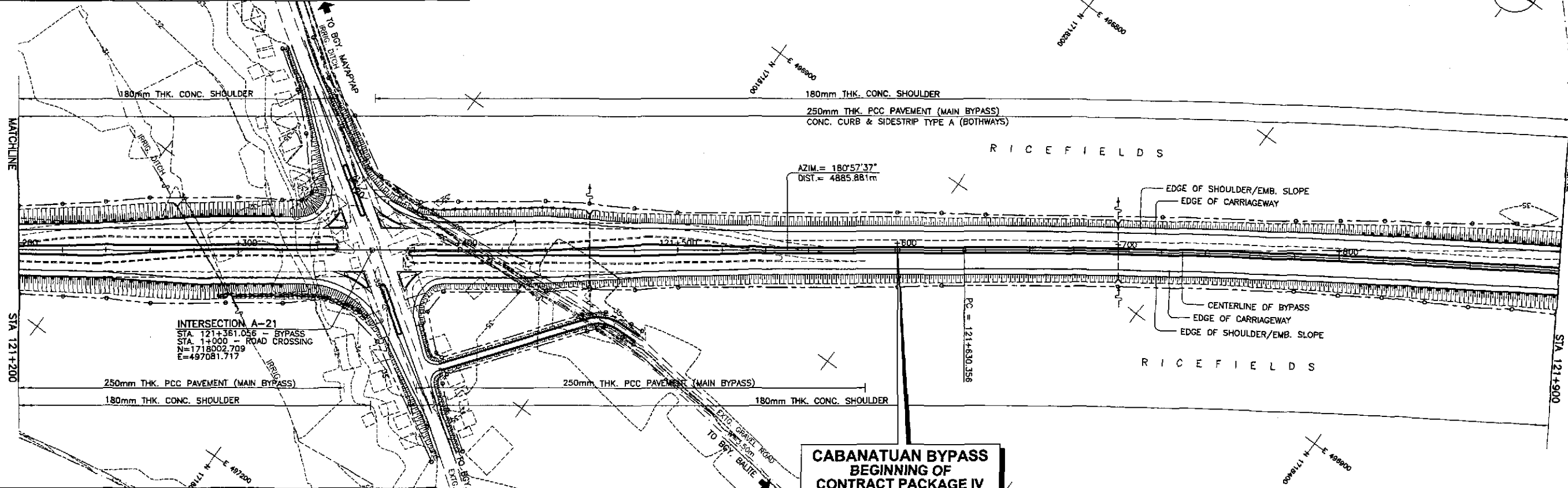
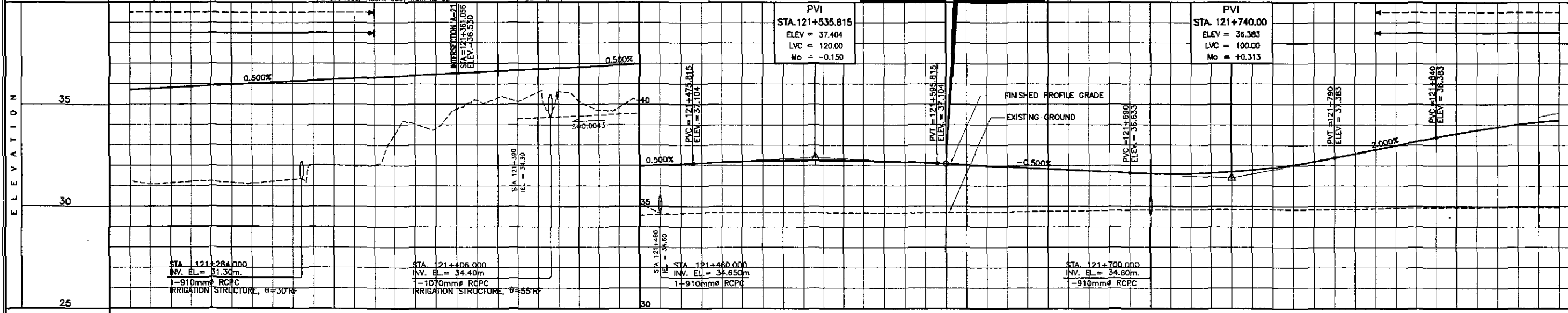


ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-DB	122+487.349	1,718,911.622	496,416.576	24°11'07"	4,000.00	856.992	1,688.459	90.774	-	-	80



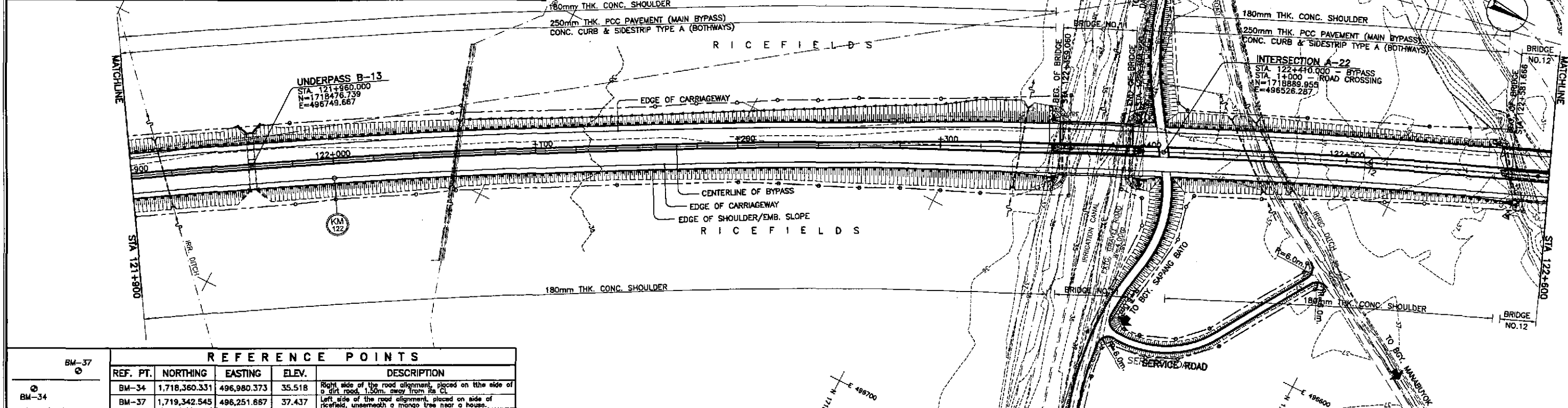
REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-30	1,718,304.852	498,373.638	32.793	Right side of the road alignment, placed on the uppermost top bank of a canal of the side of a nipa hut.
BM-34	1,718,360.331	496,980.373	35.518	Right side of the road alignment, placed on the side of a dirt road, 1.50m. away from its CL.



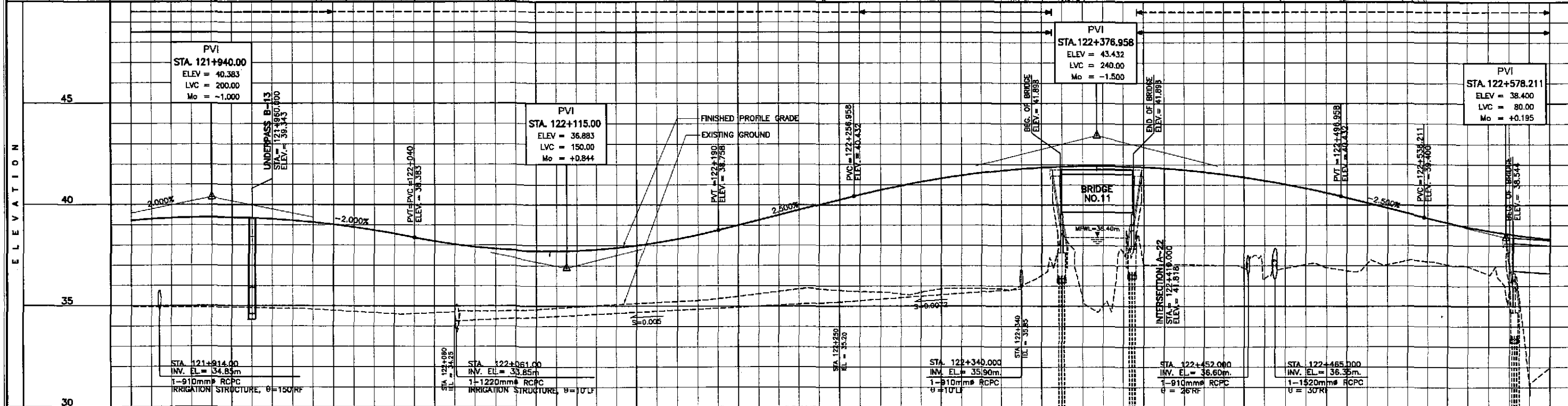
STATION	+200	+300	+400	121+500	+600	+700	+800	+900																																												
FINISHED PROFILE GRADE BYPASS	31.235, 35.725	31.137, 35.825	31.216, 35.925	31.117, 36.025	31.301, 36.125	32.015, 36.225	32.033, 36.325	34.044, 36.425	34.764, 36.525	35.298, 36.625	35.597, 36.725	35.137, 36.825	34.842, 36.925	34.645, 37.025	34.698, 37.124	34.690, 37.200	34.684, 37.243	34.679, 37.253	34.675, 37.228	34.671, 37.172	34.669, 37.083	34.713, 36.983	34.738, 36.883	34.766, 36.783	34.794, 36.683	34.813, 36.595	34.829, 36.595	34.840, 36.595	34.835, 36.895	34.831, 37.195	34.862, 37.583	34.902, 37.983	34.932, 38.383	34.941, 38.743	34.949, 39.023	34.947, 39.223																
EXISTING GROUND BYPASS	31.235, 35.725	31.137, 35.825	31.216, 35.925	31.117, 36.025	31.301, 36.125	32.015, 36.225	32.033, 36.325	34.044, 36.425	34.764, 36.525	35.298, 36.625	35.597, 36.725	35.137, 36.825	34.842, 36.925	34.645, 37.025	34.698, 37.124	34.690, 37.200	34.684, 37.243	34.679, 37.253	34.675, 37.228	34.671, 37.172	34.669, 37.083	34.713, 36.983	34.738, 36.883	34.766, 36.783	34.794, 36.683	34.813, 36.595	34.829, 36.595	34.840, 36.595	34.835, 36.895	34.831, 37.195	34.862, 37.583	34.902, 37.983	34.932, 38.383	34.941, 38.743	34.949, 39.023	34.947, 39.223																
HORIZONTAL CURVATURE	R=∞																121+630.356												R=4000																							
VERTICAL CURVATURE	g=+0.500%																L=120, Mo=-0.150												g=-0.500%, L=100, Mo=+0.313												g=2.000%											
SUPERELEVATION	N.C.																																																			

	DESIGNED	10/17/02		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/19/02			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	PLAN ANF PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 121+600 - STA. 121+900	RP-01
	SUBMITTED	10/21/02			CABANATUAN BYPASS - CONTRACT PACKAGE IV			

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		A	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-08	122+487.349	1,718,911.622	496,416.576	24°11'07"	4,000.00	856.992	1,688.459	90.774	-	-	80



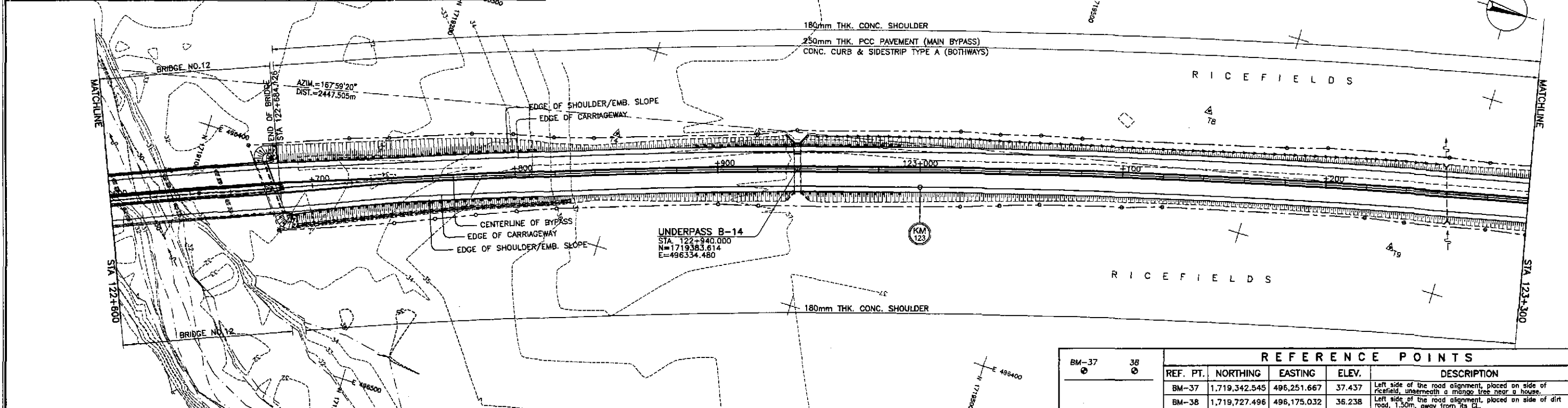
REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-34	1,718,360.331	496,980.373	35.518	Right side of the road alignment, placed on the side of a dirt road, 1.50m. away from its CL.
BM-37	1,719,342.545	496,251.667	37.437	Left side of the road alignment, placed on side of ricefields, underneath a mango tree near a house.



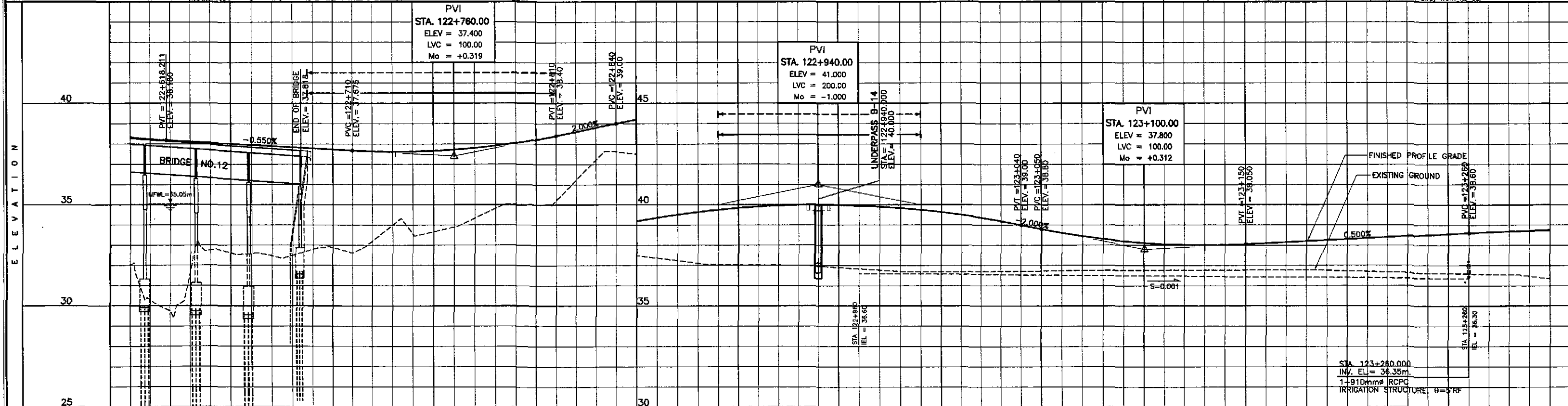
STATION	+900	122+000										+100										+200										+300										+400										122+500										+600								
FINISHED PROFILE GRADE BYPASS	34.947	39.223	34.943	39.343	34.932	39.383	34.904	39.343	34.876	39.223	34.782	39.023	34.670	38.743	34.617	38.383	34.710	38.043	34.742	37.743	35.079	37.883	35.179	38.143	35.279	38.523	35.488	39.008	35.722	39.508	35.848	40.008	35.715	40.507	35.599	40.952	35.850	41.315	35.871	41.594	36.015	41.789	36.006	41.902	35.043	41.931	37.037	41.876	37.086	41.739	37.023	41.518	36.359	41.213	37.063	40.826	36.744	40.356	37.081	39.856	37.216	39.356	36.975	38.914	35.849	38.568	31.980	38.321		
EXISTING GROUND BYPASS	34.947	39.223	34.943	39.343	34.932	39.383	34.904	39.343	34.876	39.223	34.782	39.023	34.670	38.743	34.617	38.383	34.710	38.043	34.742	37.743	35.079	37.883	35.179	38.143	35.279	38.523	35.488	39.008	35.722	39.508	35.848	40.008	35.715	40.507	35.599	40.952	35.850	41.315	35.871	41.594	36.015	41.789	36.006	41.902	35.043	41.931	37.037	41.876	37.086	41.739	37.023	41.518	36.359	41.213	37.063	40.826	36.744	40.356	37.081	39.856	37.216	39.356	36.975	38.914	35.849	38.568	31.980	38.321		
HORIZONTAL CURVATURE	R=4000																																																																					
VERTICAL CURVATURE	L=200, Mo=-1.000										g=-2.000%										L=150, Mo=+0.844										g=2.500%										L=240, Mo=-1.500										g=-2.500%										L=80, Mo=+0.195									
SUPERELEVATION	N.C.																																																																					

	DESIGNED	10/17/02			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Pilarid, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE IV	SCALE : HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	SHEET CONTENTS : PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 121+900 - STA. 122+600	SHEET NO. : RP-02		
	CHECKED	10/19/02			Submitted By:	DANILO C. TRAJANO Project Director	Reviewed By:	JOSEFINA M. ALAGAR Chief, Highways Division					Recommended By:	GILBERTO S. REYES OC, Director IV
	SUBMITTED	10/21/02			Approved By:	MANUEL M. BONDAN Undersecretary	Approved By:	SIMEON A. DATUMANONG Secretary						

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		A	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-08	122+487.349	1,718,911.622	496,416.576	24°11'07"	4,000.00	856.992	1,888.459	90.774	-	-	80



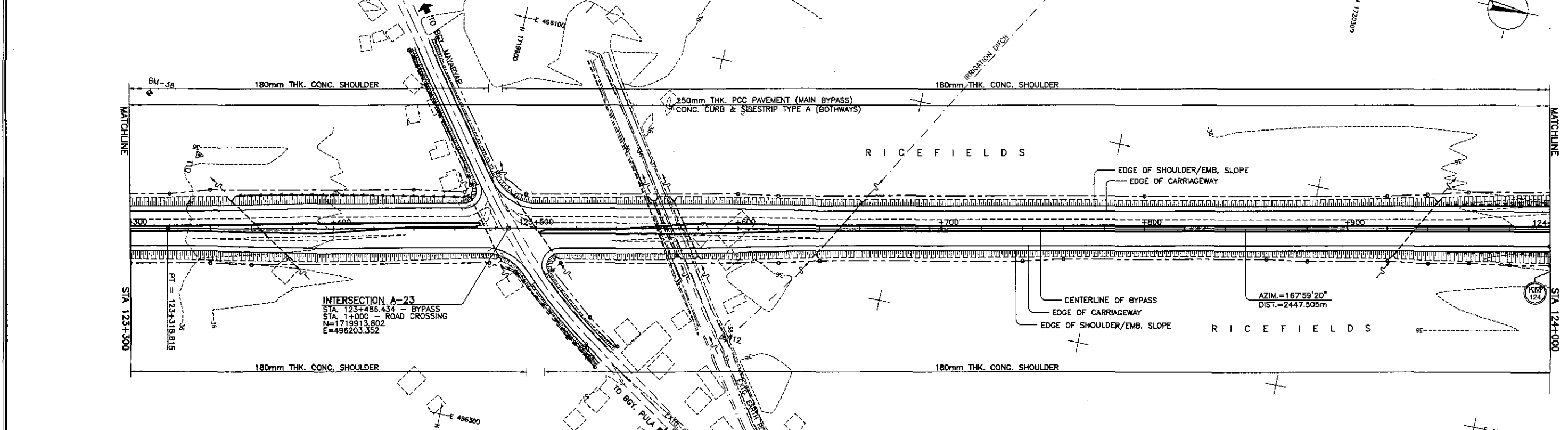
REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-37	1,719,342.545	496,251.667	37.437	Left side of the road alignment, placed on side of ricefield, underneath a mango tree near a house.
BM-38	1,719,727.496	496,175.032	36.238	Left side of the road alignment, placed on side of dirt road, 1.50m. away from Sta. 6.



