

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
REPUBLIC OF THE PHILIPPINES

**THE DETAILED DESIGN STUDY  
ON  
UPGRADING INTER-URBAN HIGHWAY SYSTEM  
ALONG THE PAN-PHILIPPINE HIGHWAY  
(PLARIDEL, CABANATUAN AND SAN JOSE BYPASSES)**

**FINAL REPORT**

**PLARIDEL BYPASS - CONTRACT PACKAGE IV  
(ULTIMATE STAGE)  
STA. 49+625.000 TO STA. 55+672.457**



**December 2002**

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

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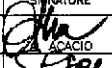
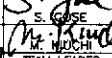
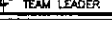

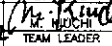

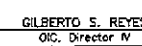
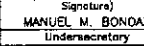
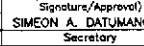

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# **GENERAL**

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**ALONG THE PAN-PHILIPPINE HIGHWAY**  
**PLARIDEL BYPASS - PACKAGE IV**  
**(ULTIMATE STAGE)**

SHEET NO.	TITLE OF DRAWING	SHEET NO.	TITLE OF DRAWING	SHEET NO.	TITLE OF DRAWING
	<b>GENERAL</b>		<b>INTERSECTION A-19a (STA. 52+040.477)</b>		
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RP-08	PLAN AND PROFILE, STA. 54 + 300.000 TO STA. 55 + 000.000		<b>ROADWAY MISCELLANEOUS DRAWINGS</b>	DG-04	SCHEDULE OF SURFACE DRAINAGE - 4 of 4
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RI-04	GEOMETRIC DESIGN LAYOUT	RM-10	LAYOUT PLAN, STA. 55 + 000.000 TO STA. 55 + 672.457	DP-04	PLAN AND PROFILE, STA. 51 + 500.000 TO STA. 52 + 200.000
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 <b>JICA</b> JAPAN INTERNATIONAL COOPERATION AGENCY	DESIGNED	DATE	SIGNATURE	 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION :				SCALE :	SHEET CONTENTS :	SHEET NO. :									
	CHECKED	9/23/02			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)				FULL SIZE A1	INDEX OF DRAWINGS (ULTIMATE STAGE) Sheet 1 of 2	GP-01									
	SUBMITTED	9/30/02			PLARIDEL BYPASS - CONTRACT PACKAGE IV															
		10/16/02																		
 KATAHIRA & ENGINEERS INTERNATIONAL	Submitted By:  <b>DANILO C. TRAJANO</b> Project Director				Recommended By:  <b>JOSEFINA M. ALAGAR</b> Chief, Highways Division				Approved By:  <b>GILBERTO S. REYES</b> Off. Director IV				Approved By:  <b>MANUEL M. BONDAN</b> Undersecretary				Approved By:  <b>SIMEON A. DATUMANONG</b> Secretary			
	 <b>YACHIYO ENGINEERING CO., LTD.</b>																			

