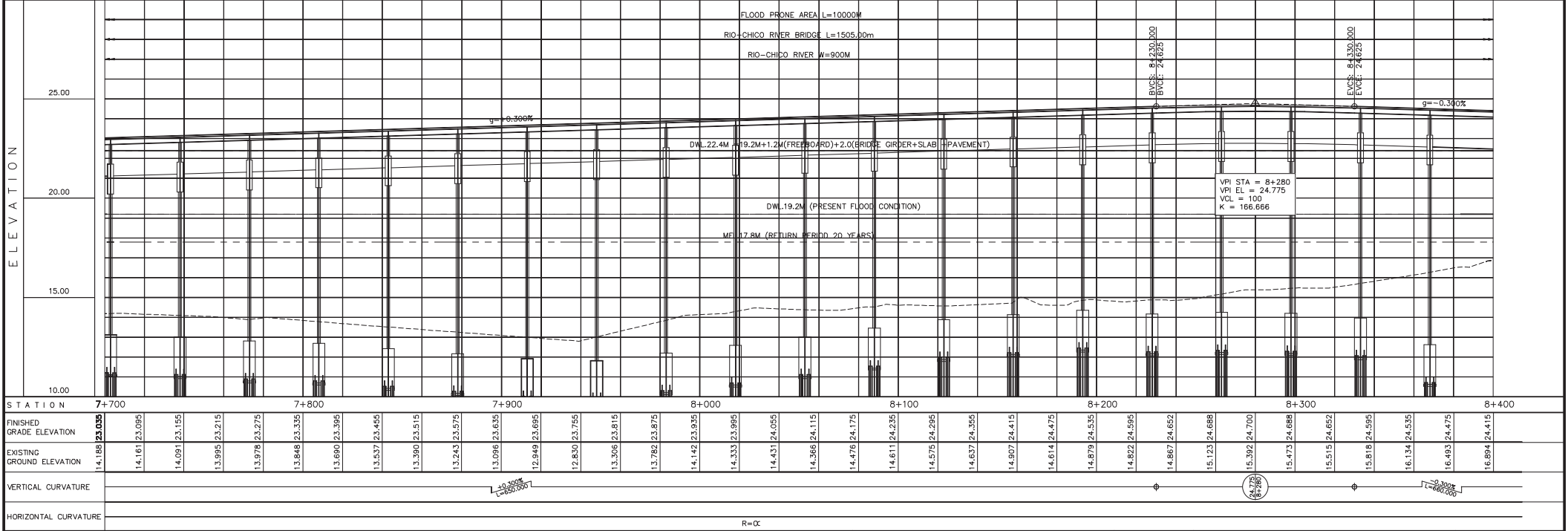
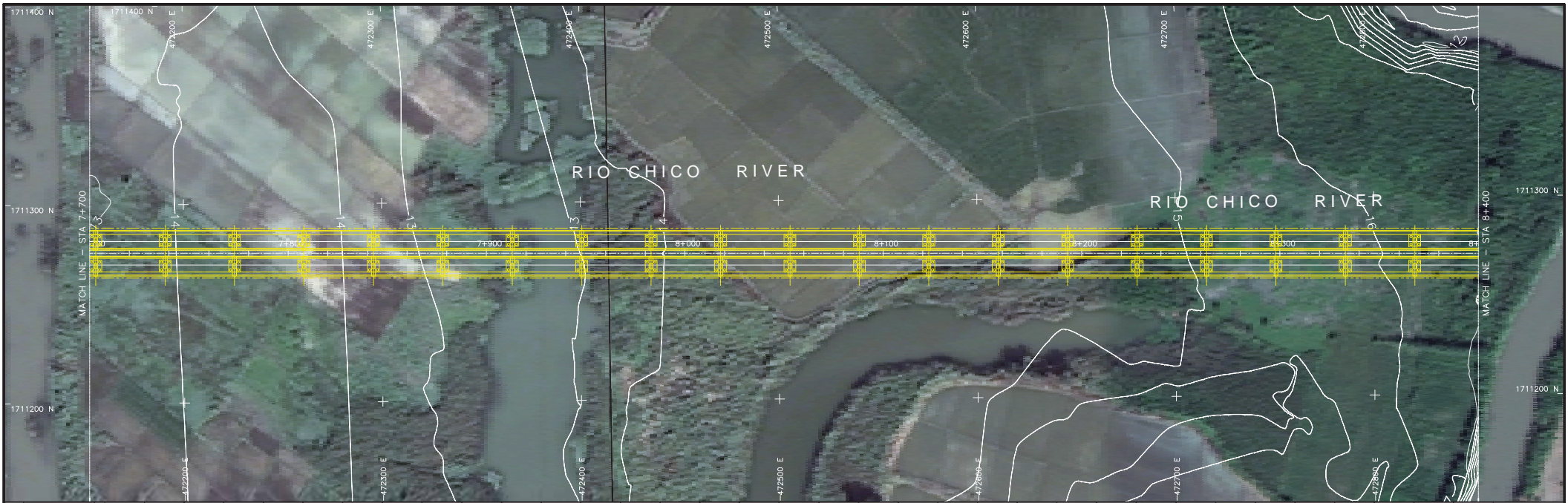
STATION	6+300	6+400	6+500	6+600	6+700	6+800	6+900	7+000
FINISHED GRADE ELEVATION	20.700	20.753	20.794	20.821	20.836	20.837	20.825	20.800
EXISTING GROUND ELEVATION	14.953	14.908	14.905	14.877	14.826	14.764	14.731	14.700
VERTICAL CURVATURE	21.000 6+400		0.353% L=360.000		19.200 6+910		0.536% L=520.000	
HORIZONTAL CURVATURE	R=∞							