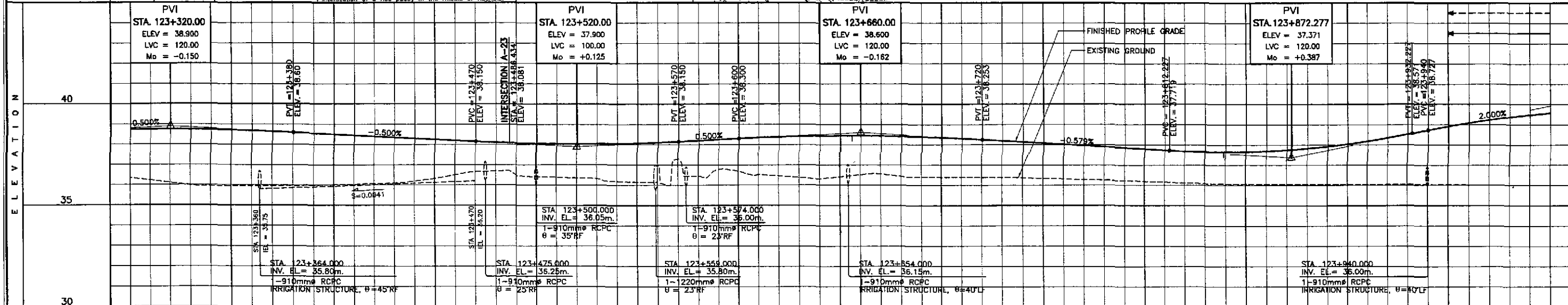
STATION	+600	+700	+800	+900	123+000	+100	+200	+300																																																
FINISHED PROFILE GRADE BYPASS	31.980, 38.321	32.752, 38.170	32.763, 38.060	32.574, 37.950	32.497, 37.840	32.878, 37.730	33.208, 37.633	33.538, 37.525	33.902, 37.419	34.820, 37.915	35.005, 38.213	36.222, 38.600	37.616, 39.000	37.366, 39.350	37.106, 39.640	37.027, 39.840	37.011, 39.960	36.992, 40.000	36.830, 39.960	36.698, 39.840	36.681, 39.350	36.708, 39.000	36.731, 38.612	36.755, 38.312	36.760, 38.112	36.761, 38.012	36.761, 38.012	36.765, 38.100	36.768, 38.200	36.725, 38.300	36.670, 38.400	36.619, 38.500	36.579, 38.600	36.539, 38.693	36.344, 38.733																					
EXISTING GROUND BYPASS	31.980	29.752	32.763	32.574	32.497	32.878	33.208	33.538	33.902	34.820	35.005	36.222	37.616	37.366	37.106	37.027	37.011	36.992	36.830	36.698	36.681	36.708	36.731	36.755	36.760	36.761	36.761	36.765	36.768	36.725	36.670	36.619	36.579	36.539	36.344																					
HORIZONTAL CURVATURE	R=4000																																																							
VERTICAL CURVATURE	g=-0.550%							L=100, Mo=+0.319							g=2.000%							L=200, Mo=-1.000							g=-2.000%							L=100, Mo=+0.312							g=0.500%							L=120, Mo=-0.150						
SUPERELEVATION	N.C.																																																							

	DESIGNED	10/17/02			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE IV	SCALE : HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	SHEET CONTENTS : PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 122+600 - STA. 123+300	SHEET NO. : RP-03
	CHECKED	10/19/02			PUHL - PMO Submitted By:	BUREAU OF DESIGN Reviewed By:	OFFICE OF THE SECRETARY Recommended By:	Approved By:				
	SUBMITTED	10/21/02			DANILLO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONOAN Undersecretary				

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-08	122+487.349	1,718,911.622	496,416.576	24°11'07"	4,000.00	856.992	1,688.459	90.774	-	-	80



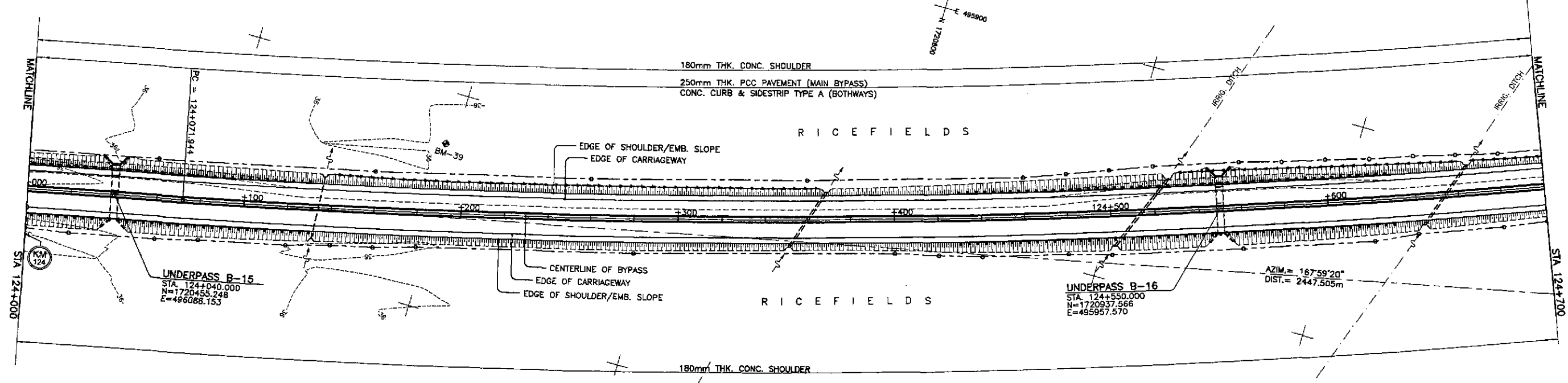
REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-37	1,719,342.545	496,251.667	37.437	Left side of the road alignment, placed on side of ricefield, underneath a mango tree near a house.
BM-38	1,719,727.495	496,175.032	36.238	Left side of the road alignment, placed on side of dirt road, 1.50m. away from its CL.
BM-39	1,720,595.956	496,023.421	36.396	Left side of the road alignment, placed on the intersection of a rice paddy in the middle of ricefield.



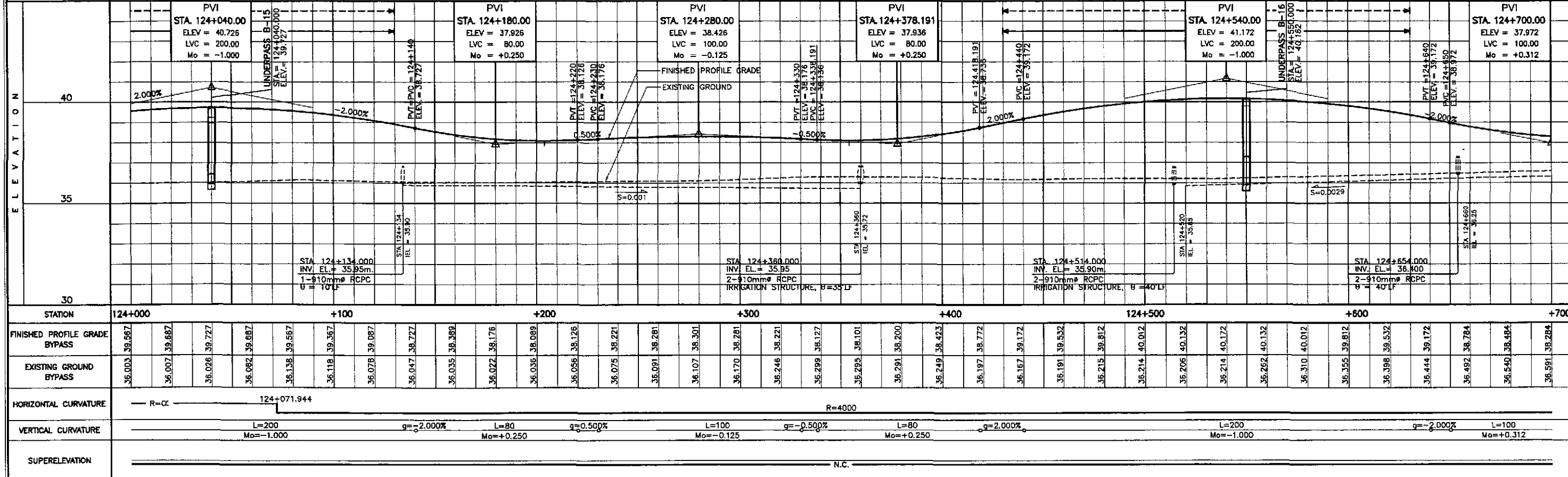
STATION	+300	+400										123+500										+600										+700										+800										+900										124+000																													
FINISHED PROFILE GRADE BYPASS	36.344	38.733	36.108	38.750	35.942	38.733	35.950	38.683	35.958	38.600	36.007	38.500	36.067	38.400	36.187	38.300	36.501	38.200	36.691	38.105	36.415	38.045	36.398	38.025	36.175	38.045	36.824	38.105	36.436	38.200	36.691	38.300	36.453	38.382	36.370	38.428	36.515	38.438	36.440	38.412	36.387	38.350	36.379	38.253	36.364	38.137	36.308	38.021	36.252	37.905	36.187	37.790	36.119	37.680	36.067	37.641	36.055	37.687	36.043	37.620	36.044	38.727	36.025	38.087	36.005	38.367	36.003	39.587																							
EXISTING GROUND BYPASS	36.344	38.733	36.108	38.750	35.942	38.733	35.950	38.683	35.958	38.600	36.007	38.500	36.067	38.400	36.187	38.300	36.501	38.200	36.691	38.105	36.415	38.045	36.398	38.025	36.175	38.045	36.824	38.105	36.436	38.200	36.691	38.300	36.453	38.382	36.370	38.428	36.515	38.438	36.440	38.412	36.387	38.350	36.379	38.253	36.364	38.137	36.308	38.021	36.252	37.905	36.187	37.790	36.119	37.680	36.067	37.641	36.055	37.687	36.043	37.620	36.044	38.727	36.025	38.087	36.005	38.367	36.003	39.587																							
HORIZONTAL CURVATURE	123+318.815										R=∞																																																																																
VERTICAL CURVATURE	L=120, Mo=-0.150										g=-0.500%										L=100, Mo=+0.125										g=0.500%										L=120, Mo=-0.162										g=-0.579%										L=120, Mo=+0.387										g=2.000%										L=200, Mo=-1.000										
SUPERELEVATION											N.C.																																																																																

	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :	
	DESIGNED	10/17/02	<i>[Signature]</i>	BUREAU OF DESIGN				THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	HORIZONTAL 1:1000	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 123+300 - STA. 124+000	RP-04
	CHECKED	10/19/02	<i>[Signature]</i>	OFFICE OF THE SECRETARY				VERTICAL 1:100	FULL SIZE A1		
SUBMITTED	10/21/02	<i>[Signature]</i>	PUHL - PMD DANILO C. TRAJANO Project Director	Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By: GILBERTO S. REYES OIC, Director IV	Recommended By: MANUEL M. BONDAN Undersecretary	Approved By: SIMEDON A. DATUMANONG Secretary	CABANATUAN BYPASS - CONTRACT PACKAGE IV			

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-09	124+909.328	1,721,305.544	495,907.244	23°38'52"R	4,000.00	837.385	1,650.927	86.712	-	-	80

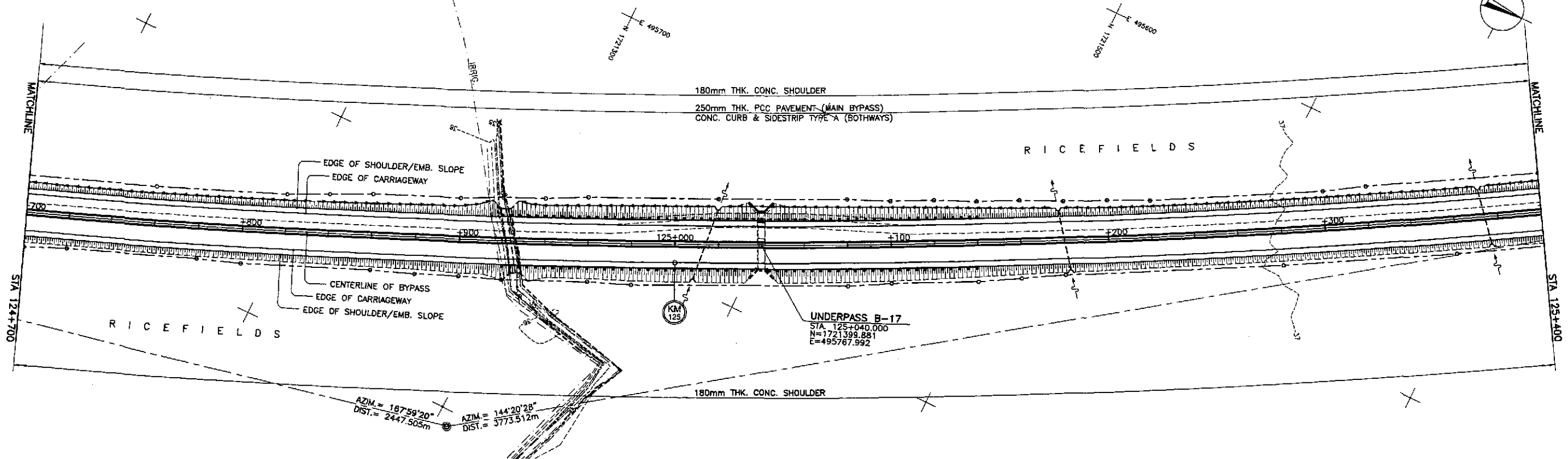


REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-38	1,719,727.496	495,175.032	36.238	Left side of the road alignment, placed on side of dirt road, 1.50m. away from the C.L.
BM-39	1,720,595.958	496,023.421	36.396	Left side of the road alignment, placed on the intersection of a rice paddy in the middle of ricefield.
BM-40	1,721,353.720	495,998.525	36.993	Right side of the road alignment, placed underneath a group of coconut tree in the middle of ricefield.

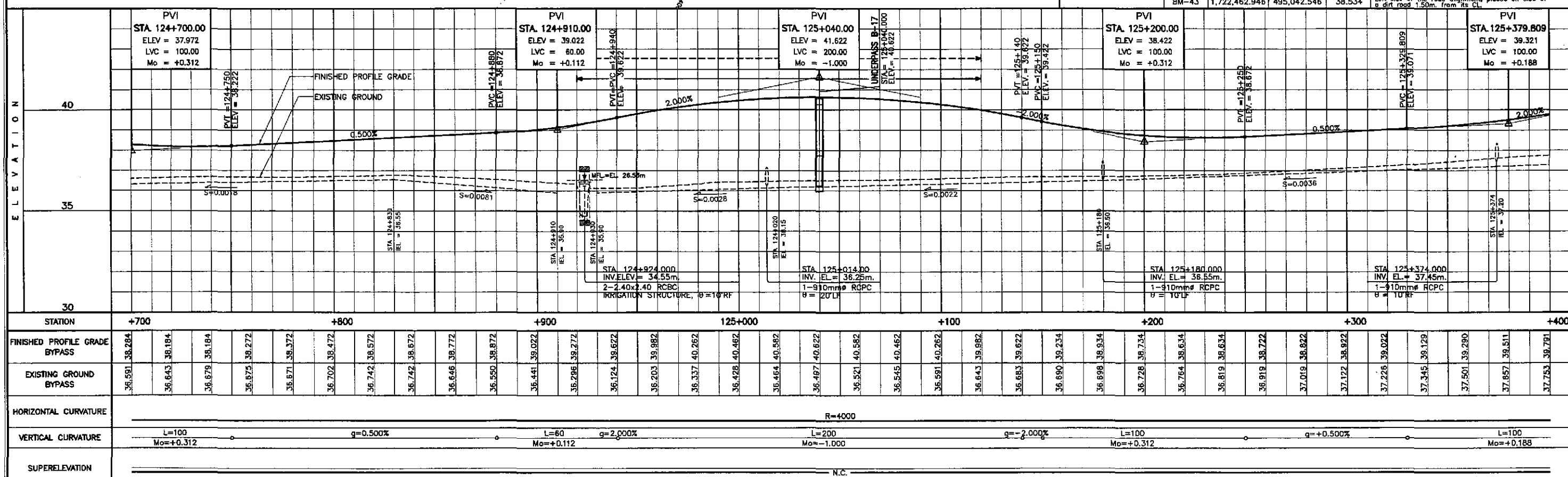


	DESIGNED	10/17/02		PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS : PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 124+000 - STA. 124+700	SHEET NO. : RP-05
	CHECKED	10/19/02		THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	HORIZONTAL 1:1000		
	SUBMITTED	10/21/02		CABANATUAN BYPASS - CONTRACT PACKAGE IV	VERTICAL 1:100		
JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL YEO YACHIYO ENGINEERING CO., LTD.		DATE: 10/17/02 SIGNATURE: [Signature] S. ACACIO TEAM LEADER	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN OFFICE OF THE SECRETARY	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE IV	SCALE : HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	SHEET CONTENTS : PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 124+000 - STA. 124+700	SHEET NO. : RP-05

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-09	124+909.328	1,721,305.544	495,907.244	23°38'52"R	4,000.00	837.385	1,650.927	86.712	-	-	80



REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-39	1,720,595.956	496,023.421	36.396	Left side of the road alignment, placed on the intersection of a rice paddy in the middle of ricefield.
BM-40	1,721,353.720	495,998.525	36.993	Right side of the road alignment, placed underneath a group of coconut tree in the middle of ricefield.
BM-43	1,722,462.946	495,042.546	38.534	Left side of the road alignment, placed on side of a dirt road 1.50m. from its CL.