# INDEX OF DRAWINGS

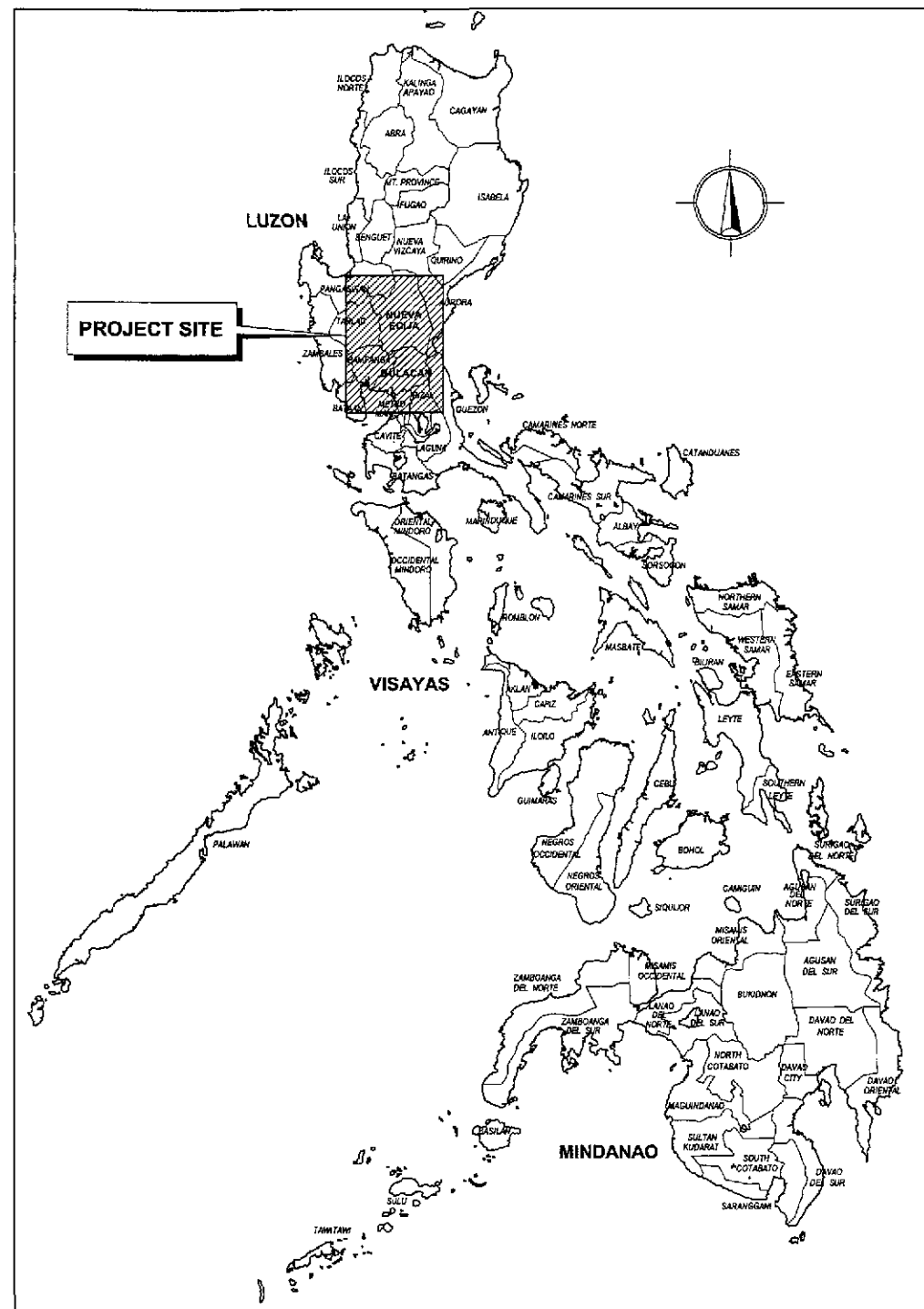
## THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY