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 6+300.000-STA 7+000.000	E-10
			SHEET NO.
			10 OF 44



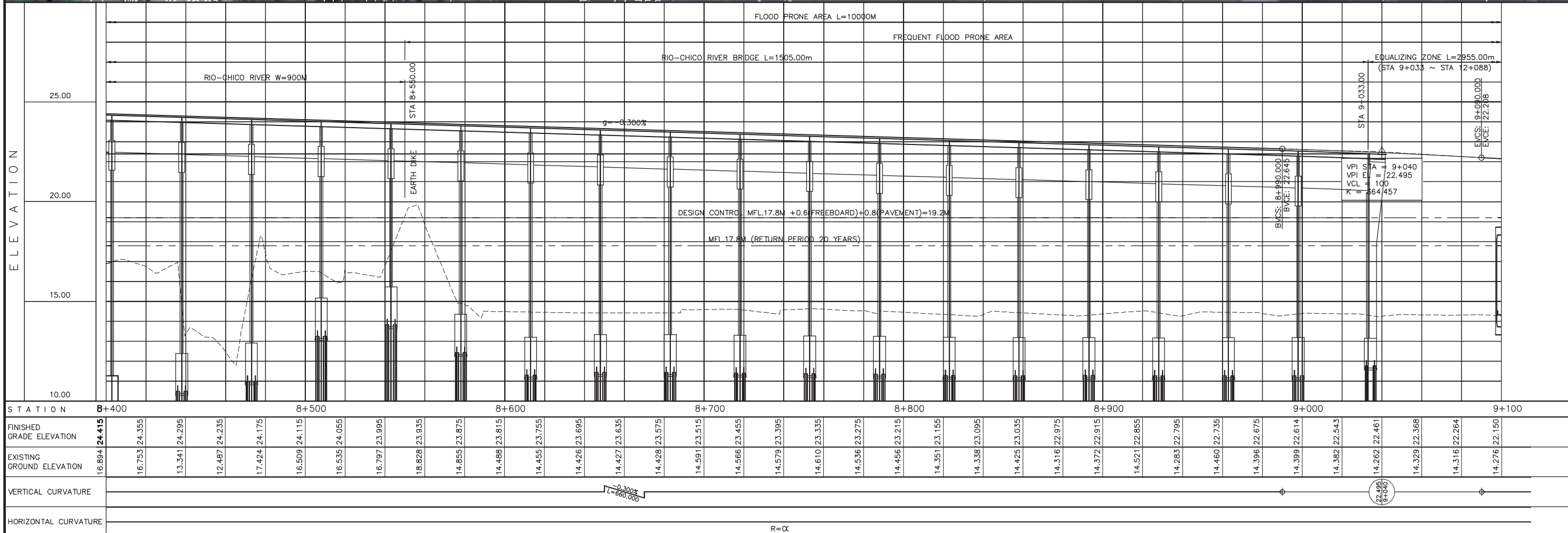
STATION	7+000	7+100	7+200	7+300	7+400	7+500	7+600	7+700																												
FINISHED GRADE ELEVATION	14.281 19.683	14.272 19.790	14.088 19.897	14.243 20.004	14.283 20.112	14.351 20.219	14.330 20.326	14.293 20.433	14.314 20.541	14.267 20.648	14.314 20.755	14.176 20.863	14.152 20.970	14.162 21.077	14.171 21.184	14.196 21.292	14.161 21.399	14.178 21.506	14.219 21.613	14.176 21.721	14.134 21.828	14.096 21.935	14.132 22.042	14.120 22.150	14.102 22.257	14.088 22.359	14.097 22.452	14.145 22.536	14.184 22.610	14.222 22.675	14.134 22.735	13.932 22.795	15.239 22.855	13.136 22.915	13.957 22.975	14.188 23.035
EXISTING GROUND ELEVATION	14.281	14.272	14.088	14.243	14.283	14.351	14.330	14.293	14.314	14.267	14.314	14.176	14.152	14.162	14.171	14.196	14.161	14.178	14.219	14.176	14.134	14.096	14.132	14.120	14.102	14.088	14.097	14.145	14.184	14.222	14.134	13.932	15.239	13.136	13.957	14.188
VERTICAL CURVATURE																			$\frac{+0.536\%}{L=520.000}$		$\frac{+0.300\%}{L=650.000}$															
HORIZONTAL CURVATURE	R=∞																																			