STATION	+700	+800	+900	125+000	+100	+200	+300	+400
FINISHED PROFILE GRADE BYPASS	36.591, 38.284	36.643, 38.184	36.679, 38.184	36.675, 38.272	36.671, 38.372	36.702, 38.472	36.742, 38.572	36.742, 38.672
EXISTING GROUND BYPASS	36.591, 38.284	36.643, 38.184	36.679, 38.184	36.675, 38.272	36.671, 38.372	36.702, 38.472	36.742, 38.572	36.742, 38.672
HORIZONTAL CURVATURE	R=4000							
VERTICAL CURVATURE	L=100, Mo=+0.312		L=60, Mo=+0.112		L=200, Mo=-1.000		L=100, Mo=+0.312	
SUPERELEVATION	N.C.							

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KAI KATAHIRA & ENGINEERS INTERNATIONAL
YEO YACHIYO ENGINEERING CO., LTD.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

DESIGNED: 10/17/02
CHECKED: 10/19/02
SUBMITTED: 10/21/02

Submitted By: PUHL - FMO
Reviewed By: JOSEFINA M. ALAGAR
Recommended By: GILBERTO S. REYES
Approved By: MANUEL M. BONDAN
Approved By: SIMEON A. DATUMANONG

Project Director: DANILO C. TRAJANO
Chief, Highways Division: JOSEFINA M. ALAGAR
Undersecretary: GILBERTO S. REYES

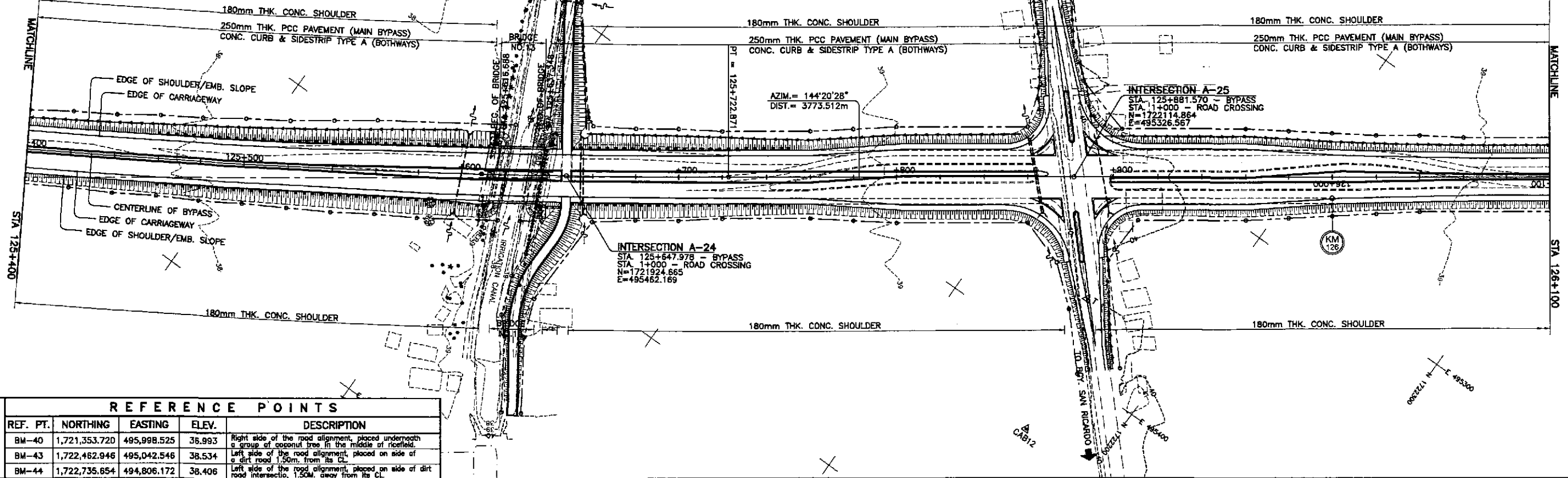
PROJECT AND LOCATION :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)

SCALE :
HORIZONTAL 1:1000
VERTICAL 1:100
FULL SIZE A1

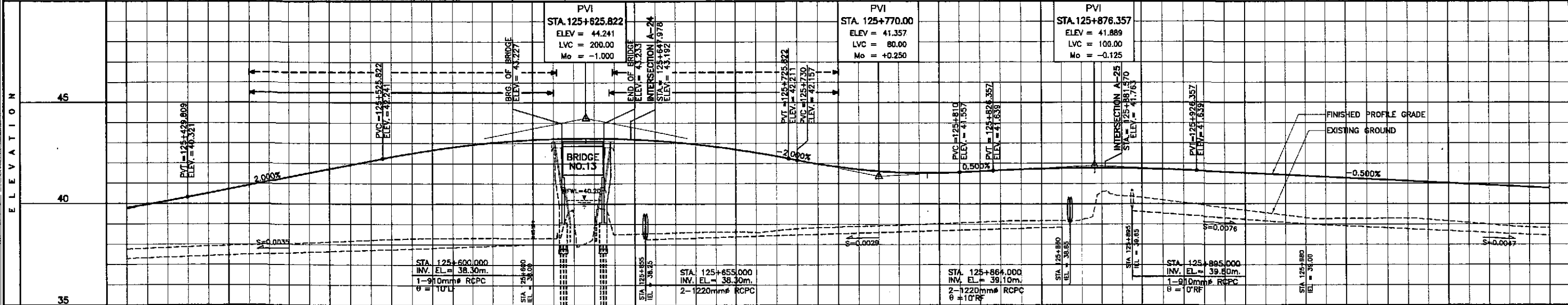
SHEET CONTENTS :
PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 124+700 - STA. 125+400

SHEET NO. :
RP-06

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-09	124+909.328	1,721,305.544	495,907.244	23°38'52"R	4,000.00	637.385	1,650.927	86.712	-	-	80

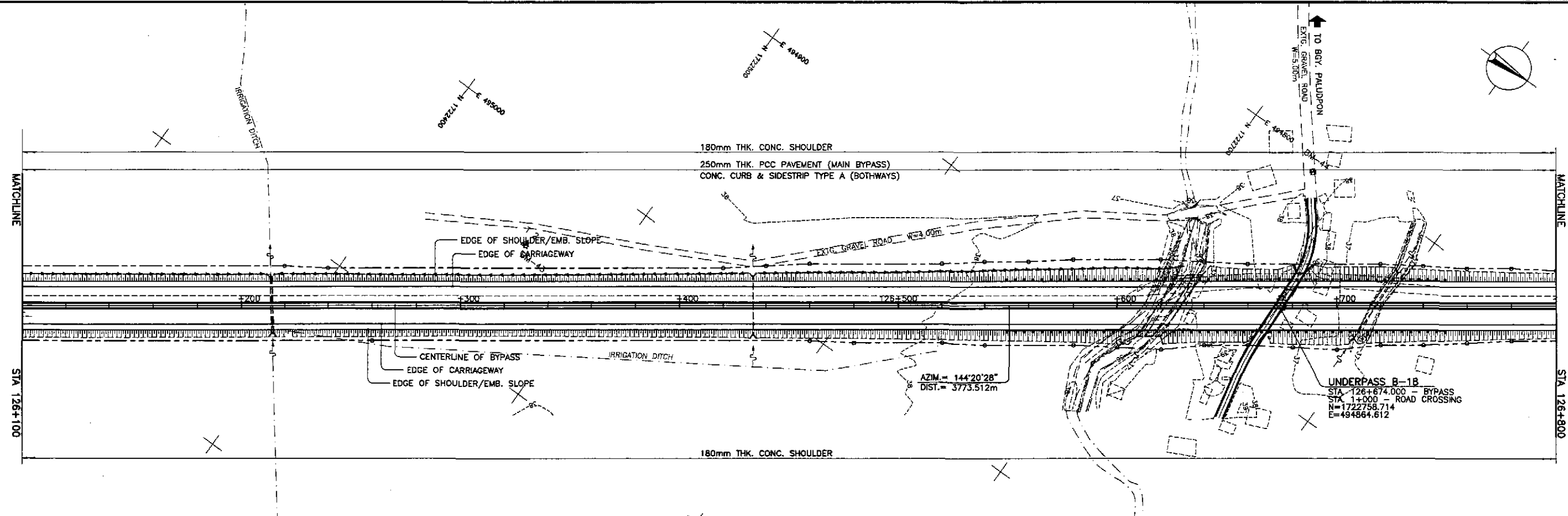


REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-40	1,721,353.720	495,998.525	36.993	Right side of the road alignment, placed underneath a group of coconut trees in the middle of ricefield.
BM-43	1,722,462.946	495,042.546	38.534	Left side of the road alignment, placed on side of a dirt road 1.50m. from its CL.
BM-44	1,722,735.654	494,806.172	38.406	Left side of the road alignment, placed on side of dirt road intersecto. 1.50m. away from its CL.

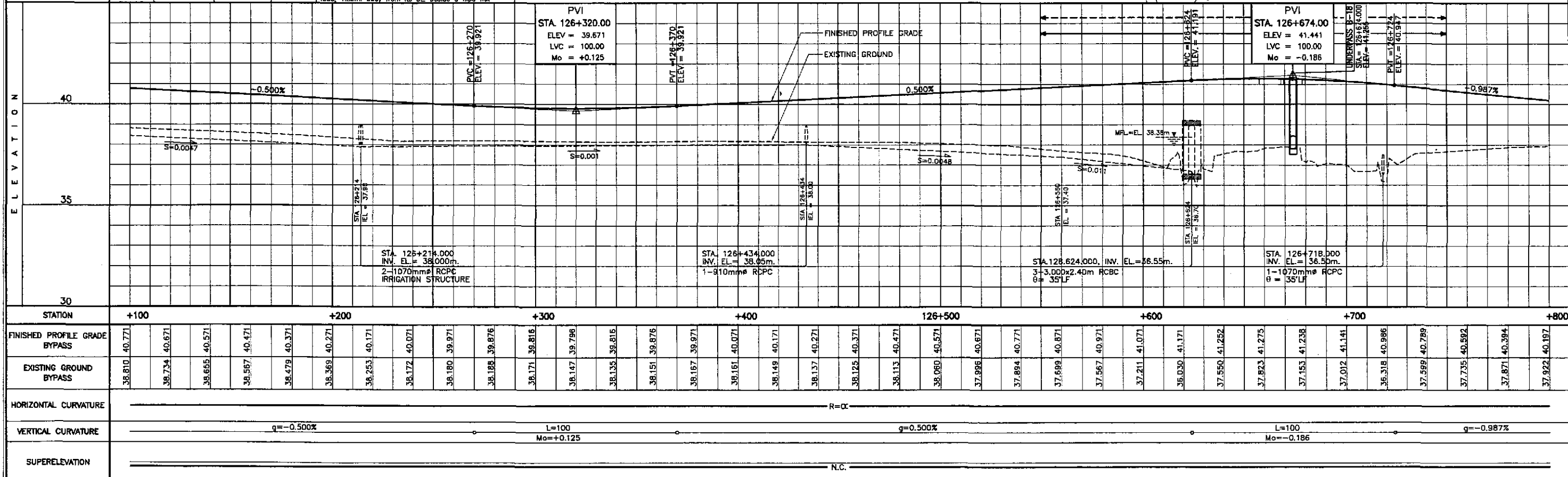


STATION	+400	125+500										+600	+700										+800	+900										126+000	+1000																																			
FINISHED PROFILE GRADE BYPASS	37.753	39.791	37.833	40.132	37.908	40.525	37.972	40.925	38.036	41.325	38.122	41.725	38.214	42.125	38.292	42.504	38.314	42.808	38.326	43.031	38.315	43.174	38.212	43.238	38.489	43.221	38.548	43.124	38.607	42.947	38.684	42.354	38.827	41.873	38.887	41.888	38.947	41.548	39.023	41.523	39.103	41.807	39.161	41.698	39.165	41.751	40.598	41.764	40.314	41.236	40.080	41.668	39.808	41.571	39.561	41.471	39.313	41.371	39.265	41.271	39.274	41.171	39.233	41.071	39.089	40.971	38.905	40.871	38.810	40.771
EXISTING GROUND BYPASS	37.753	39.791	37.833	40.132	37.908	40.525	37.972	40.925	38.036	41.325	38.122	41.725	38.214	42.125	38.292	42.504	38.314	42.808	38.326	43.031	38.315	43.174	38.212	43.238	38.489	43.221	38.548	43.124	38.607	42.947	38.684	42.354	38.827	41.873	38.887	41.888	38.947	41.548	39.023	41.523	39.103	41.807	39.161	41.698	39.165	41.751	40.598	41.764	40.314	41.236	40.080	41.668	39.808	41.571	39.561	41.471	39.313	41.371	39.265	41.271	39.274	41.171	39.233	41.071	39.089	40.971	38.905	40.871	38.810	40.771
HORIZONTAL CURVATURE	R=4000										L=240										L=80										L=100										R=∞																													
VERTICAL CURVATURE	L=100, Mo=+0.188, g=2.000%										L=240, Mo=-1.000, g=-2.000%										L=80, Mo=+0.250, g=0.500%										L=100, Mo=-0.125, g=-0.500%																																							
SUPERELEVATION																					N.C.																																																	

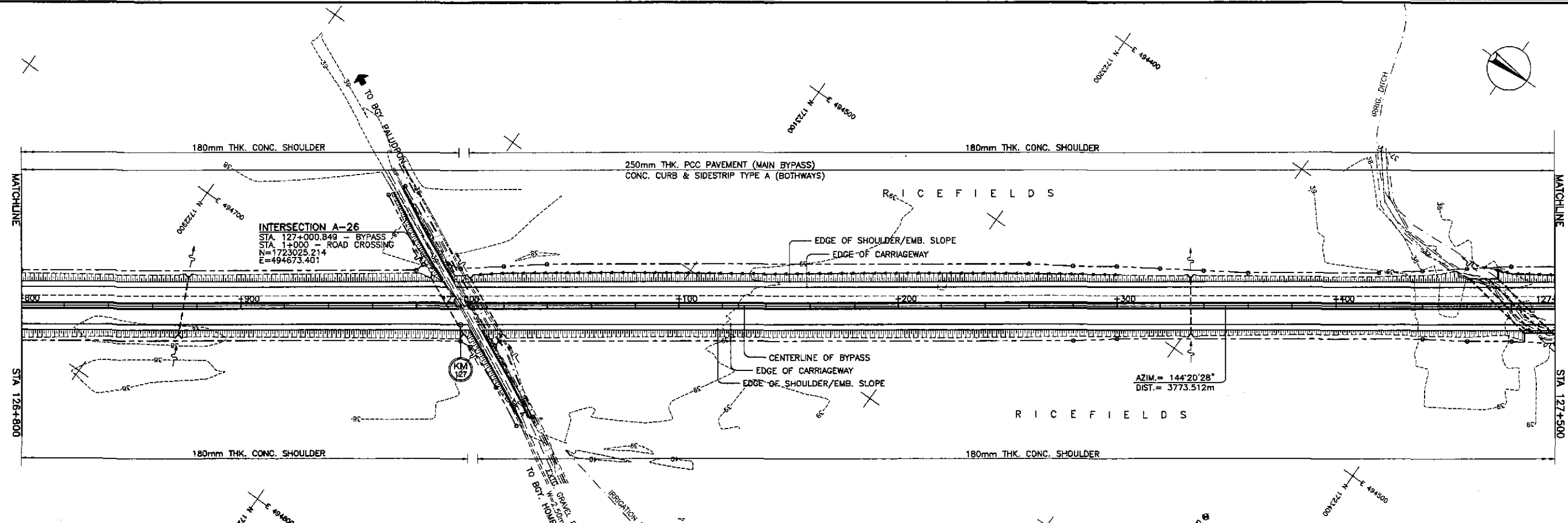
	DESIGNED	10/17/02	<i>[Signature]</i>		PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/19/02	<i>[Signature]</i>		THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	HORIZONTAL 1:1000	PLAN AND PROFILE	RP-07
	SUBMITTED	10/21/02	<i>[Signature]</i>		CABANATUAN BYPASS - CONTRACT PACKAGE IV	VERTICAL 1:100	ALONG BYPASS (ULTIMATE STAGE) STA. 125+400 - STA. 126+100	



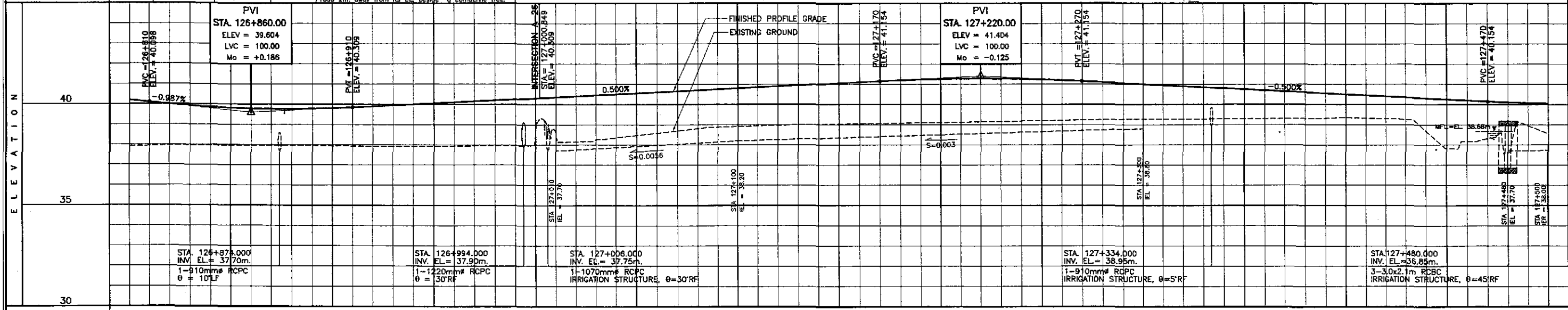
REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-43	1,722,462.946	495,042.546	38.534	Left side of the road alignment, placed on side of a dirt road 1.50m. from its CL
BM-44	1,722,735.654	494,806.172	38.406	Left side of the road alignment, placed on side of dirt road intersection, 1.50m. away from its CL
BM-45	1,723,356.627	494,554.149	40.327	Right side of the road alignment, placed on side of dirt road 1.50m. away from its CL beside a nipa hut



	DESIGNED	10/17/02																PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/19/02																THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 126+100 - STA. 126+800	RP-08
	SUBMITTED	10/21/02																CABANATUAN BYPASS - CONTRACT PACKAGE IV			



REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-44	1,722,735.654	494,806.172	38.406	Left side of the road alignment, placed on side of dirt road intersection, 1.50m. away from its CL.
BM-45	1,723,356.627	494,554.149	40.327	Right side of the road alignment, placed on side of dirt road, 1.50m. away from its CL. beside a nipa hut.
BM-46	1,723,535.448	494,225.815	39.229	Left side of the road alignment, placed on side of the road 2m. away from its CL. beside a comachile tree.