### PLARIDEL BYPASS - PACKAGE IV (ULTIMATE STAGE)

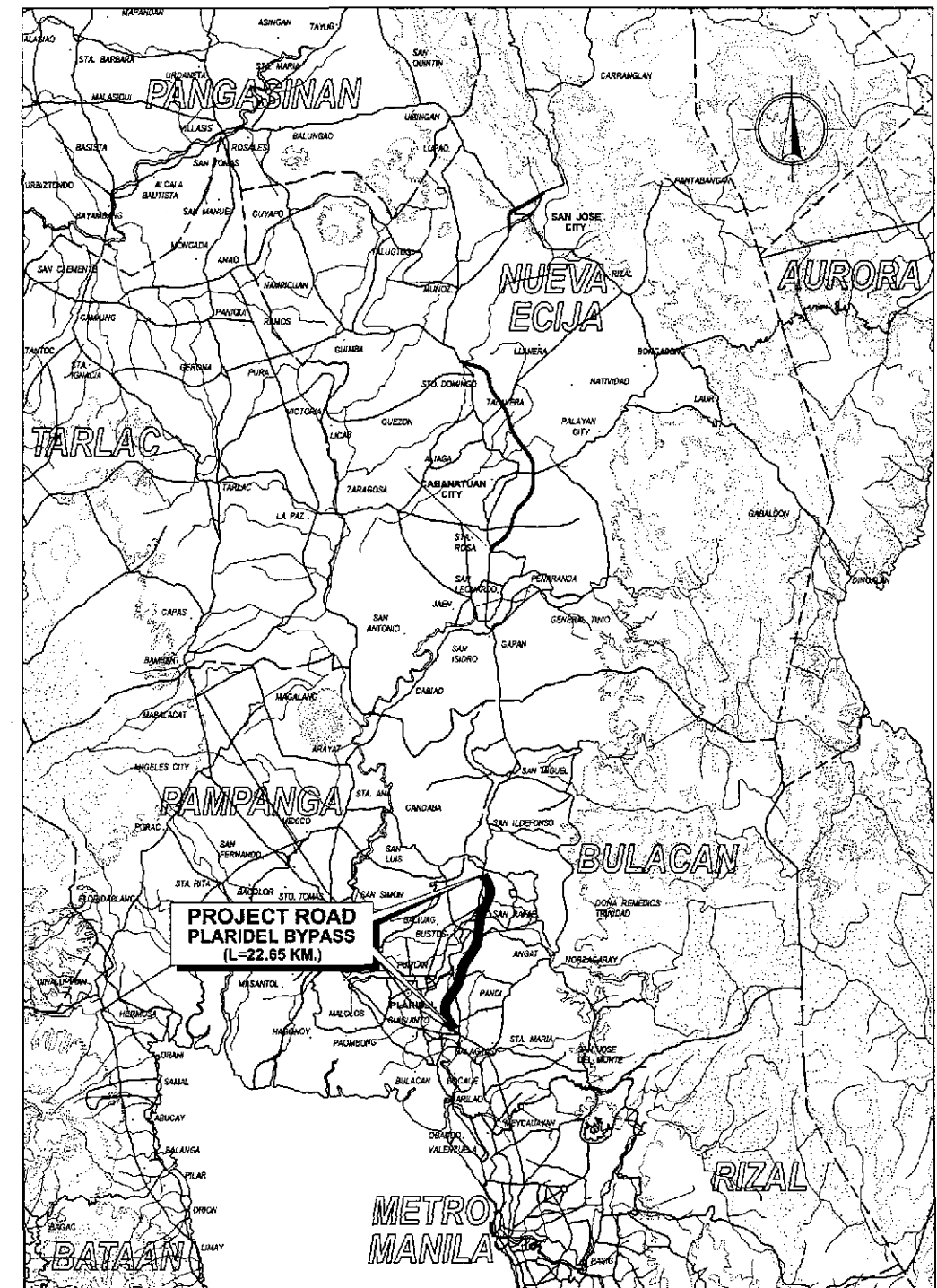
SHEET NO.	TITLE OF DRAWING	SHEET NO.	TITLE OF DRAWING	SHEET NO.	TITLE OF DRAWING
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<b>JICA</b> JAPAN INTERNATIONAL COOPERATION AGENCY	DESIGNED	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION :				SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	7/29/02	[Signature]		THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)					INDEX OF DRAWINGS (ULTIMATE STAGE) Sheet 2 of 2	GP-02
	SUBMITTED	10/10/02	[Signature]		PLARIDEL BYPASS - CONTRACT PACKAGE IV				FULL SIZE A1		

Submitted By:	Reviewed By:	Recommended By:	Approved By:	Approved By:	Approved By:
DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONGAN Undersecretary	SIMEON A. DATUMANONG Secretary	SIMEON A. DATUMANONG Secretary



2 KEY MAP  
GP-03 NOT TO SCALE



1 VICINITY MAP  
GP-03 NOT TO SCALE

<b>JICA</b> JAPAN INTERNATIONAL COOPERATION AGENCY		DATE: 9/23/02 DESIGNED: [Signature]		SIGNATURE: [Signature] CHECKED: 9/30/02 SUBMITTED: 10/16/02		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 : NOT TO SCALE	SHEET CONTENTS : KEY AND VICINITY MAP	SHEET NO. : GP-03
<b>KAI</b> KATAHIRA & ENGINEERS INTERNATIONAL		<b>YEO</b> YACHIYO ENGINEERING CO., LTD.		BUREAU OF DESIGN Submitted By: DANILLO C. TRAJANO Project Director		OFFICE OF THE SECRETARY Recommended By: JOSEFINA M. ALAGAR Chief, Highway Division		PLARIDEL BYPASS - CONTRACT PACKAGE IV		FULL SIZE A1		