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region <b>CLLEX ( TARLAC - CABANATUAN )</b>	V = 200 H = 2000	<b>PACKAGE 1 - ULTIMATE STAGE</b> PLAN AND PROFILE STA 7+000.000-STA 7+700.000	E-11 SHEET NO. 11 OF 44

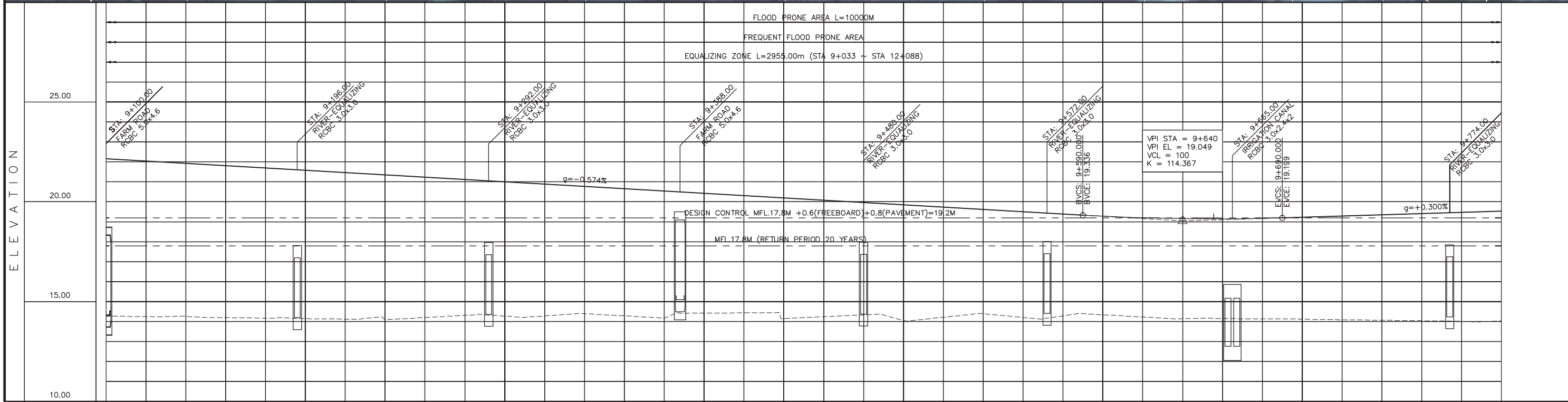
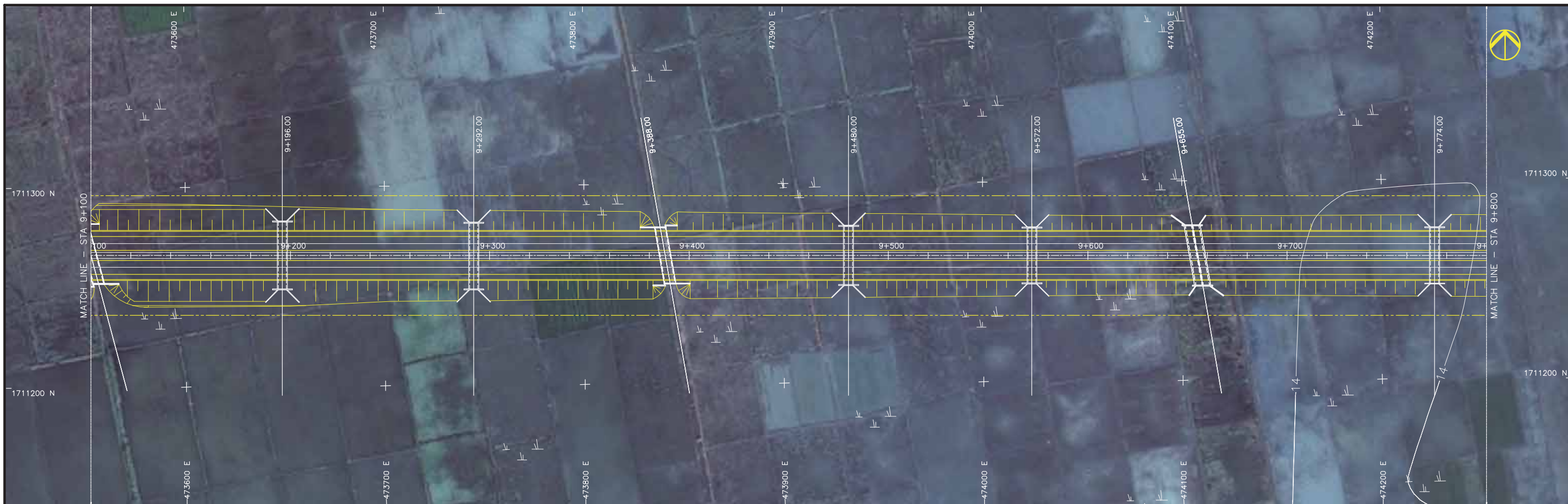


STATION	7+700	7+800	7+900	8+000	8+100	8+200	8+300	8+400
FINISHED GRADE ELEVATION	23.035	23.095	23.155	23.215	23.275	23.335	23.395	23.455
EXISTING GROUND ELEVATION	14.188	14.101	14.091	13.995	13.978	13.848	13.690	13.537
VERTICAL CURVATURE								
HORIZONTAL CURVATURE								

<b>PROJECT TITLE</b> Preparatory survey for expressway project in Mega Manila Region <b>CLLEX ( TARLAC - CABANATUAN )</b>	<b>SCALE</b> V = 200 H = 2000	<b>SHEET CONTENT</b> PACKAGE 1 - ULTIMATE STAGE <b>PLAN AND PROFILE</b> STA 7+700.000-STA 8+400.000	<b>DRAWING NO.</b> E-12
			<b>SHEET NO.</b> 12 OF 44