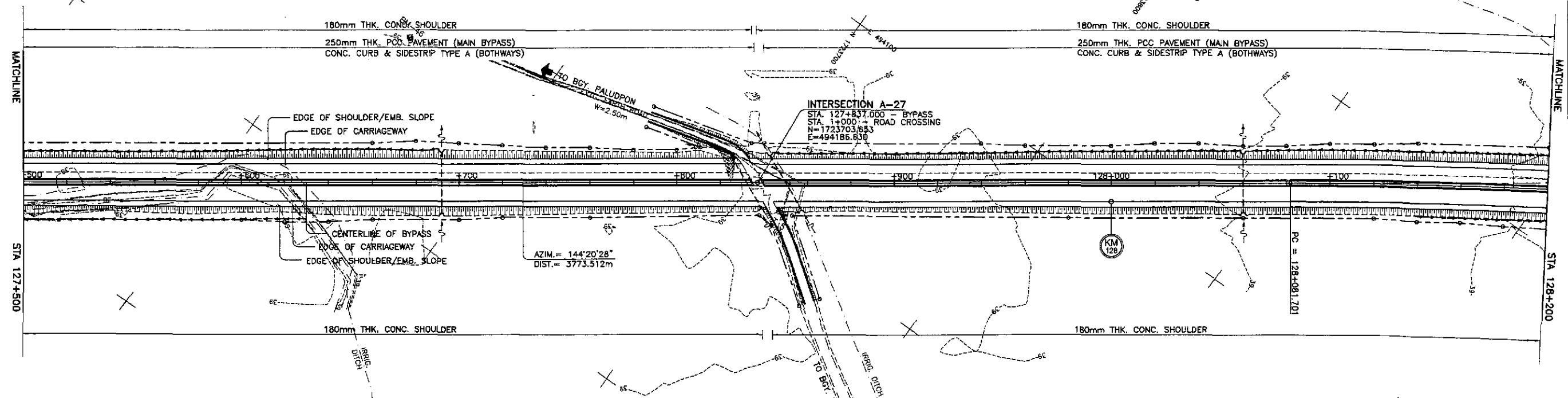


STATION	+800	+900	127+000	+100	+200	+300	+400	127+500
FINISHED PROFILE GRADE BYPASS	37.922	37.950	37.989	37.985	37.981	37.944	37.924	37.918
EXISTING GROUND BYPASS	37.922	37.950	37.989	37.985	37.981	37.944	37.924	37.918
HORIZONTAL CURVATURE	R=∞							
VERTICAL CURVATURE	L=100 Mo=+0.186		g=0.500%			L=100 Mo=-0.125		g=-0.500%
SUPERELEVATION	N.C.							

	DESIGNED	10/17/02				PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/19/02	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 126+800 - STA. 127+500	RP-09
	SUBMITTED	10/21/02	BUREAU OF DESIGN OFFICE OF THE SECRETARY			CABANATUAN BYPASS - CONTRACT PACKAGE IV			

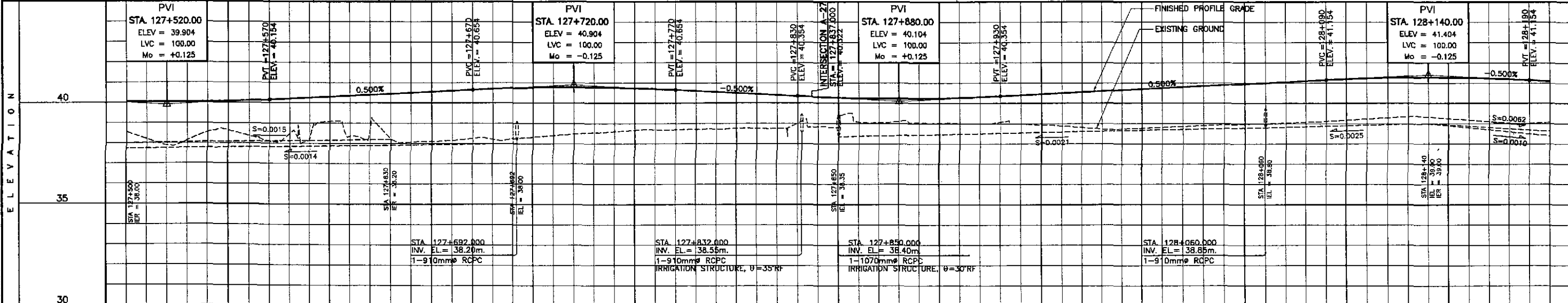
ELEMENTS OF CURVE

PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-10	128+658.998	1,724,371.527	493,707.438	26°00'20"	2,500.00	577.297	1,134.704	65.789	2.0	-	80



REFERENCE POINTS

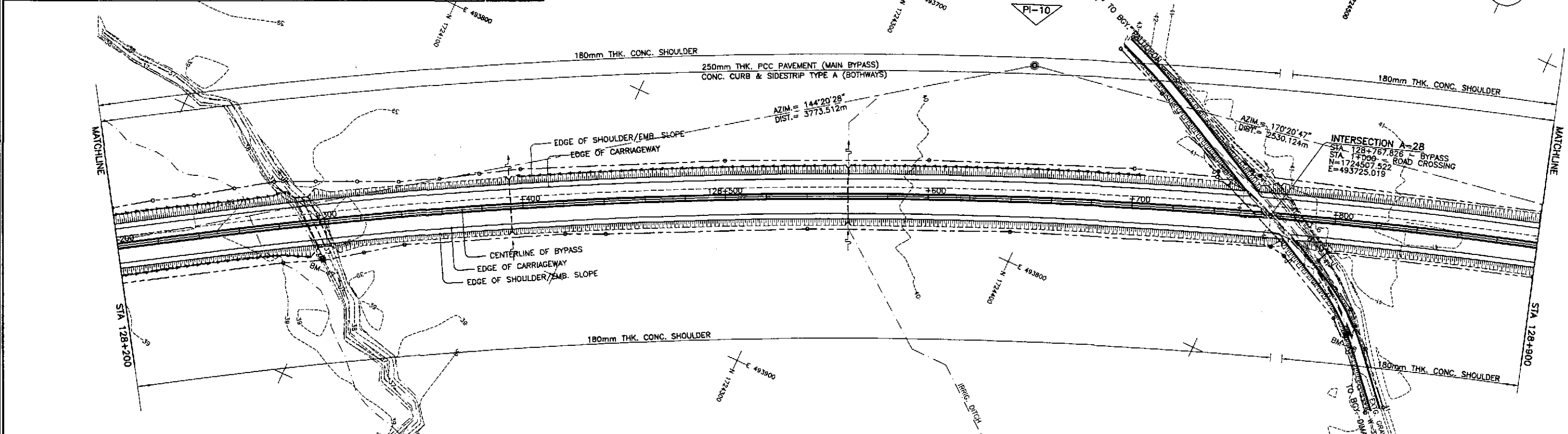
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-45	1,723,356.627	494,554.149	40.327	Right side of the road alignment, placed on side of dirt road, 1.50m. away from its CL, beside a nipa hut
BM-46	1,723,535.448	494,225.815	39.229	Left side of the road alignment, placed on side of the road 2m. away from its CL, beside a camachile tree.
BM-47	1,724,094.093	493,940.197	39.500	Right side of the road alignment, placed on the intersection of a rice paddy in the middle of the ricefield.



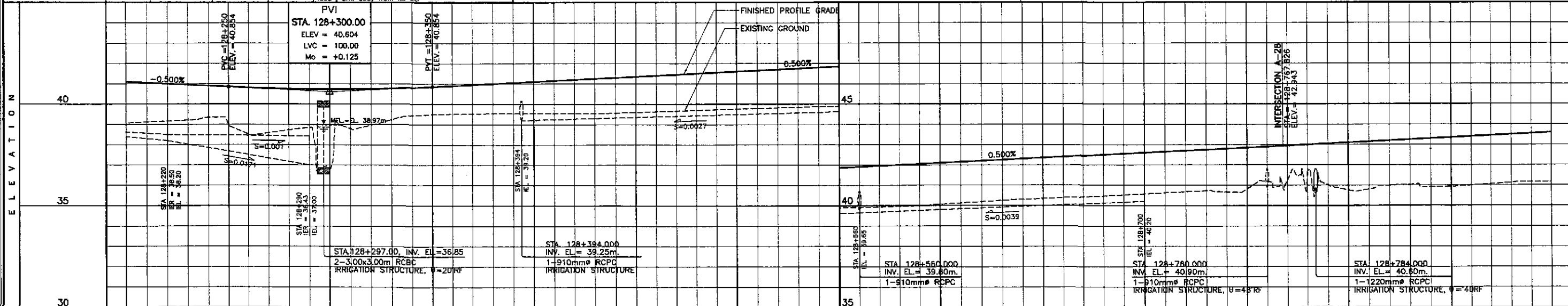
STATION	127+500	+600					+700					+800					+900					128+000					+100					+200				
FINISHED PROFILE GRADE BYPASS	40.049	40.029	40.049	40.109	40.204	40.304	40.404	40.504	40.604	40.699	40.759	40.779	40.759	40.699	40.604	40.504	40.404	40.309	40.249	40.249	40.309	40.404	40.504	40.604	40.704	40.804	40.904	41.004	41.104	41.199	41.259	41.279	41.259	41.199	41.104	
EXISTING GROUND BYPASS	38.548	37.889	38.542	38.368	38.482	39.084	38.712	38.087	38.147	38.213	38.320	38.476	38.593	38.688	38.700	38.757	38.753	38.641	38.060	39.114	39.019	38.985	38.975	38.890	38.732	38.769	38.657	38.938	39.002	39.086	39.172	39.288	39.327	39.180	38.032	38.072
HORIZONTAL CURVATURE	R=∞															R=2500																				
VERTICAL CURVATURE	L=100, Mo=+0.125, g=0.500%					L=100, Mo=-0.125, g=-0.500%					L=100, Mo=+0.125, g=0.500%					L=100, Mo=-0.125, g=0.500%																				
SUPERELEVATION	N.C.															128+091.701, e=+2%, e=-2%																				

	DATE	10/17/02	SIGNATURE	<i>[Signature]</i>	<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :	
	DESIGNED	10/17/02	ACACIO	PHL - PWO		BUREAU OF DESIGN	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	HORIZONTAL 1:1000	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 127+500 - STA. 128+200	RP-10
	CHECKED	10/19/02	S. BOSE	Submitted By:		OFFICE OF THE SECRETARY	CABANATUAN BYPASS - CONTRACT PACKAGE IV	VERTICAL 1:100		
	SUBMITTED	10/21/02	M. KUCHI	Project Director		Recommended By:	MANUEL M. BONOAN Undersecretary	FULL SIZE A1		

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-10	128+658.998	1,724,371.527	493,707.438	26°00'20"	2,500.00	577.297	1,134.704	65.789	2.00	-	80



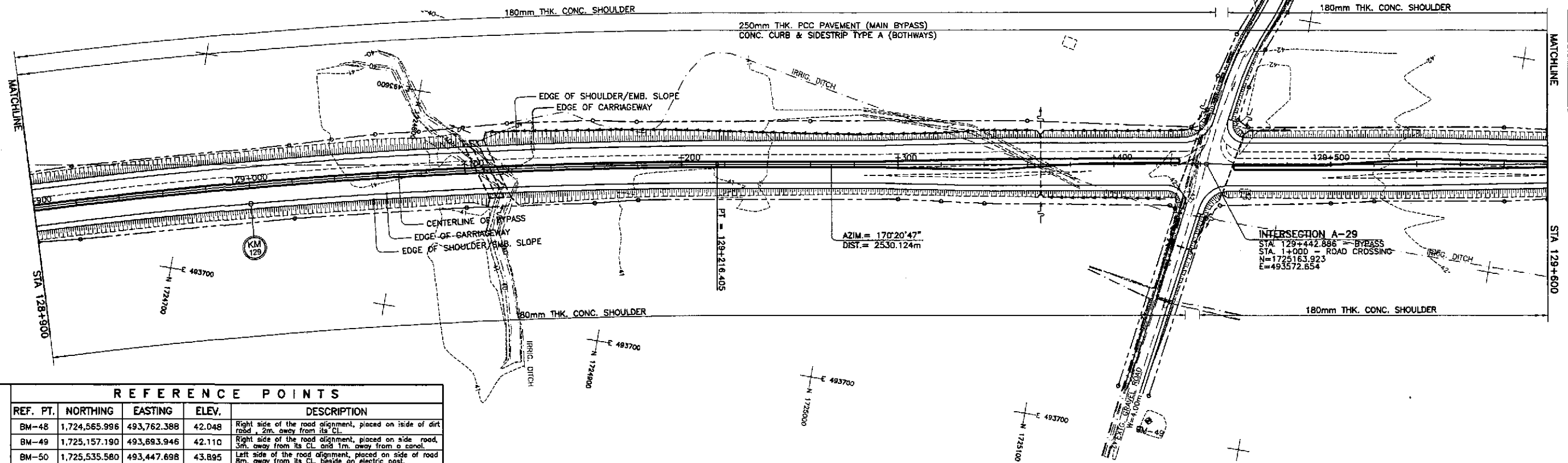
REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-46	1,723,535.448	494,225.815	39.229	Left side of the road alignment, placed on side of the road 2m. away from its CL, beside a cornachille tree.
BM-47	1,724,094.093	493,940.197	39.500	Right side of the road alignment, placed on the intersection of a rice paddy in the middle of the ricefield.
BM-48	1,724,565.996	493,762.388	42.048	Right side of the road alignment, placed on side of dirt road, 2m. away from its CL.



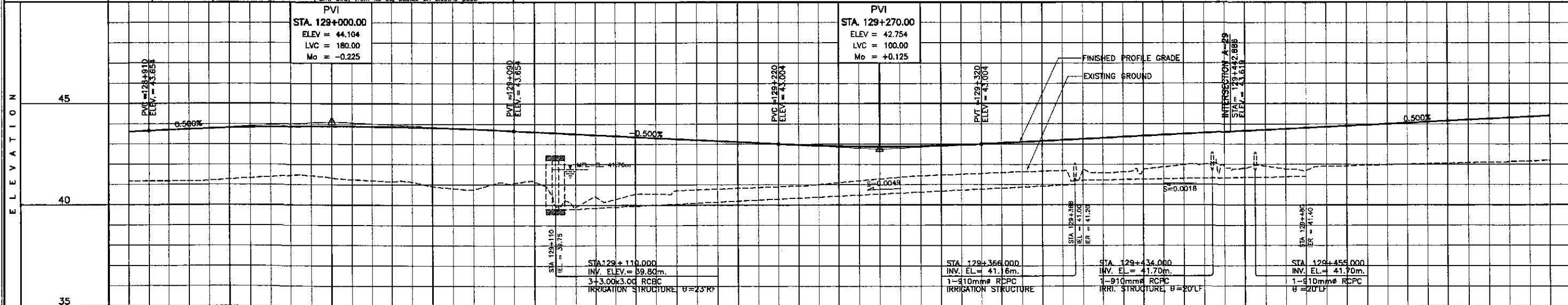
STATION	+200	+300	+400	128+500	+600	+700	+800	+900
FINISHED PROFILE GRADE BYPASS	38.072	39.165	39.348	39.512	39.728	40.749	40.809	41.004
EXISTING GROUND BYPASS	38.072	39.165	39.348	39.512	39.728	40.749	40.809	41.004
HORIZONTAL CURVATURE	R=2500							
VERTICAL CURVATURE	q=-0.500%				q=0.500%			
SUPERELEVATION	e=+2%							

	DESIGNED	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/19/02	<i>S. G. Gose</i>	BUREAU OF DESIGN OFFICE OF THE SECRETARY				THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE IV	HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 128+200 - STA. 128+900	RP-11
	SUBMITTED	10/21/02	<i>M. M. Bondon</i>	Submitted By: DANILO C. TRAJANO Project Director	Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By: GILBERTO S. REYES DC, Director IV	Approved By: MANUEL M. BONDON Undersecretary				

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-10	128+658.998	1,724,371.527	493,707.438	26°00'20"	2,500.00	577.297	1,134.704	65.789	2.00	-	80



REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-48	1,724,565.996	493,762.388	42.048	Right side of the road alignment, placed on side of dirt road, 2m. away from its CL
BM-49	1,725,157.190	493,693.946	42.110	Right side of the road alignment, placed on side road, 3m. away from its CL and 1m. away from a canal.
BM-50	1,725,535.580	493,447.698	43.895	Left side of the road alignment, placed on side of road 8m. away from its CL, beside an electric post.