# LEGEND AND SYMBOLS




EXISTING FEATURES	
ROAD	
CONTOUR	
ORIGINAL GROUND	
CONCRETE FENCE	
BARBED WIRE FENCE	
HOUSE	
TREES	
BRIDGE	
SINGLE PIPE CULVERT	
DOUBLE PIPE CULVERT	
BOX CULVERT	
DITCH LINE/ IRRIGATION LINE	
IRRIGATION LINE	
RIVER/CREEK	
ELECTRIC POST	
KILOMETER POST	
TRAVERSE STATION POINT	
BENCHMARK	
FISH POND	
NATIONAL POWER CORP. TRANSMISSION LINE	

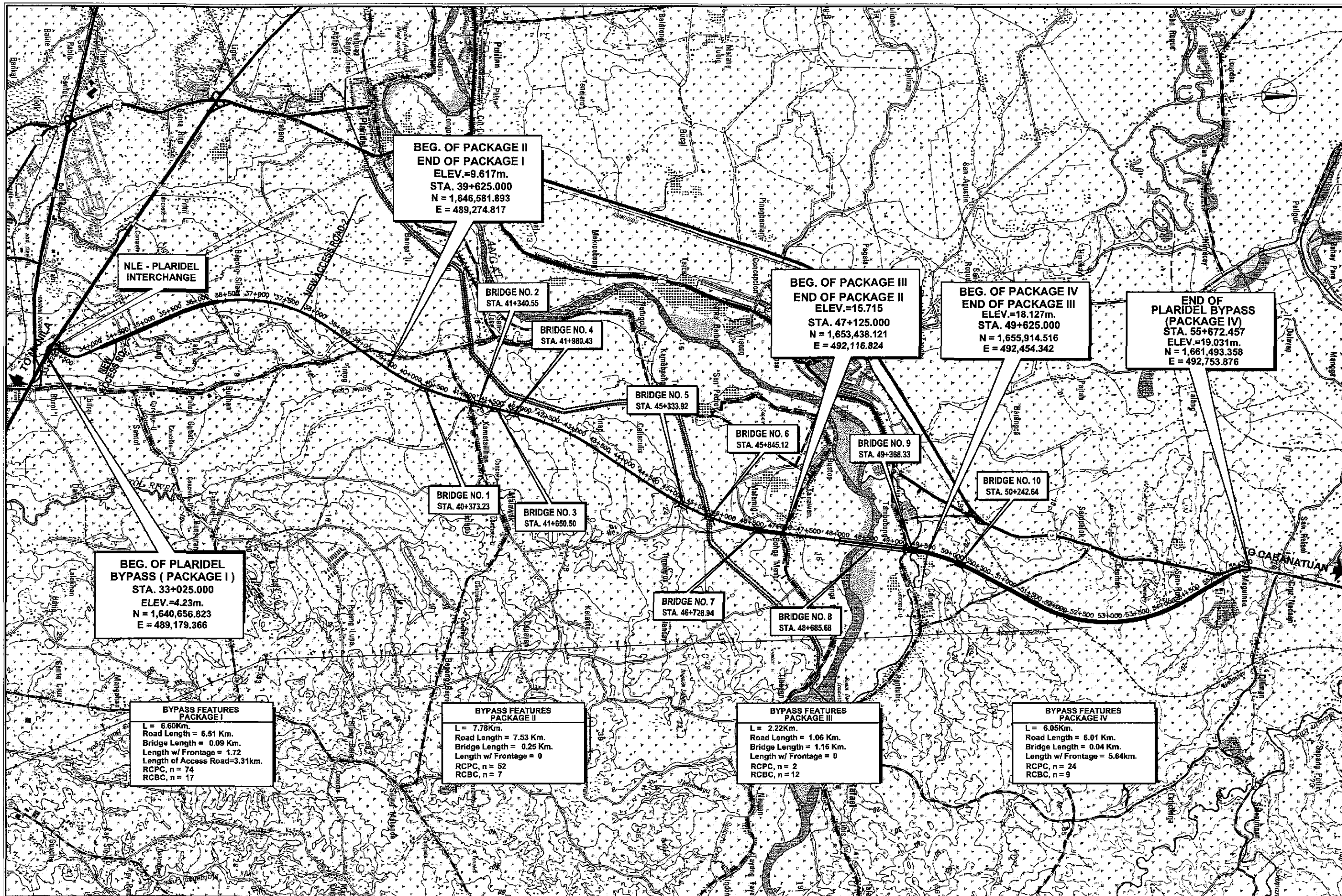
NEW DESIGN FEATURES	
PROJECT ROAD	
SERVICE OR FRONTAGE ROAD ALONG BYPASS	
CONTOUR	
RIGHT-OF-WAY LIMIT	
POINT OF INTERSECTION	
POINT OF INTERSECTION NO.	
Q OF PROJECT ROAD	
FINISHED GRADE ON PROFILE	
BRIDGE	
SINGLE RC PIPE CULVERT	
DOUBLE RC PIPE CULVERT	
BOX CULVERT	
EARTH DITCH FLOW	
DIRECTION OF FLOW	
MANHOLE	
GUARDRAIL ON PLAN	
GUARDRAIL ON PROFILE	
GROUTED RIPRAP ON SLOPE	
EMBANKMENT	
EXCAVATION	
SECTION IN WATER	
SECTION IN EARTH	
SECTION IN CONCRETE	
SECTION IN GRAVEL	
SECTION IN STRUCTURAL STEEL	
SOFT BED MATERIALS TO BE EXCAVATED	
STONE MASONRY RETAINING WALL / REVETMENT / REINF. CONCRETE RETAINING WALL	
NORTH SIGN	
GRID COORDINATES	
AGGREGATE SOURCE	
LINE SYMMETRY	
SECTION TARGET	
ELEVATION TARGET	
TITLE TARGET	
SUB-TITLE TARGET	
DETAIL REF TARGET	
BOREHOLE	
STREET LIGHTING POLE	
KILOMETER POST	
STATION GRID	
LINED IRRIG. CANAL	
CHAIN LINK FENCE	
SODDING ON PLAN	
LOW TREES	
MIDDLE TREE	
HIGH TREE	