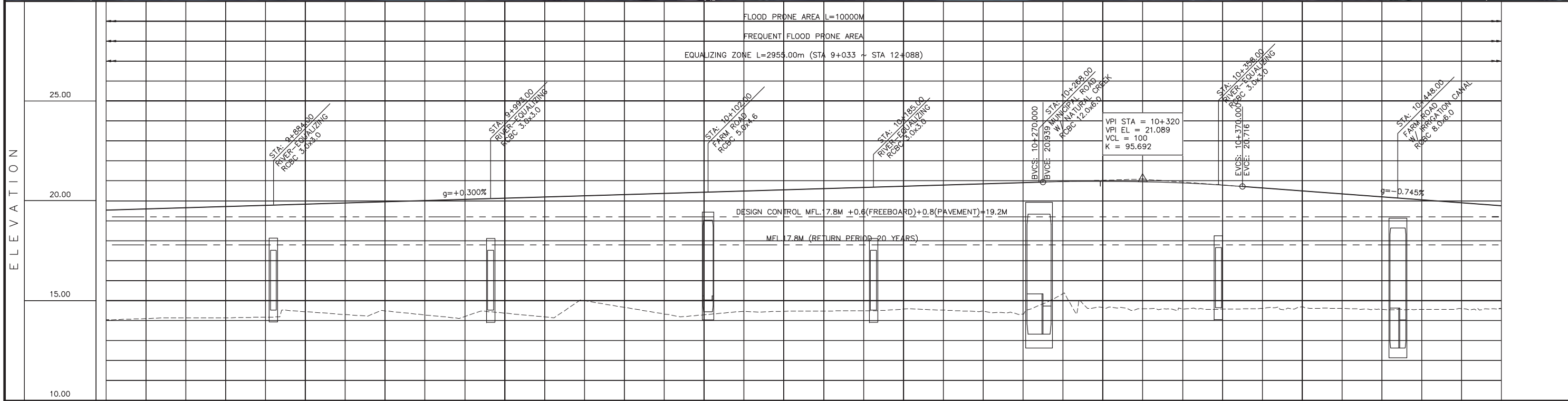
PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region <b>CLLEX ( TARLAC - CABANATUAN )</b>	V = 200 H = 2000	<b>PACKAGE 1 - ULTIMATE STAGE</b> PLAN AND PROFILE STA 8+400.000-STA 9+100.000	E-13
			SHEET NO.
			13 OF 44



STATION	9+100	9+200	9+300	9+400	9+500	9+600	9+700	9+800
FINISHED GRADE ELEVATION	22.150	22.035	21.921	21.806	21.691	21.576	21.461	21.346
EXISTING GROUND ELEVATION	14.276	14.251	14.263	14.200	14.175	14.149	14.125	14.092
VERTICAL CURVATURE	$g = -0.574\%$ $L = 500.000$							
HORIZONTAL CURVATURE	R=∞							

PROJECT TITLE	SCALE	SHEET CONTENT	DRAWING NO.
Preparatory survey for expressway project in Mega Manila Region CLLEX ( TARLAC - CABANATUAN )	V = 200 H = 2000	PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 9+100.000-STA 9+800.000	E-14
			SHEET NO.
			14 OF 44





STATION	9+800	9+900	10+000	10+100	10+200	10+300	10+400	10+500
FINISHED GRADE ELEVATION	19.529	19.589	19.649	19.709	19.769	19.829	19.889	19.949
EXISTING GROUND ELEVATION	14.031	14.102	14.132	14.139	14.173	14.447	14.304	14.489
VERTICAL CURVATURE	+0.300%		+0.300%		-0.745%	-0.745%	-0.745%	-0.745%
HORIZONTAL CURVATURE	R=∞							

<b>PROJECT TITLE</b> Preparatory survey for expressway project in Mega Manila Region <b>CLLEX ( TARLAC - CABANATUAN )</b>	<b>SCALE</b> V = 200 H = 2000	<b>SHEET CONTENT</b> PACKAGE 1 - ULTIMATE STAGE PLAN AND PROFILE STA 9+800.000-STA 10+500.000	DRAWING NO.
			E-15
			SHEET NO.
			15 OF 44