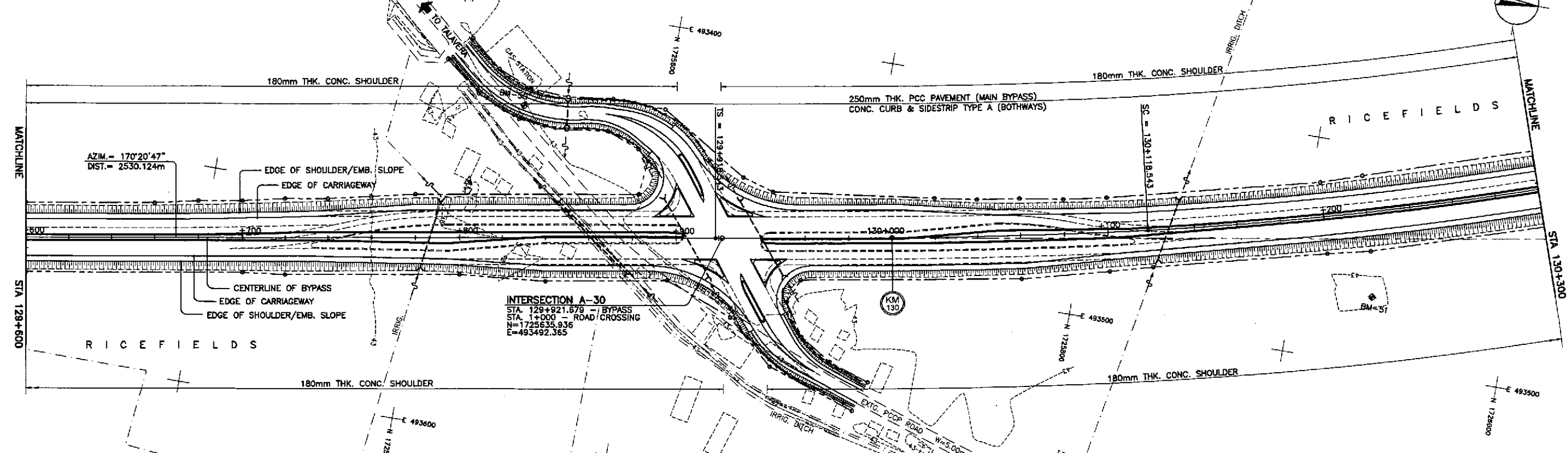


STATION	+900	129+000					+100	+200					+300	+400					129+500	+600																																																		
FINISHED PROFILE GRADE BYPASS	41.163	43.604	41.167	43.702	41.206	43.779	41.330	43.835	41.454	43.868	41.334	43.679	41.196	43.868	41.176	43.835	40.817	43.779	41.074	43.702	41.141	43.604	39.898	43.504	40.280	43.404	40.548	43.304	40.745	43.204	40.820	43.104	40.896	43.004	41.003	42.924	41.187	42.884	41.371	42.884	41.470	42.824	41.546	43.004	41.627	43.104	41.688	43.204	41.582	43.304	41.747	43.404	41.874	43.504	41.912	43.604	41.912	43.704	41.704	43.804	41.980	44.004	42.034	44.104	42.082	44.204	42.130	44.304	42.200	44.404
EXISTING GROUND BYPASS	41.163	43.604	41.167	43.702	41.206	43.779	41.330	43.835	41.454	43.868	41.334	43.679	41.196	43.868	41.176	43.835	40.817	43.779	41.074	43.702	41.141	43.604	39.898	43.504	40.280	43.404	40.548	43.304	40.745	43.204	40.820	43.104	40.896	43.004	41.003	42.924	41.187	42.884	41.371	42.884	41.470	42.824	41.546	43.004	41.627	43.104	41.688	43.204	41.582	43.304	41.747	43.404	41.874	43.504	41.912	43.604	41.912	43.704	41.704	43.804	41.980	44.004	42.034	44.104	42.082	44.204	42.130	44.304	42.200	44.404
HORIZONTAL CURVATURE	R=2500										129+215.405										R=∞																																																	
VERTICAL CURVATURE	L=180, Mo=-0.225										q=-0.500%										L=100, Mo=+0.125		q=0.500%																																															
SUPERELEVATION	e=+2%, e=-2%										129+206.405										129+236.405, 129+266.405		N.C.																																															

	DESIGNED	10/17/02	SIGNATURE	<i>[Signature]</i>		PROJECT AND LOCATION :				SCALE :	SHEET CONTENTS :		SHEET NO. :	
	CHECKED	10/19/02	Submitted By: DANILO C. TRAJANO, Project Director			BUREAU OF DESIGN		OFFICE OF THE SECRETARY		HORIZONTAL 1:1000	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 128+900 - STA. 129+600			RP-12
	SUBMITTED	10/21/02	Reviewed By: JOSEFINA M. ALAGAR, Chief, Highways Division			Recommended By: GILBERTO S. REYES, OIC, Director IV		Approved By: MANUEL M. BONGON, Undersecretary		VERTICAL 1:100	CABANATUAN BYPASS - CONTRACT PACKAGE IV			

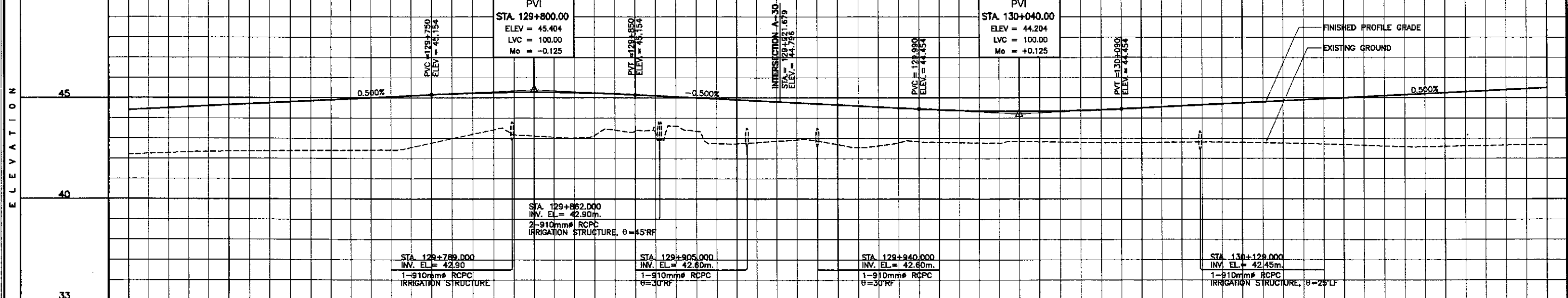
ELEMENTS OF CURVE

PI NO.	STATION	COORDINATES		Δ	A	R	T	Lc	E	Ls	θ _s	x	y	Δ _x	X _m	T ₁	T ₂	T ₃	Δ _e	e%	W	V(kph)
		NORTHING	EASTING																			
PI-11	131+169.232	1,726,885.824	493,283.164	65°09'11"	800	1,800.00	1150.70	1,846.841	337.167	200.000	3°10'59"	199.938	3.703	0.926	99.99	133.355	66.686	250.689	58°47'12"	2.00	-	80



REFERENCE POINTS

REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-49	1,725,157.190	493,693.946	42.110	Right side of the road alignment, placed on side road, 3m. away from the CL, and 1m. away from a canal.
BM-50	1,725,535.580	493,447.698	43.895	Left side of the road alignment, placed on side of road 8m. away from the CL, beside an electric post.
BM-51	1,725,936.648	493,468.459	43.274	Right side of the road alignment, placed on intersection of a rice paddy in middle of ricefield, 150m. from CL.



STATION	+600	+700	+800	+900	130+000	+100	+200	+300
FINISHED PROFILE GRADE BYPASS	42.200	44.504	44.804	45.104	45.404	44.409	44.504	45.504
EXISTING GROUND BYPASS	42.276	44.504	44.804	45.104	45.404	44.409	44.504	45.504
HORIZONTAL CURVATURE	R=∞		129+918.543			130+118.543		R=1800
VERTICAL CURVATURE	g=0.500%		L=100, Mo=-0.125			L=100, Mo=+0.125		g=0.500%
SUPERELEVATION	N.C.		130+058.543			130+088.543		e=+2%, e=-2%

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INTERNATIONAL

YEO YACHIYO ENGINEERING CO., LTD.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

BUREAU OF DESIGN
OFFICE OF THE SECRETARY

DESIGNED: 10/17/02
CHECKED: 10/19/02
SUBMITTED: 10/21/02

Submitted By: DANILO C. TRAJANO
Reviewed By: JOSEFINA M. ALAGAR
Recommended By: GILBERTO S. REYES
Approved By: MANUEL M. BONDAN
SIMEON A. DATUMANONG

PROJECT AND LOCATION :
THE DETAILED DESIGN STUDY ON
UPGRADING INTER-URBAN HIGHWAY SYSTEM
ALONG THE PAN-PHILIPPINE HIGHWAY
(Plaridel, Cabanatuan and San Jose Bypasses)

CABANATUAN BYPASS - CONTRACT PACKAGE IV

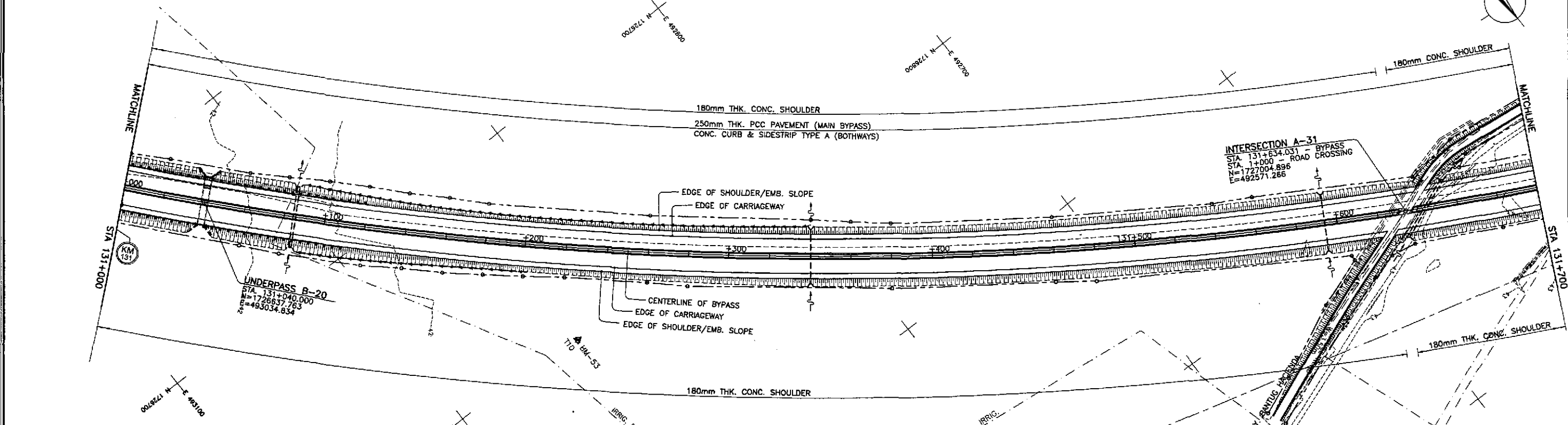
SCALE :
HORIZONTAL 1:1000
VERTICAL 1:100
FULL SIZE A1

SHEET CONTENTS :
PLAN AND PROFILE
ALONG BYPASS (ULTIMATE STAGE)
STA. 129+600 - STA. 130+300

SHEET NO. :
RP-13

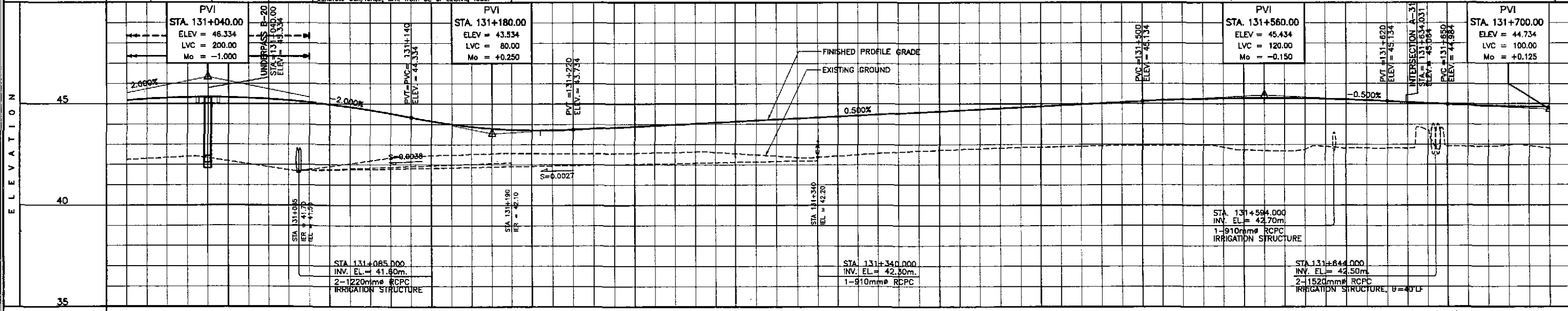
ELEMENTS OF CURVE

PI NO.	STATION	COORDINATES		Δ	A	R	T	Lc	E	Ls	θ _s	x	y	Δe	Xm	T ₁	T ₂	T ₃	Δc	e%	W	V(kph)
		NORTHING	EASTING																			
PI-11	131+169.232	1,726,865.824	453,283.164	65°09'11"	600	1,800.00	1150.70	1,848.841	337.167	200.000	3°10'59"	199.938	3.703	0.926	99.99	133.355	56.686	1,250.689	58°47'12"	2.00	-	80



REFERENCE POINTS

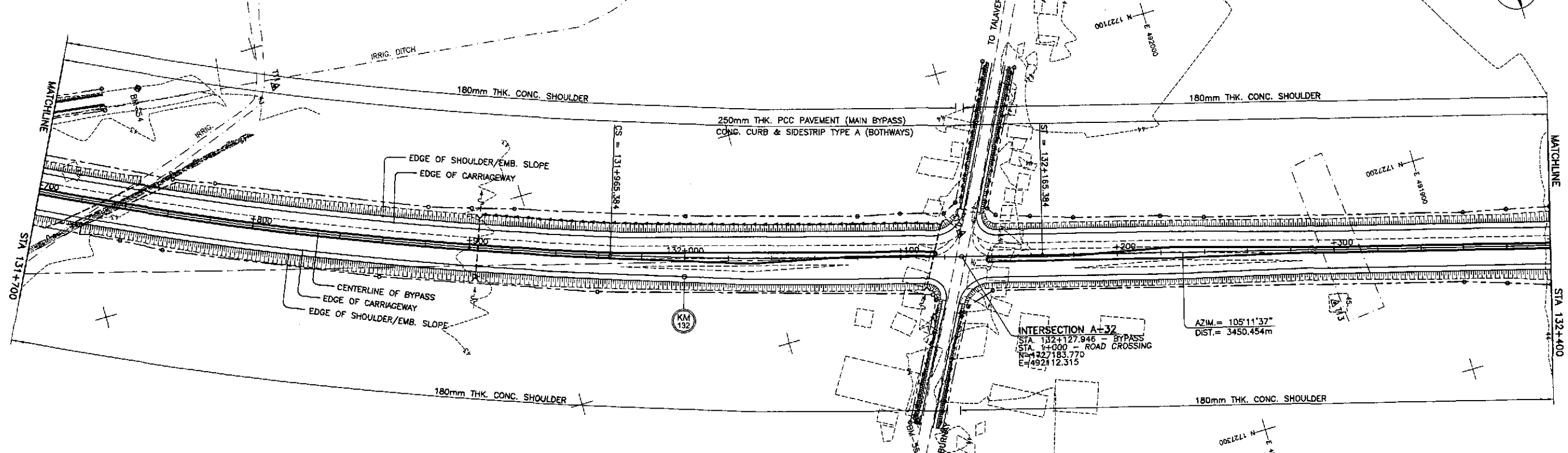
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-53	1,726,804.440	492,931.296	42.900	Right side of the road alignment, in middle of ricefield, at side of well placed in the rice paddy.
BM-54	1,727,002.842	492,465.434	43.790	Left side of the road alignment, 3m. away from dirt road CL and 6m from toe of irrigation canal.
BM-55	1,727,251.355	492,153.048	44.219	Right side of the road alignment, near the corner of concrete wall/fence, 3m. from CL of existing road.



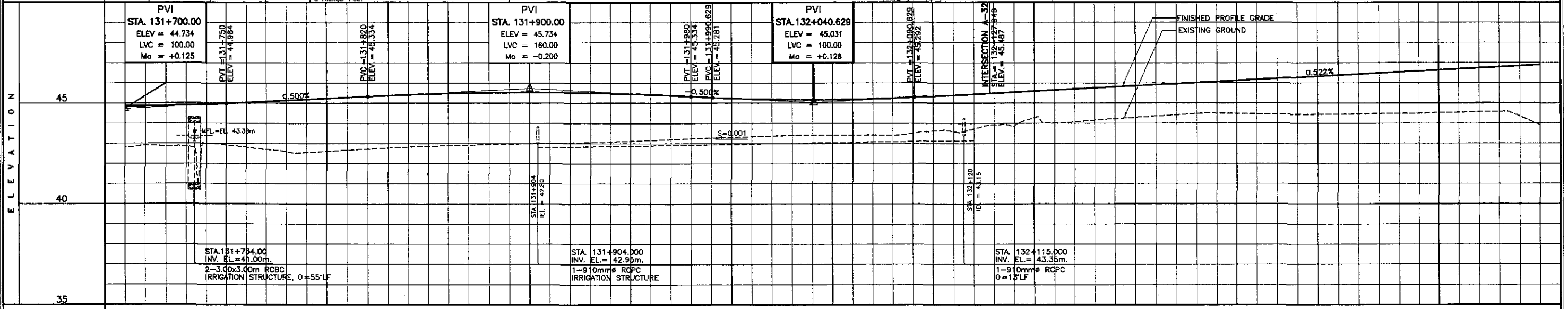
STATION	131+000	+100				+200				+300				+400				131+500				+600				+700																																														
FINISHED PROFILE GRADE BYPASS	42.249	45.174	42.349	45.294	42.335	45.334	42.039	45.294	41.742	45.174	41.906	44.974	42.195	44.694	42.418	44.334	42.482	43.997	42.546	43.784	42.551	43.697	42.558	43.734	42.544	43.834	42.592	43.934	42.640	44.034	42.549	44.134	42.421	44.234	42.367	44.334	42.495	44.434	42.623	44.534	42.710	44.634	42.786	44.734	42.852	44.834	42.892	44.934	42.932	45.034	42.969	45.134	42.961	45.218	42.863	45.268	42.700	45.284	42.759	45.268	42.810	45.218	42.811	45.134	43.684	45.034	42.697	44.939	42.967	44.879	42.808	44.859
EXISTING GROUND BYPASS	42.249	45.174	42.349	45.294	42.335	45.334	42.039	45.294	41.742	45.174	41.906	44.974	42.195	44.694	42.418	44.334	42.482	43.997	42.546	43.784	42.551	43.697	42.558	43.734	42.544	43.834	42.592	43.934	42.640	44.034	42.549	44.134	42.421	44.234	42.367	44.334	42.495	44.434	42.623	44.534	42.710	44.634	42.786	44.734	42.852	44.834	42.892	44.934	42.932	45.034	42.969	45.134	42.961	45.218	42.863	45.268	42.700	45.284	42.759	45.268	42.810	45.218	42.811	45.134	43.684	45.034	42.697	44.939	42.967	44.879	42.808	44.859
HORIZONTAL CURVATURE	R=1800																																																																							
VERTICAL CURVATURE	L=200 Mo=-1.00				q=-2.000%				L=80 Mo=+0.250				q=0.500%				L=120 Mo=-0.150				q=-0.500%				L=100 Mo=+0.125																																															
SUPERELEVATION	e=+2% e=-2%																																																																							

	DESIGNED	10/17/02		<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	PROJECT AND LOCATION :				SCALE :	SHEET CONTENTS :		SHEET NO. :		
	CHECKED	10/19/02			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)				HORIZONTAL 1:1000	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 131+000 - STA. 131+700		RP-15		
	SUBMITTED	10/21/02			CABANATUAN BYPASS - CONTRACT PACKAGE IV				VERTICAL 1:100					
BUREAU OF DESIGN DANILLO C. TRAJANO Project Director			OFFICE OF THE SECRETARY JOSEFINA M. ALAGAR Chief, Highways Division			OFFICE OF THE SECRETARY GILBERTO S. REYES OC, Director IV			OFFICE OF THE SECRETARY MANUEL M. BONDAN Undersecretary			OFFICE OF THE SECRETARY SIMON A. DATUMANONG Secretary		