# ABBREVIATIONS

A	PARAMETER (CLOTHOID)	DIST.	DISTANCE	Lo	SUPERELEVATION RUN-OFF	NIC	NOT INCLUDED IN CONTRACT
ABAN	ABANDON	DIV.	DIVISION	LG	LONG	MPa	MEGA PASCAL
ABT	ABOUT	DRWG./DWG.	DRAWING	LLV	LONG LEG VERTICAL	MC	MANHOLE COVER
ABUT	ABUTMENT	DWY.	DRIVEWAY	LM	LINEAR METER	RP	REFERENCE POINT
AC	ASPHALT CONCRETE	e%	DESIGN SUPERELEVATION	LONGIT.	LONGITUDINAL	RSP	ROCK SLOPE PROTECTION
AGG	AGGREGATE	E	EASTING	LP	LIGHT POLE	RT.	RIGHT
AH	AHEAD	EA	EACH	LS	LUMP SUM ; LEFT SIDE	S	SOUTH
APP	APPROACH	ECC/CS/PF	END OF CIRCULAR CURVE	LT	LEFT	SECT.	SECTION
ASPH	ASPHALT	E	EXTERNAL DISTANCE	m	METER	SDWK.	SIDEWALK
ASTM	AMERICAN STANDARD FOR TESTING & MATERIALS	EF	EACH FACE	mm	MILLIMETER	SHT.	SHEET
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS	EG	EDGE OF GUTTER	MAX	MAXIMUM	SL	SLOPE
AVE	AVENUE	ELEV./EL.	ELEVATION	MFL	MAXIMUM FLOOD LEVEL	SQ.M./m <sup>2</sup>	SQUARE METER
AZIM.	AZIMUTH	EMB.	EMBANKMENT	MFWL	MAXIMUM FLOOD WATER LEVEL	SMH	SEWER MANHOLE
BCC/SC/PC	BEGINNING OF CIRCULAR CURVE	ENGR.	ENGINEER	MH	MANHOLE	SP	SPIRAL
BDRY LN	BOUNDARY LINE	EP	EDGE OF PAVEMENT	MIN.	MINIMUM	SPCD.	SPACED
BEG.	BEGINNING	EQ	EQUAL ; EQUATION	MISC.	MISCELLANEOUS	SPCS.	SPACES
BET.	BETWEEN	EQN.	EQUATION	MO	MIDDLE ORDINATE	SPL	SPECIAL
BGY./BRGY.	BARANGAY	ESMT	EASMENT	MPa	MEGA PASCAL	SPECS.	SPECIFICATIONS
BH	BOREHOLE	ETC/ST	END OF TRANSITION CURVE	MSL	MEAN SEA LEVEL	SQ.	SQUARE
BK	BACK	EW	EACH WAY	MT	METRIC TON	ST.	STREET
BLDG.	BUILDING	EXC.	EXCAVATION	DPWH	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	STA.	STATION
BLVD.	BOULEVARD	EXIST./EXTG.	EXISTING	MWSS	METROPOLITAN WATERWORKS & SEWERAGE SYSTEM	STD.	STANDARD
BM	BENCH MARK	EXP.	EXPANSION BEARING	N	NORTH / NEWTON	STIFF.	STIFFENERS
BMSL	BELOW MEAN SEA LEVEL	EXT.	EXTERIOR	N/A	NOT APPLICABLE	STIRR./STIR	STIRRUP(S)
BOT./BOTT	BOTTOM	EXTN.	EXTENSION	NC	NORMAL CROWN	STR.	STRAIGHT
BR.	BRIDGE	FF	FAR FILL/FAR FACE	NF	NEAR FACE	STRUC./STRUCT	STRUCTURAL
BRG	BEARING	FG	FINISHED GRADE	NO./No.	NUMBER	SURVY.	SURVEY
BS	BACK STATION ; BOTH SIDES	FIN.	FINISHED	OC/O.C.	ON CENTER	SYMM.	SYMMETRY
BST	BITUMINOUS SURFACE TREATMENT	FPL	FINISHED PAVEMENT LEVEL	OD	OUTSIDE DIAMETER	T	TANGENT
BTC/TS	BEGINING OF TRANSITION CURVE	FTG.	FOOTING	OGL	ORIGINAL GROUND LEVEL	TBM	TEMPORARY BENCHMARK
BW	BOTHWAYS	FH	FIRE HYDRANT	OUT INV.	OUTLET INVERT	TEMP.	TEMPORARY
C	CURVE	FWL	FLOOD WATER LEVEL	OWL	ORDINARY WATER LEVEL	THK.	THICK