ELEMENTS OF CURVE																						
PI NO.	STATION	COORDINATES		Δ	A	R	T	Lc	E	Ls	θ _a	x	y	Δ _s	X _m	T ₁	T ₂	T ₃	Δ _e	e&	W	V(kph)
		NORTHING	EASTING																			
PI-11	131+169.232	1,726,865.824	493,283.164	65°09'11"	603	1,800.00	1150.70	1,846.841	337.167	200.000	3°10'58"	199.938	3.703	0.926	19.99	133.355	66.686	250.689	58°47'12"	2.00	-	80

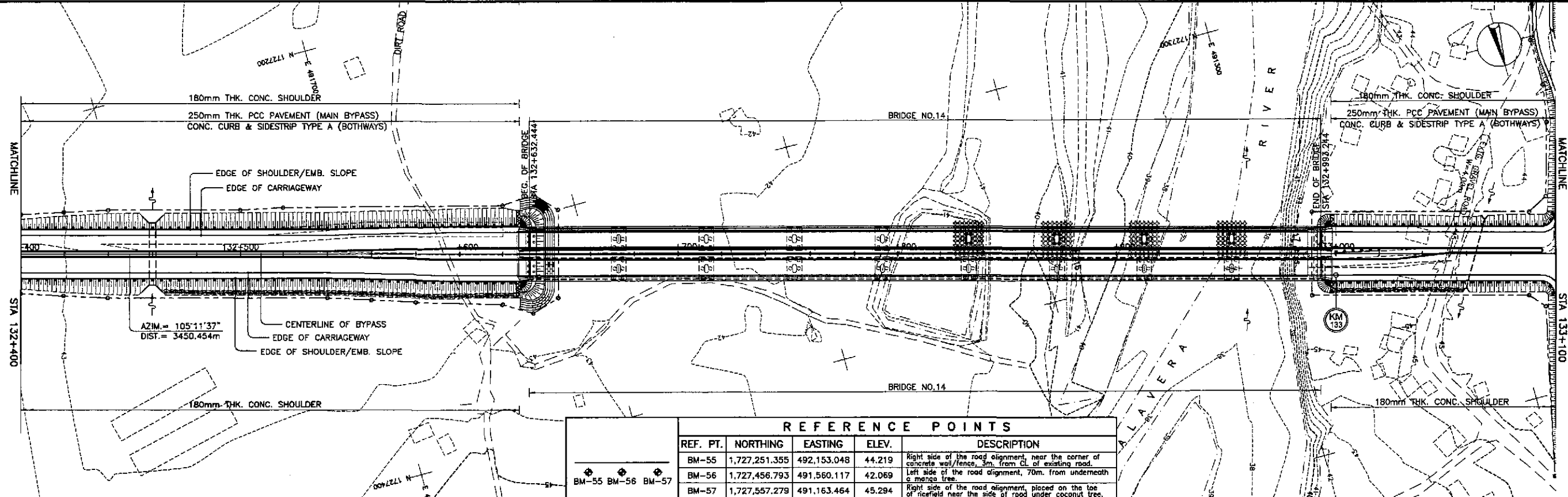


REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-54	1,727,002.842	492,465.434	43.790	Left side of the road alignment, 3m. away from dirt road CL and 5m from toe of irrigation canal.
BM-55	1,727,251.355	492,153.048	44.219	Right side of the road alignment near the corner of concrete wall/fence, 3m. from CL of existing road.
BM-56	1,727,456.793	491,560.117	42.069	Left side of the road alignment, 70m. from underneath a mango tree.

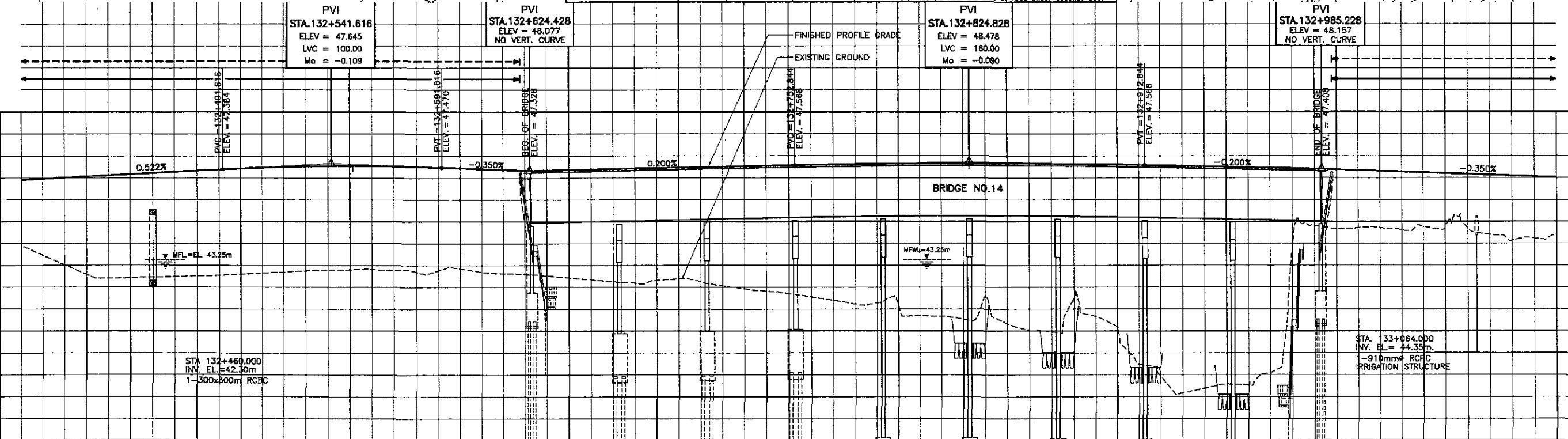


STATION	+700	+800					+900					132+000					+100					+200					+300					+400					
FINISHED PROFILE GRADE BYPASS	42.808	44.859	44.939	45.034	45.134	45.234	45.334	45.422	45.484	45.522	45.534	45.522	45.484	45.422	45.334	45.239	45.179	45.159	45.180	45.242	45.341	45.445	45.550	45.654	45.758	45.863	45.967	46.071	46.175	46.280	46.384	46.488	46.593	46.697	46.802	46.906	
EXISTING GROUND BYPASS	42.808	42.869	43.021	42.814	42.592	42.611	42.727	42.828	42.892	42.956	42.998	43.034	43.083	43.164	43.243	43.307	43.367	43.410	43.410	43.410	43.621	43.721	43.862	44.023	44.151	44.281	44.419	44.501	44.469	44.437	44.449	44.473	44.503	44.547	44.591	44.602	44.606
HORIZONTAL CURVATURE	R=1800										131+965.384					A=600					132+165.384					R=∞											
VERTICAL CURVATURE	L=100, Mo=+0.125, q=0.500%					L=180, Mo=-0.200, q=-0.500%					L=100, Mo=+0.128, q=0.522%																										
SUPERELEVATION	e=+2%										131+965.384					131+995.384, 132+025.384					e=-2%					N.C.											

	DESIGNED	10/17/02			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)				SCALE :	SHEET CONTENTS :		SHEET NO. :
	CHECKED	10/19/02			BUREAU OF DESIGN				CABANATUAN BYPASS - CONTRACT PACKAGE IV				HORIZONTAL 1:1000	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE)		RP-16
	SUBMITTED	10/21/02			OFFICE OF THE SECRETARY				BUREAU OF DESIGN				VERTICAL 1:100	STA. 131+700 - 132+400		
			PROJECT DIRECTOR	DANILO C. TRAJANO				SIMEON A. DATUMANONG				FULL SIZE A1				

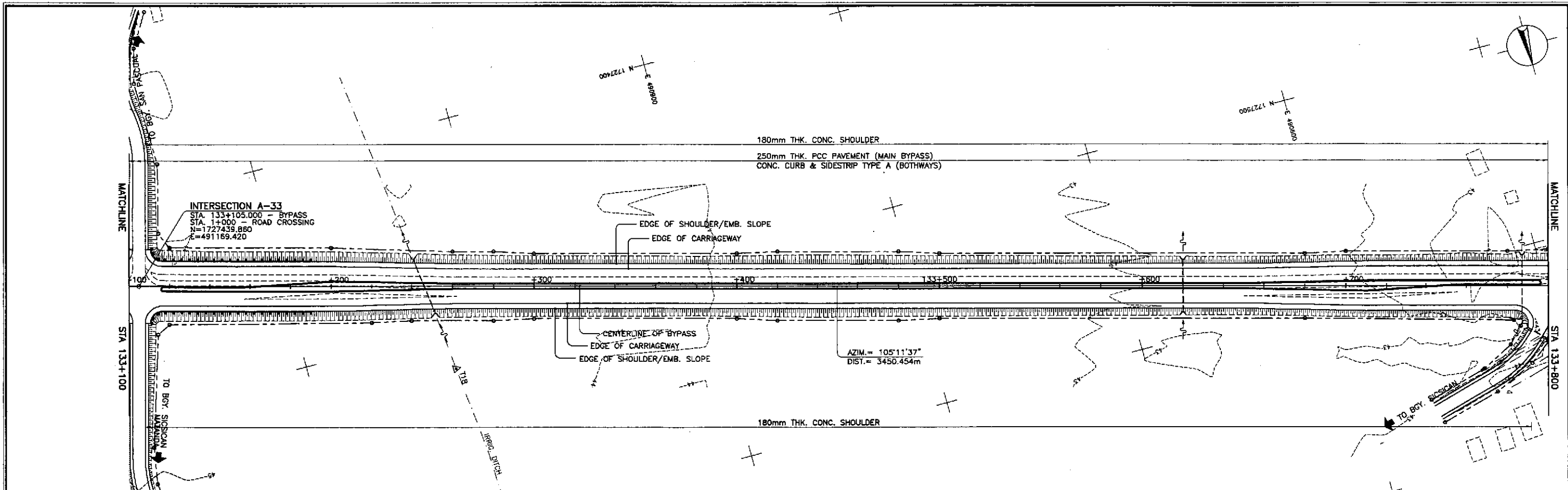


REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-55	1,727,251.355	492,153.048	44.219	Right side of the road alignment, near the corner of concrete wall/fence, 3m. from CL of existing road.
BM-56	1,727,456.793	491,560.117	42.069	Left side of the road alignment, 70m. from underneath a mango tree.
BM-57	1,727,557.279	491,163.464	45.294	Right side of the road alignment, placed on the toe of ricefield near the side of road, under coconut tree.



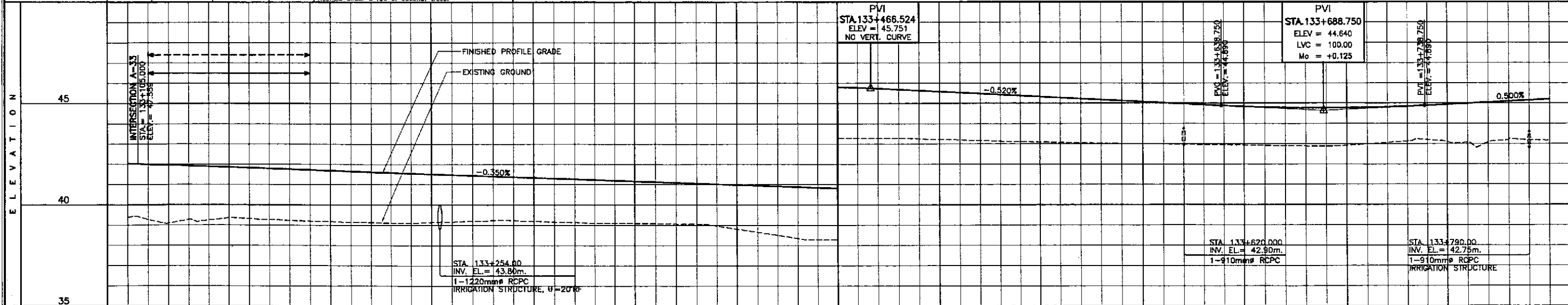
STATION	+400	132+500										+600										+700										+800										+900										133+000										+100																		
FINISHED PROFILE GRADE BYPASS	43.907	46.906	43.027	47.011	42.414	47.115	42.482	47.219	42.510	47.324	42.589	47.425	42.699	47.497	42.781	47.535	42.819	47.537	42.701	47.505	42.850	47.441	42.636	47.371	42.521	47.342	42.344	47.382	42.181	47.422	42.388	47.462	42.066	47.502	41.814	47.542	41.557	47.582	41.230	47.613	41.144	47.634	40.684	47.646	41.536	47.647	40.030	47.639	41.496	47.620	40.184	47.592	37.921	47.554	37.383	47.514	37.526	47.474	43.867	47.434	44.660	47.383	44.708	47.313	44.781	47.243	44.710	47.173	44.138	47.103	44.380	47.033								
EXISTING GROUND BYPASS	43.907	46.906	43.027	47.011	42.414	47.115	42.482	47.219	42.510	47.324	42.589	47.425	42.699	47.497	42.781	47.535	42.819	47.537	42.701	47.505	42.850	47.441	42.636	47.371	42.521	47.342	42.344	47.382	42.181	47.422	42.388	47.462	42.066	47.502	41.814	47.542	41.557	47.582	41.230	47.613	41.144	47.634	40.684	47.646	41.536	47.647	40.030	47.639	41.496	47.620	40.184	47.592	37.921	47.554	37.383	47.514	37.526	47.474	43.867	47.434	44.660	47.383	44.708	47.313	44.781	47.243	44.710	47.173	44.138	47.103	44.380	47.033								
HORIZONTAL CURVATURE	R=∞																																																																															
VERTICAL CURVATURE	g=0.522%										L=100, Mo=-0.109										NO VERTICAL CURVE										g=0.200%										L=160, Mo=-0.080										g=-0.200%										NO VERTICAL CURVE										g=-0.350%									
SUPERELEVATION	N.C.																																																																															

	DESIGNED	DATE	SIGNATURE		PROJECT AND LOCATION :					SCALE :	SHEET CONTENTS :		SHEET NO. :
	CHECKED	10/19/02	<i>[Signature]</i>		THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)					HORIZONTAL 1:1000	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 132+400 - STA. 133+100		RP-17
	SUBMITTED	10/21/02	<i>[Signature]</i>		CABANATUAN BYPASS - CONTRACT PACKAGE IV					VERTICAL 1:100			
JICA JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL YEO YACHIYO ENGINEERING CO., LTD.				REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN OFFICE OF THE SECRETARY					FULL SIZE A1				



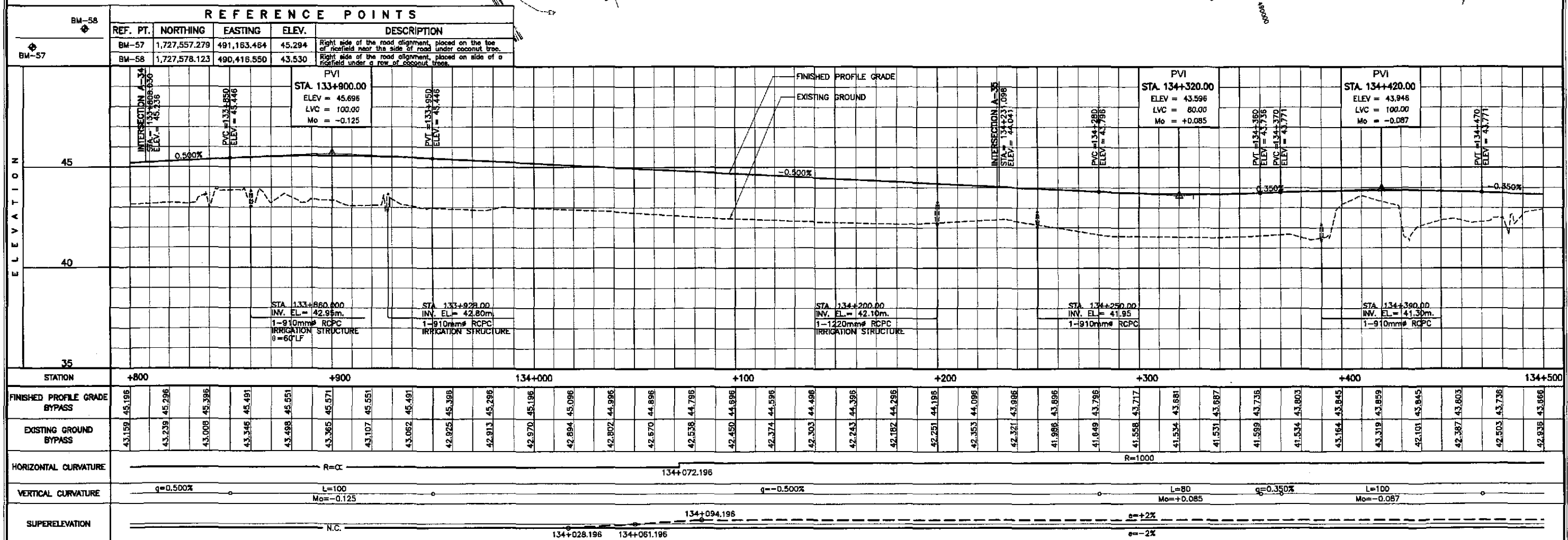
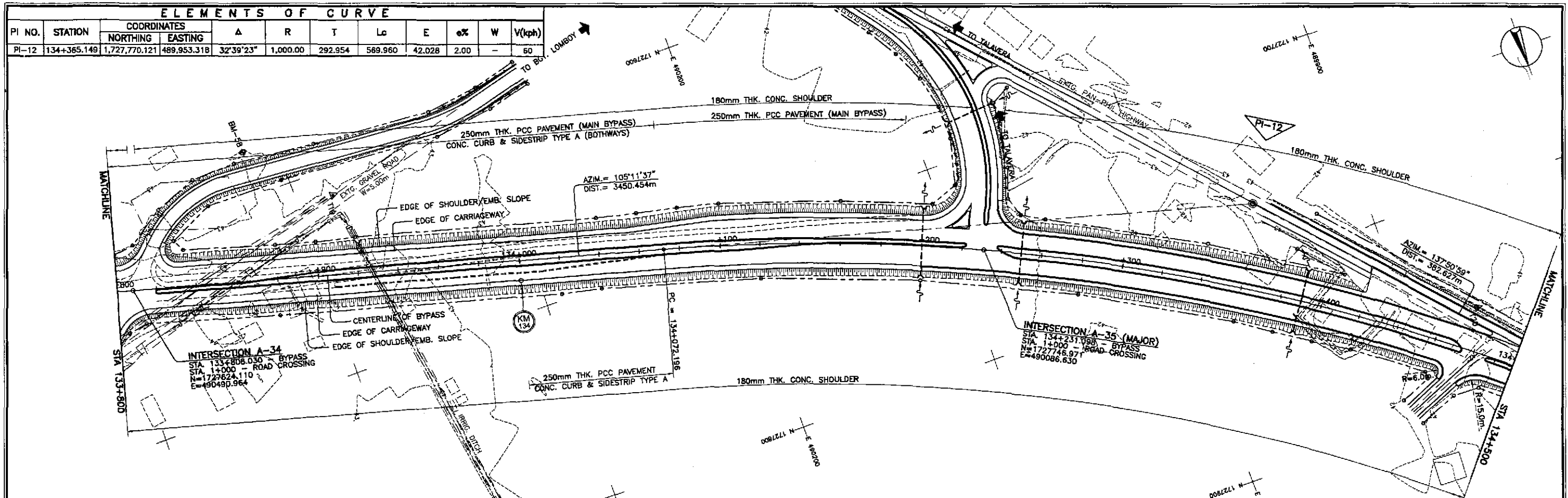
REFERENCE POINTS

REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-56	1,727,456.793	491,560.117	42.069	Left side of the road alignment, 70m. from underneath a mango tree.
BM-57	1,727,557.279	491,163.464	45.294	Right side of the road alignment, placed on the toe of ricefield near the side of road under coconut tree.
BM-58	1,727,578.123	490,416.550	43.530	Right side of the road alignment, placed on side of a ricefield under a row of coconut trees.



STATION	+100	+200						+300						+400						133+500						+600						+700						+800																															
FINISHED PROFILE GRADE BYPASS	44.390	44.093	44.863	44.747	44.894	44.320	44.824	44.230	44.754	44.172	44.684	44.124	44.614	44.107	44.544	44.167	44.474	44.227	44.404	44.193	44.334	44.133	44.264	44.085	44.194	44.053	44.054	43.807	44.384	43.499	44.914	43.279	44.844	43.275	44.774	43.271	44.684	43.223	44.684	43.163	44.484	43.108	44.384	43.068	44.284	43.028	44.184	43.001	44.084	42.977	44.984	42.951	44.884	42.919	44.806	42.887	44.769	42.819	44.771	42.809	44.814	42.700	44.896	42.671	44.996	42.615	44.096	42.159	44.196
EXISTING GROUND BYPASS	44.390	44.093	44.863	44.747	44.894	44.320	44.824	44.230	44.754	44.172	44.684	44.124	44.614	44.107	44.544	44.167	44.474	44.227	44.404	44.193	44.334	44.133	44.264	44.085	44.194	44.053	44.054	43.807	44.384	43.499	44.914	43.279	44.844	43.275	44.774	43.271	44.684	43.223	44.684	43.163	44.484	43.108	44.384	43.068	44.284	43.028	44.184	43.001	44.084	42.977	44.984	42.951	44.884	42.919	44.806	42.887	44.769	42.819	44.771	42.809	44.814	42.700	44.896	42.671	44.996	42.615	44.096	42.159	44.196
HORIZONTAL CURVATURE	R=∞																																																																				
VERTICAL CURVATURE	g=-0.350%												NO VERTICAL CURVE												g=-0.500%												L=100 Mo=+0.125												g=0.500%																				
SUPERELEVATION	N.C.																																																																				

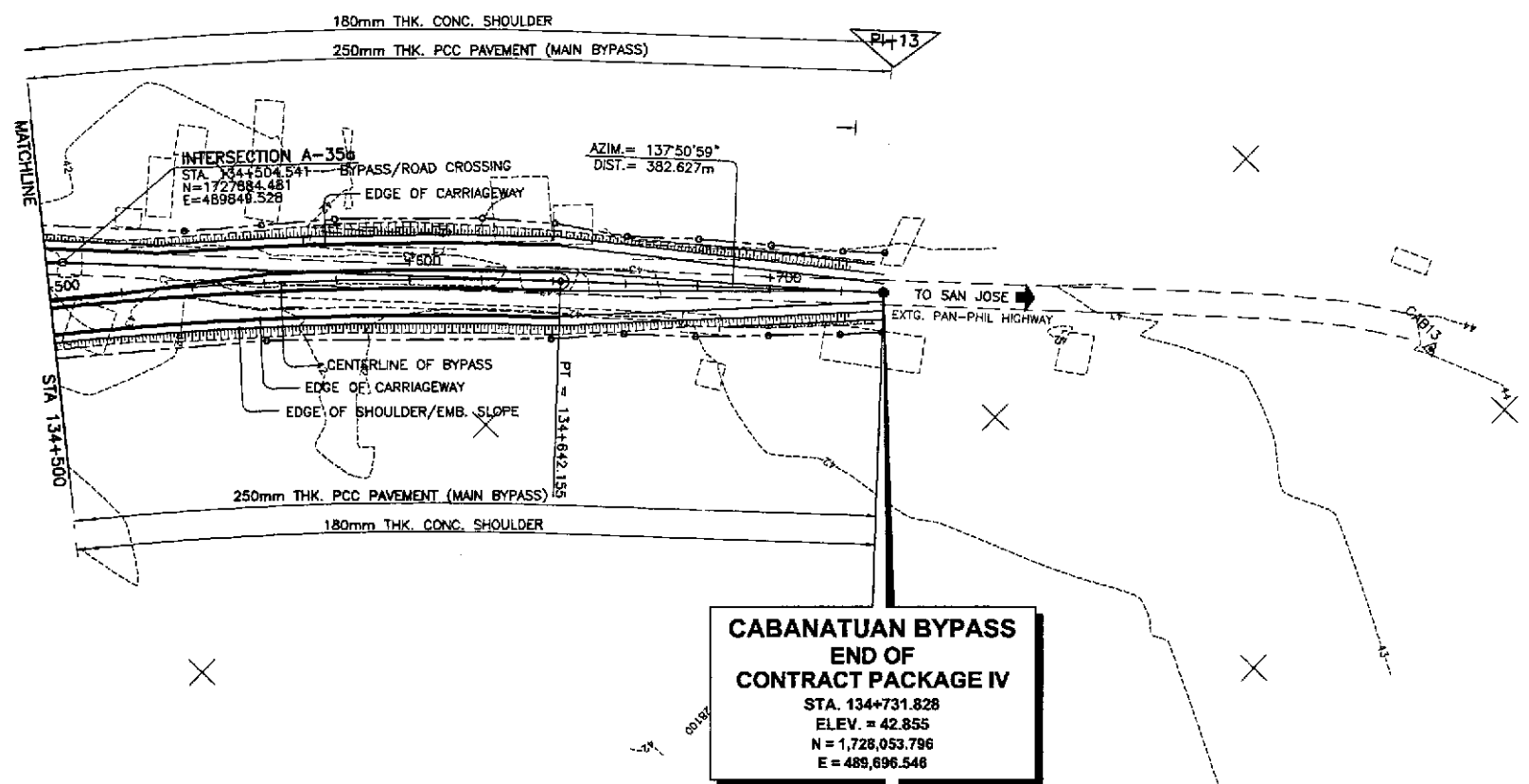
	DESIGNED	10/17/02	SIGNATURE	<i>[Signature]</i>	<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	PROJECT AND LOCATION :				SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/19/02	SIGNATURE	<i>[Signature]</i>		THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)				HORIZONTAL 1:1000	PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 133+100 - STA. 133+800	RP-18
	SUBMITTED	10/21/02	SIGNATURE	<i>[Signature]</i>		CABANATUAN BYPASS - CONTRACT PACKAGE IV				VERTICAL 1:100		
Submitted By: DANILO C. TRAJANO (Project Director) Reviewed By: JOSEFINA M. ALAGAR (Chief, Highways Division) Recommended By: GILBERTO S. REYES (OIC, Director IV) Recommended By: MANUEL M. BONGAN (Undersecretary) Approved By: SIMEON A. DATUMANONG (Secretary)												



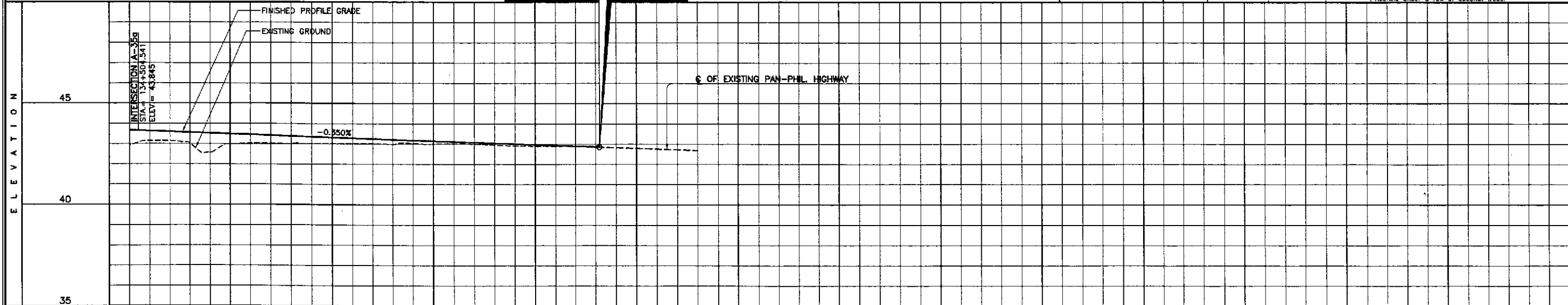
STATION	+800	+900	134+000	+100	+200	+300	+400	134+500
FINISHED PROFILE GRADE BYPASS	43.159	43.239	43.308	43.345	43.488	43.551	43.365	43.107
EXISTING GROUND BYPASS	43.159	43.239	43.308	43.345	43.488	43.551	43.365	43.107
HORIZONTAL CURVATURE	R=C							
VERTICAL CURVATURE	g=0.500%		L=100 Mo=-0.125		g=-0.500%		L=80 Mo=+0.085	
SUPERELEVATION	N.C.							

	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE IV	SCALE : HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	SHEET CONTENTS : PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 133+800 - STA. 134+500	SHEET NO. : RP-19			
	DESIGNED	10/17/02		BUREAU OF DESIGN									
	CHECKED	10/19/02		OFFICE OF THE SECRETARY									
		SUBMITTED	10/21/02	Submitted By: DANILO C. TRAJANO Project Director		Reviewed By: JOSEFINA M. ALAGAR Chief, Highway Division		Recommended By: GILBERTO S. REYES OC, Director IV		Recommended By: MANUEL M. BONJAN Undersecretary		Approved By: SIMEON A. DATUMANONG Secretary	

PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	W	V(kph)
		NORTHING	EASTING								
PI-12	134+365.149	1,727,770.121	489,953.318	32°39'23"	1,000.00	292.954	569.960	42.028	2.00	-	60

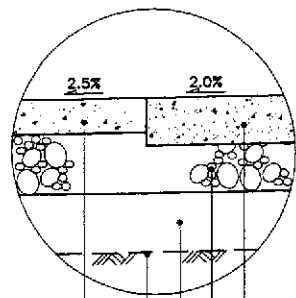


REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-58	1,727,578.123	490,416.550	43.530	Right side of the road alignment, placed on side of a ricefield under a row of coconut trees.

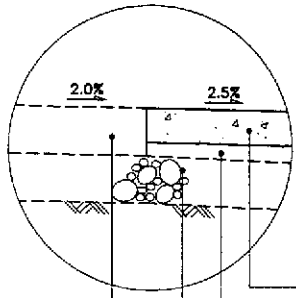


STATION	134+500	+600					+700					+800	+900	135+000	+100
FINISHED PROFILE GRADE BYPASS	42.936	43.668	43.596	43.526	43.456	43.386	43.316	43.246	43.176	43.106	42.936	42.866	42.796	42.726	42.656
EXISTING GROUND BYPASS	42.936	43.147	43.596	43.032	43.456	43.006	43.316	43.012	43.176	43.015	43.036	42.903	42.896	42.866	42.866
HORIZONTAL CURVATURE	R=1000														
VERTICAL CURVATURE	g=-0.350%														
SUPERELEVATION	e=+2% (134+620.155), e=-2% (134+653.155, 134+686.155), N.C.														

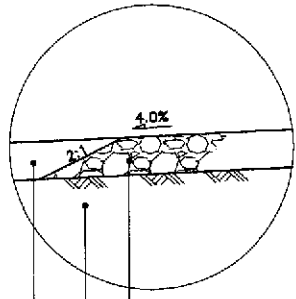
	DESIGNED	10/17/02			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : HORIZONTAL 1:1000 VERTICAL 1:100 FULL SIZE A1	SHEET CONTENTS : PLAN AND PROFILE ALONG BYPASS (ULTIMATE STAGE) STA. 134+500 - STA.0134+731.828	SHEET NO. : RP-20
	CHECKED	10/19/02			BUREAU OF DESIGN		OFFICE OF THE SECRETARY					
	SUBMITTED	10/21/02			Submitted By: DANILLO C. TRAJAND Project Director	Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By: GILBERTO S. REYES D.C. Director IV	Recommended By: MANUEL M. BONOAN Undersecretary				



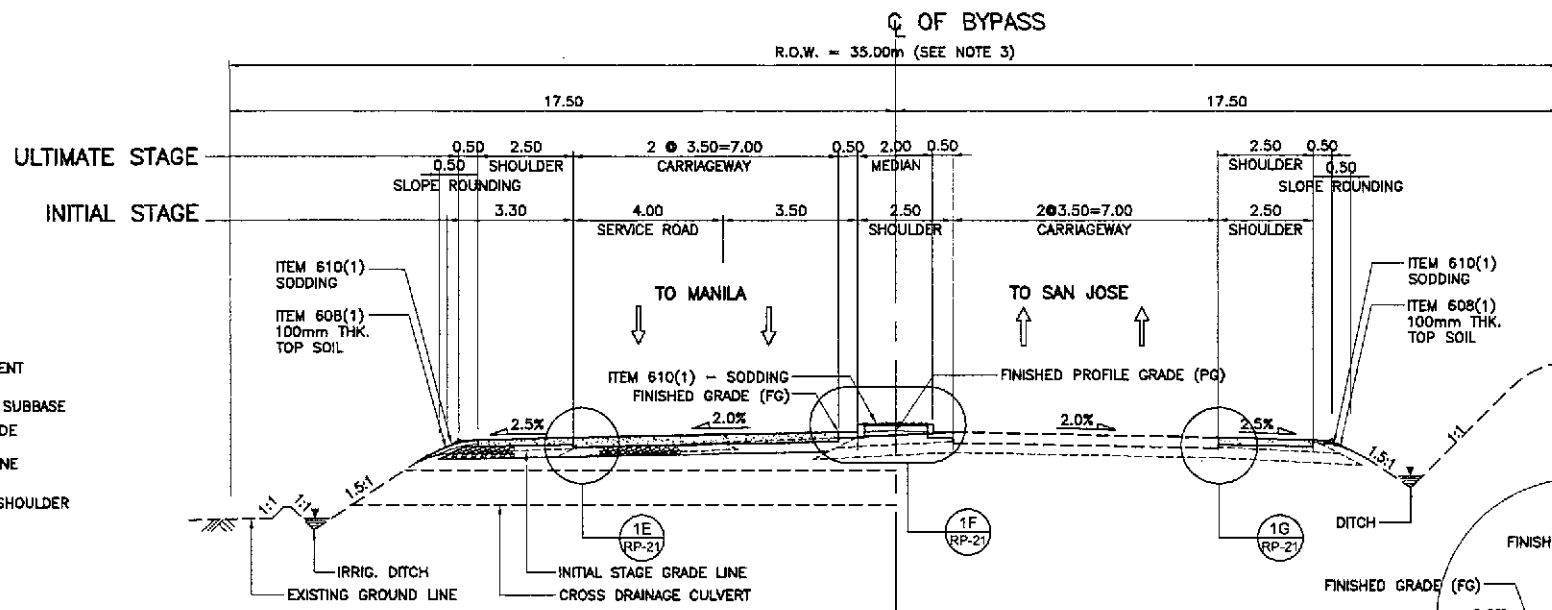
1E DETAIL
RP-21 SCALE 1:20



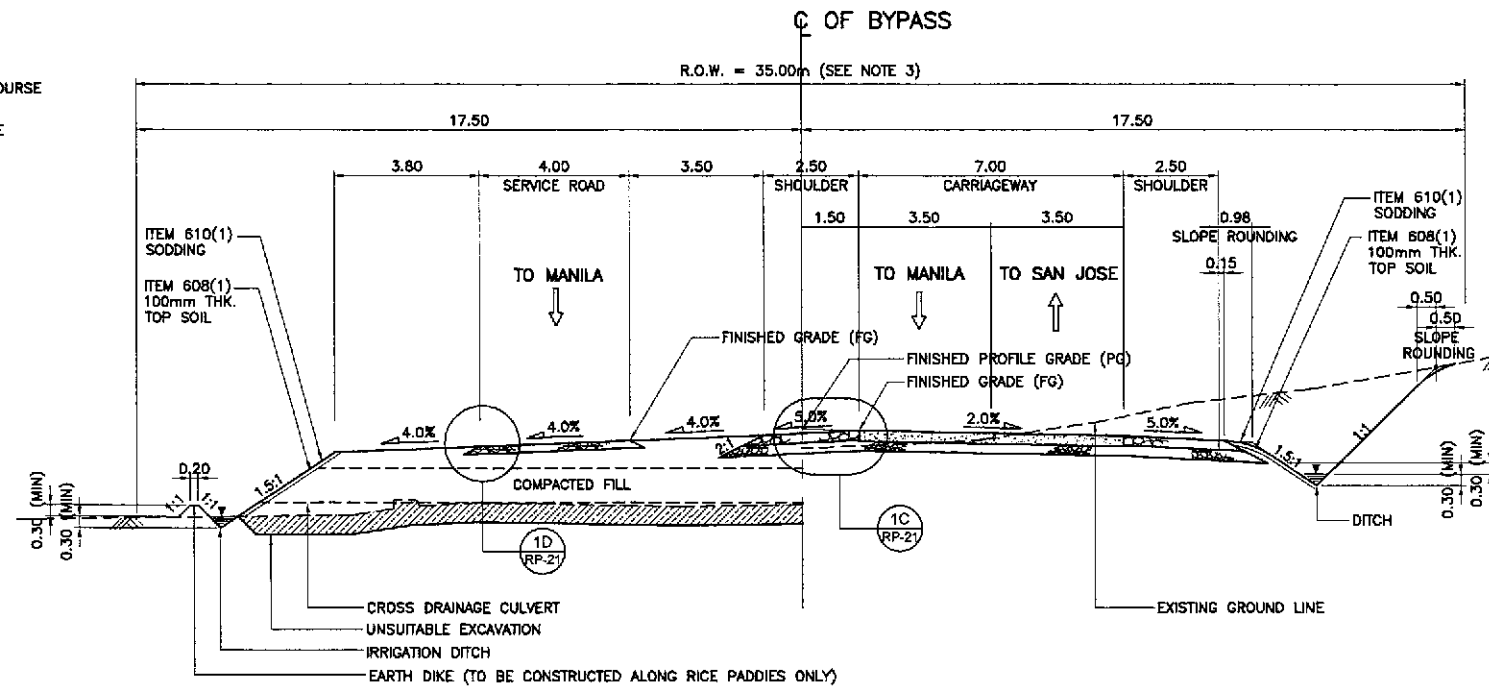
1G DETAIL
RP-21 SCALE 1:20



1D DETAIL
RP-21 SCALE 1:20



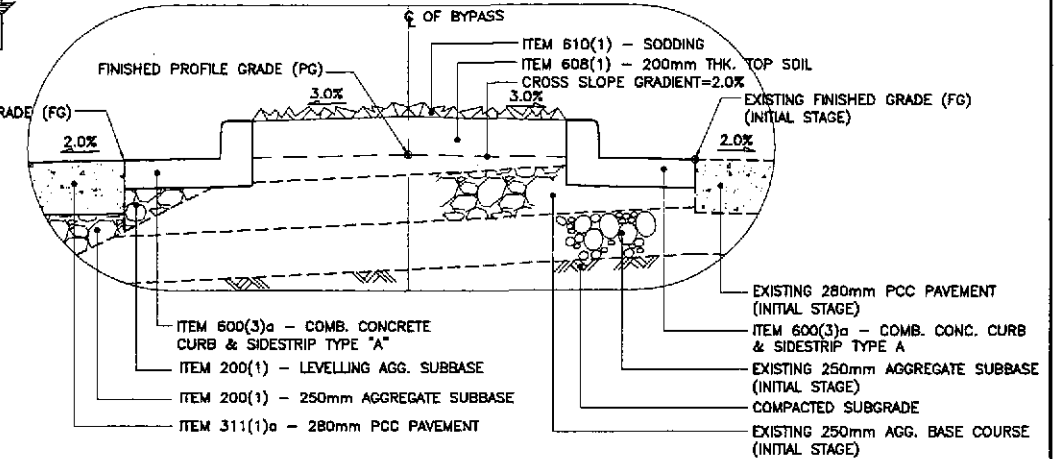
1B NORMAL SECTION - ULTIMATE STAGE
RP-21 SCALE 1:100