CAB	CRUSHED AGGREGATE BASE	g	GRADIENT IN PERCENT	PCC	PORTLAND CEMENT CONCRETE	Tk	SHORT TANGENT OF SPIRAL
CALC.	CALCULATED	GALV.	GALVANIZED	PEJ	PREMOULDED EXPANSION JOINT	TL	LONG TANGENT OF SPIRAL
CB	CATCH BASIN	GEN.	GENERAL	PHIL	PHILIPPINE(S)	TRANS.	TRANSVERSE
c / c	CENTER TO CENTER	GIP	GALVANIZED IRON PIPE	PI	POINT OF INTERSECTION	Ta	TOTAL TANGENT DISTANCE
CEM	CEMENT	GPS	GLOBAL POSITIONING SYSTEM	PJHL	PHILIPPINE-JAPAN HIGHWAY LOAN	TYP.	TYPICAL OR TYPE
CEP	CONCRETE ELECTRIC POST	GL	GROUND LEVEL	PL	PROPERTY LINE/ PLATE	V	DESIGN SPEED
cm.	CENTIMETER	GRD.	GRADE	PLDT	PHILIPPINE LONG DISTANCE TELEPHONE COMPANY	VAR.	VARIABLE/VARIES
Cu M/m <sup>3</sup>	CUBIC METER	HDWL	HEADWALL	PMO	PROJECT MANAGEMENT OFFICE	VC	VERTICAL CURVE
CHB	CONCRETE HOLLOW BLOCK	HFL	HIGH FLOOD LEVEL	POC	POINT ON CURVE	VER.	VERIFIED
CIM	CURB INLET MANHOLE	HOR.	HORIZONTAL	POT	POINT OF TANGENT	VERT.	VERTICAL
CI	CURB INLET	HSE	HOUSE	PP	POWER POLE	VOL	VOLUME
CL	CENTERLINE	HT.	HEIGHT	PR	PROJECT ROAD	W	WIDENING
CLR	CLEAR	HTL	HIGH TIDE LEVEL	PRC	POINT OF REVERSE CURVE	w	WIDTH
COL(S)	COLUMN(S)	HWL/HW	HIGH WATER LEVEL/HIGH WATER	PROJ.	PROJECT	W/	WITH
COMB. CONC.	COMBINE CONCRETE	HWY.	HIGHWAY	PROP.	PROPOSED	W/o	WITHOUT
CONC.	CONCRETE	I	INTERSECTION ANGLE	PVC	POLYVINYL CHLORIDE	WEP	WOODEN ELECTRIC POST
CONC. MON.	CONCRETE MONUMENT	ID	INSIDE DIAMETER	PVI	POINT OF VERTICAL INTERSECTION	WK	WALK
CONST.	CONSTRUCTION	IN.	INCHES	PVMT.	PAVEMENT	WT	WATER TANK
CONST. JT.	CONSTRUCTION JOINT	INC.	INCORPORATED	QTY	QUANTITY	X,Y	COORDINATE OF BCC AND ECC WITH RESPECT TO TANGENT
CONT.	CONTINUOUS	IN. INV.	INLET INVERT	R	RADIUS	&	AND
CORP.	CORPORATION	INT.	INTERIOR	RC	REINFORCED CONCRETE	@	AT
CP	CROSS PIPE	INTERM.	INTERMEDIATE	RCBC	REINFORCED CONCRETE BOX CULVER	BL	BASELINE
C & G	CURB AND GUTTER	IRRIG.	IRRIGATION	RCBG	REINFORCED CONCRETE BOX GIRDER	CL	CENTERLINE
CULV.	CULVERT	JT.	JOINT	RCDG	REINFORCED CONCRETE DECK GIRDER	CC	INFINITY
C/WAY	CARRIAGEWAY	kg.	KILOGRAM	RCPC	REINFORCED CONCRETE PIPE CULVERT	%	PERCENT
CYL	CYLINDRICAL	KN	KILO NEWTON	RD	ROAD	+/-	PLUS / MINUS
CTR	CENTER	KPa	KILO PASCAL	RDWY.	ROADWAY	Ø	DIAMETER
DEPT.	DEPARTMENT	FIX	FIX BEARING	REINF.	REINFORCED	Ø	SQUARE
DET.	DETAIL	KM	KILOMETER	REP	RELOCATED ELECTRIC POST	CP	CONTROL POINT
DIA./DIAM	DIAMETER	KPH	KILOMETER PER HOUR	RET. WALL	RETAINING WALL	L	ANGLE SHAPE
DIAPH.	DIAPHRAGM	L	LENGTH	ROW	RIGHT-OF-WAY		
		Lc	LENGTH OF CIRCULAR ARC	RS	RIGHT SIDE		