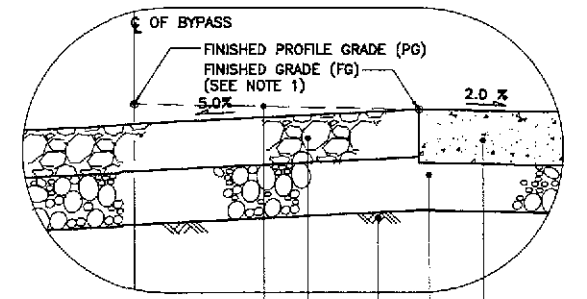
1A NORMAL SECTION - INITIAL STAGE
RP-21 SCALE 1:100

1 TYPICAL ROADWAY SECTIONS - WITHOUT FRONTAGE ROAD
RP-21 SCALE 1:100

- NOTES:
1. FINISHED PROFILE GRADE (PG) ALONG BYPASS IS TAKEN FROM THE CENTERLINE WHEREAS FINISHED GRADE (FG) IS RECKONED FROM THE PROFILE GRADE RELATIVE TO THE PAVEMENT CROSS SLOPE.
 2. FOR SCHEDULE OF QUANTITIES, SEE SHEET NOS. GC-11 TO GC-12.
 3. ROAD RIGHT-OF-WAY (R.O.W.) WIDTH SHALL BE VARIED DUE TO HORIZONTAL TRANSITION OF SERVICE ROAD, MEDIAN, DIVISIONAL ISLANDS, OUTER SEPARATIONS AND DUE TO HEIGHT OF EMBANKMENT. SEE SCHEDULE OF R.O.W.; (SHTS. NOS. RG-06 TO RG-08).
 4. SIDESLOPES OF 1:5:1 OR FLATTER SHALL BE PROTECTED BY SODDING. SIDESLOPES ALONG AREAS PRONE TO FLOODING SHALL BE PROTECTED BY GROUDED RIPRAP AT 300mm MINIMUM THICKNESS. SIDESLOPES ALONG BUILT-UP AREAS SHALL BE PROTECTED BY STONE MASONRY AND/OR RETAINING WALLS OR AS DIRECTED BY THE ENGINEER.
 5. SEE SHEET NO. RG-04 FOR UNSUITABLE EXCAVATION SCHEDULE.

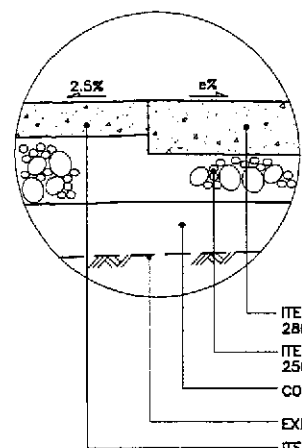


1F DETAIL
RP-21 SCALE 1:20

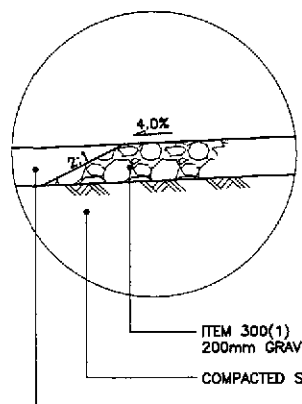


1C DETAIL
RP-21 SCALE 1:20

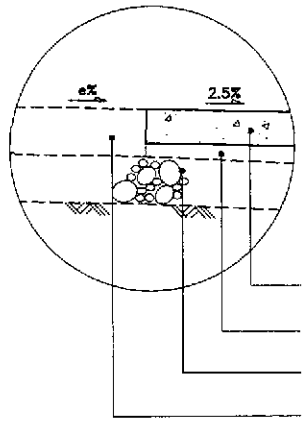
	DESIGNED	10/17/02	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/19/02	BUREAU OF DESIGN OFFICE OF THE SECRETARY			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Pilaridel, Cabanatuan and San Jose Bypasses)	AS SHOWN	TYPICAL ROADWAY SECTIONS NORMAL SECTIONS WITHOUT FRONTAGE ROAD (INITIAL AND ULTIMATE STAGE) (1 of 2)	RP-21
	SUBMITTED	10/21/02	Submitted By: DANILLO C. TRAJANO Reviewed By: JOSEFINA M. ALAGAR Recommended By: GILBERTO S. REYES Approved By: MANUEL M. BONDAN SIMEON A. DATUMANONG			CABANATUAN BYPASS - CONTRACT PACKAGE IV	FULL SIZE A1		



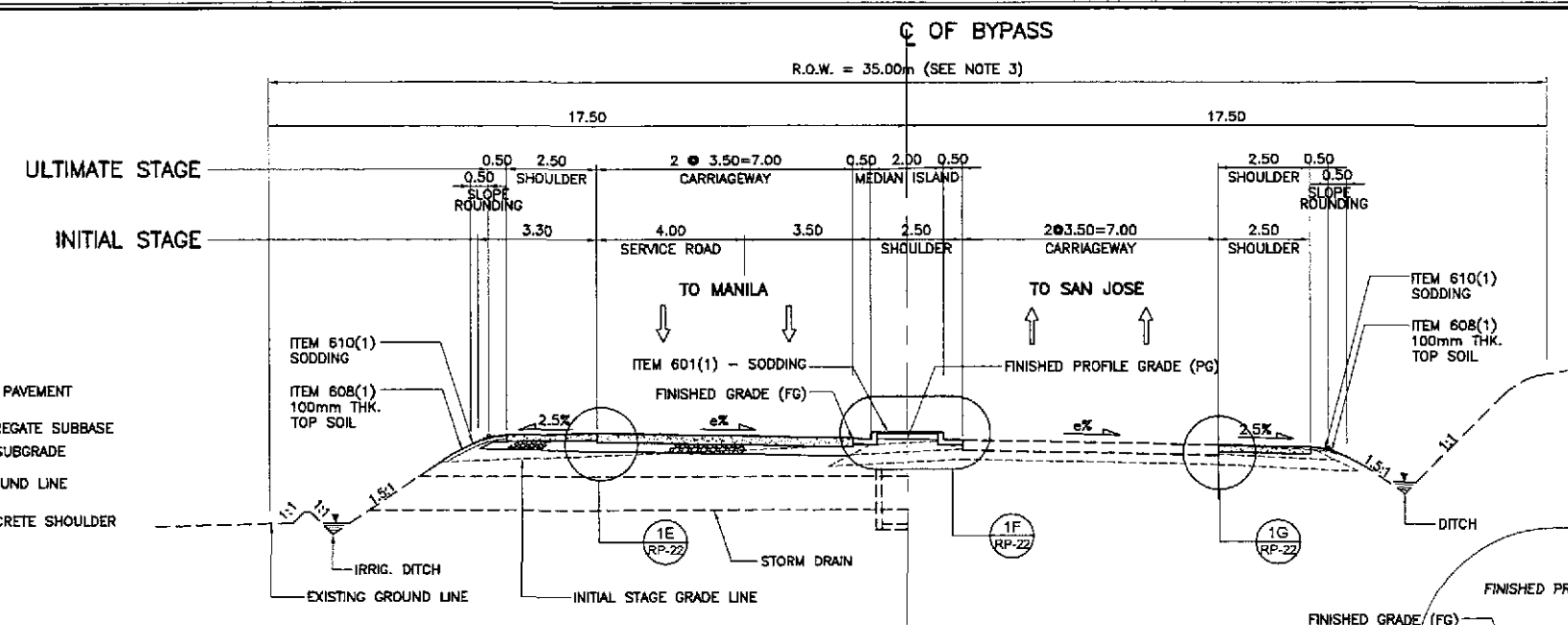
1E DETAIL
RP-22 SCALE 1:20



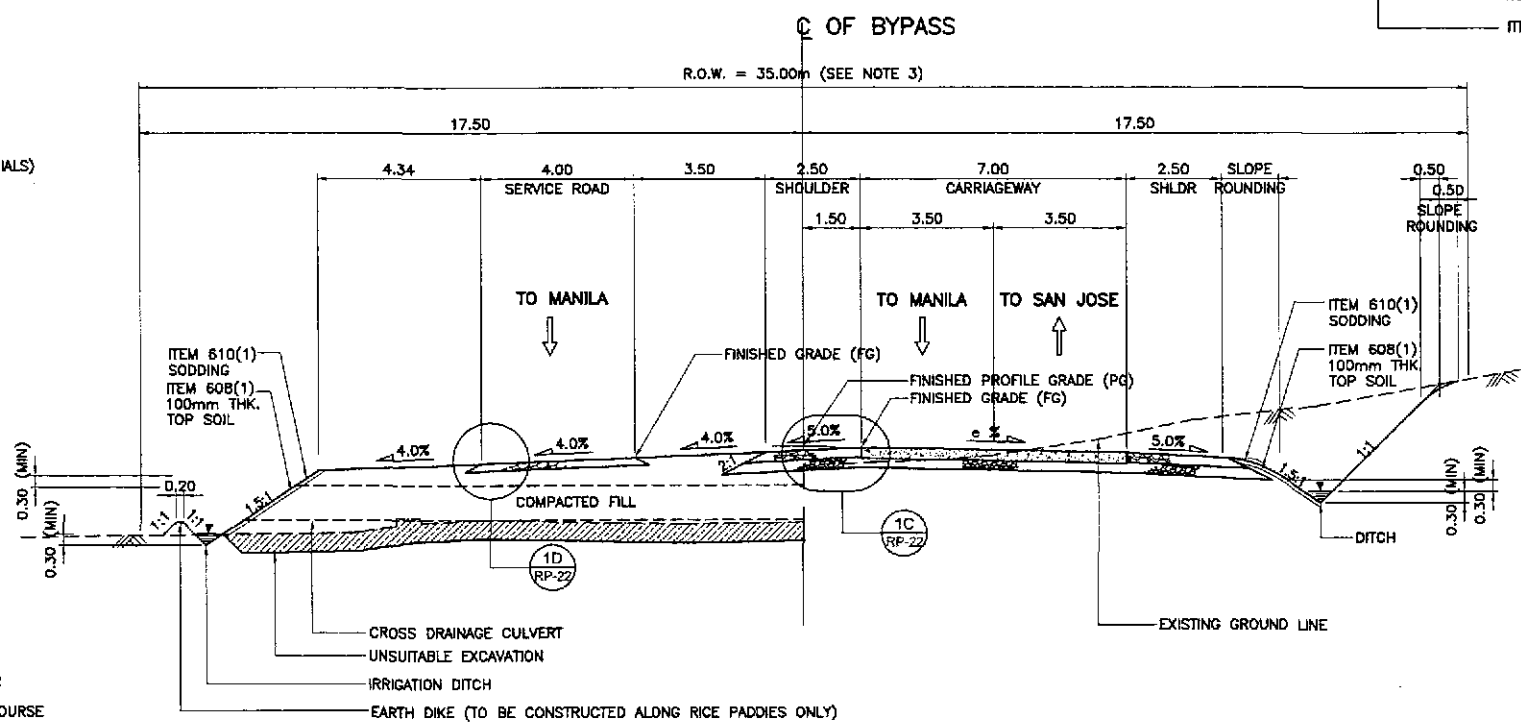
1D DETAIL
RP-22 SCALE 1:20



1G DETAIL
RP-22 SCALE 1:20



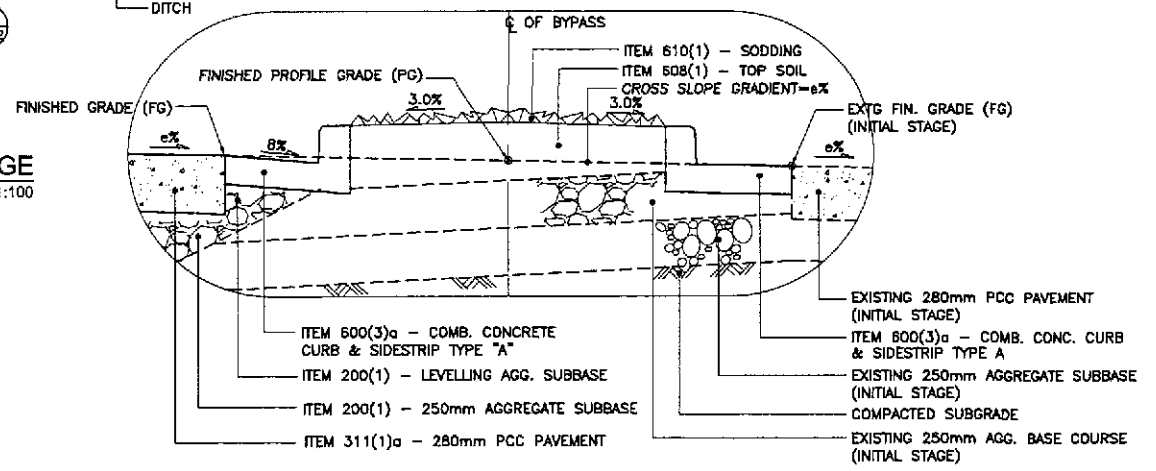
1B SUPERELEVATED SECTION - ULTIMATE STAGE
RP-22 SCALE 1:100



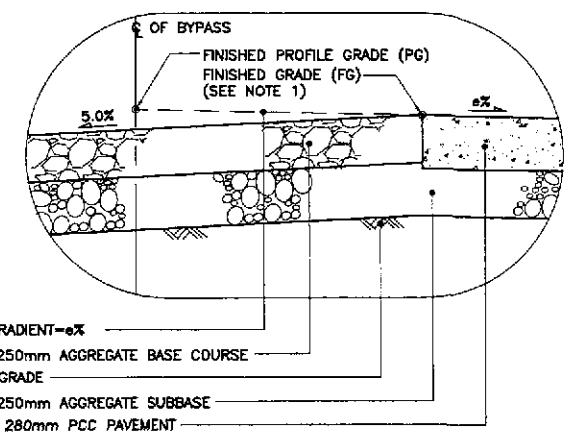
1A SUPERELEVATED SECTION - INITIAL STAGE
RP-22 SCALE 1:100

1 TYPICAL ROADWAY SECTIONS - WITHOUT FRONTAGE ROAD
RP-22 SCALE 1:100

PAVEMENT DESIGN PARAMETERS	
	AFTER PAMPANGA BRIDGE
1. TRAFFIC (FOR 25 YEARS DESIGN LIFE) DESIGN ESAL	1.70 x 10 ⁶
2. DESIGN CBR SUBGRADE CBR	5.00 %
3. ROADBED RESILIENT MODULUS	Mr Esb Ebs
	5,500 psi = 37.92 MPa 13,000 psi = 89.64 MPa 23,000 psi = 158.58 MPa
4. PERFORMANCE CRITERIA Δ PSI	2
5. DESIGN RELIABILITY Z _R	50 %
	S _D 0.35
6. DRAINAGE COEFFICIENT RIGID	1
7. LAYER COEFFICIENT	
	a ₁ (FOR AC) 0.39
	a ₂ (FOR BASE) 0.105
	a ₃ (FOR SUBBASE) 0.095
8. PAVEMENT CONSTRUCTION THICKNESS	
	PCCP 280mm THK
	SUBBASE 250mm THK



1F DETAIL
RP-22 SCALE 1:20



1C DETAIL
RP-22 SCALE 1:20

- NOTES:
1. FINISHED PROFILE GRADE (PG) ALONG BYPASS IS TAKEN FROM THE CENTERLINE WHEREAS FINISHED GRADE (FG) IS RECKONED FROM THE PROFILE GRADE RELATIVE TO THE PAVEMENT CROSS SLOPE.
 2. FOR SCHEDULE OF QUANTITIES, SEE SHEET NOS. GC-11 TO GC-12.
 3. ROAD RIGHT-OF-WAY (R.O.W.) WIDTH SHALL BE VARIED DUE TO HORIZONTAL TRANSITION OF SERVICE ROAD, MEDIAN/DIVISIONAL ISLANDS, OUTER SEPARATIONS AND DUE TO HEIGHT OF EMBANKMENT. SEE SCHEDULE OF R.O.W.; (SHTS. NOS. RG-06 TO RG-08).
 4. SIDESLOPES OF 1:5:1 OR FLATTER SHALL BE PROTECTED BY SODDING. SIDESLOPES ALONG AREAS PRONE TO FLOODING SHALL BE PROTECTED BY GROUDED RIPRAP AT 300mm MINIMUM THICKNESS. SIDESLOPES ALONG BUILT-UP AREAS SHALL BE PROTECTED BY STONE MASONRY AND/OR RETAINING WALLS OR AS DIRECTED BY THE ENGINEER.
 5. SEE SHEET NO. RG-04 FOR UNSUITABLE EXCAVATION SCHEDULE.

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS INTERNATIONAL
YEO YACHIYO ENGINEERING CO., LTD.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

BUREAU OF DESIGN

OFFICE OF THE SECRETARY

DESIGNED: 10/17/02
CHECKED: 10/19/02
SUBMITTED: 10/21/02

Submitted By: DANILO C. TRAJANO
Reviewed By: JOSEFINA M. ALAGAR
Recommended By: GILBERTO S. REYES
Recommended By: MANUEL M. BONDAN
Approved By: SIMEON A. DATUMANONG

PROJECT AND LOCATION :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)

SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
TYPICAL ROADWAY SECTIONS SUPERELEVATED SECTIONS WITHOUT FRONTAGE ROAD (INITIAL AND ULTIMATE STAGE) (2 of 2)

SHEET NO. : RP-22