 <b>JAPAN INTERNATIONAL COOPERATION AGENCY</b>		 <b>REPUBLIC OF THE PHILIPPINES</b> <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>		<b>PROJECT AND LOCATION :</b> THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) <b>PLARIDEL BYPASS - CONTRACT PACKAGE IV</b>		<b>SCALE :</b> FULL SIZE A1	<b>SHEET CONTENTS :</b> ABBREVIATIONS	<b>SHEET NO. :</b> GP-05
<b>DESIGNED</b> 9/23/12 <b>CHECKED</b> 9/30/12 <b>SUBMITTED</b> 10/16/12	<b>SIGNATURE</b>  Danilo C. Trajano Project Director	<b>REVIEWED BY:</b> JOSEFINA M. ALAGAR Chief, Highway Division	<b>RECOMMENDED BY:</b> GILBERTO S. REYES O.C. Director IV	<b>RECOMMENDED BY:</b> MANUEL M. BONGAN Undersecretary	<b>APPROVED BY:</b> SIMEON A. DATUMANONG Secretary			



**BEG. OF PACKAGE II  
END OF PACKAGE I**  
ELEV.=9.617m.  
STA. 39+625.000  
N = 1,646,581.893  
E = 489,274.817

**NLE - PLARIDEL  
INTERCHANGE**

**BRIDGE NO. 2**  
STA. 41+340.55

**BRIDGE NO. 4**  
STA. 41+980.43

**BEG. OF PACKAGE III  
END OF PACKAGE II**  
ELEV.=15.715  
STA. 47+125.000  
N = 1,653,438.121  
E = 492,116.824

**BEG. OF PACKAGE IV  
END OF PACKAGE III**  
ELEV.=18.127m.  
STA. 49+625.000  
N = 1,655,914.516  
E = 492,454.342

**END OF  
PLARIDEL BYPASS  
(PACKAGE IV)**  
STA. 55+672.457  
ELEV.=19.031m.  
N = 1,661,493.358  
E = 492,753.876

**BEG. OF PLARIDEL  
BYPASS ( PACKAGE I )**  
STA. 33+025.000  
ELEV.=4.23m.  
N = 1,640,656.823  
E = 489,179.366

**BRIDGE NO. 1**  
STA. 40+373.23

**BRIDGE NO. 3**  
STA. 41+650.50

**BRIDGE NO. 5**  
STA. 45+333.92

**BRIDGE NO. 6**  
STA. 45+845.12

**BRIDGE NO. 9**  
STA. 49+368.33

**BRIDGE NO. 10**  
STA. 50+242.64

**BRIDGE NO. 7**  
STA. 46+728.94

**BRIDGE NO. 8**  
STA. 48+685.68

**BYPASS FEATURES  
PACKAGE I**  
L = 6.60Km.  
Road Length = 6.51 Km.  
Bridge Length = 0.09 Km.  
Length w/ Frontage = 1.72  
Length of Access Road=3.31km.  
RCPC, n = 74  
RCBC, n = 17

**BYPASS FEATURES  
PACKAGE II**  
L = 7.78Km.  
Road Length = 7.53 Km.  
Bridge Length = 0.25 Km.  
Length w/ Frontage = 0  
RCPC, n = 52  
RCBC, n = 7

**BYPASS FEATURES  
PACKAGE III**  
L = 2.22Km.  
Road Length = 1.06 Km.  
Bridge Length = 1.16 Km.  
Length w/ Frontage = 0  
RCPC, n = 2  
RCBC, n = 12

**BYPASS FEATURES  
PACKAGE IV**  
L = 6.05Km.  
Road Length = 6.01 Km.  
Bridge Length = 0.04 Km.  
Length w/ Frontage = 5.64km.  
RCPC, n = 24  
RCBC, n = 9

 JAPAN INTERNATIONAL COOPERATION AGENCY		 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 : 1:30,000 FULL SIZE A1	SHEET CONTENTS : PROJECT ROAD GENERAL ALIGNMENT & FEATURES	SHEET NO. : GP-06
DESIGNED	DATE 9/26/02	SIGNATURE	PJHL - PMO	REVIEWED BY	RECOMMENDED BY			
CHECKED	9/30/02	SIGNATURE	BUREAU OF DESIGN	REVIEWED BY	RECOMMENDED BY			
SUBMITTED	10/16/02	SIGNATURE	OFFICE OF THE SECRETARY	REVIEWED BY	RECOMMENDED BY			
		TEAM LEADER	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highway Division	GILBERTO S. REYES DIC, Director IV			

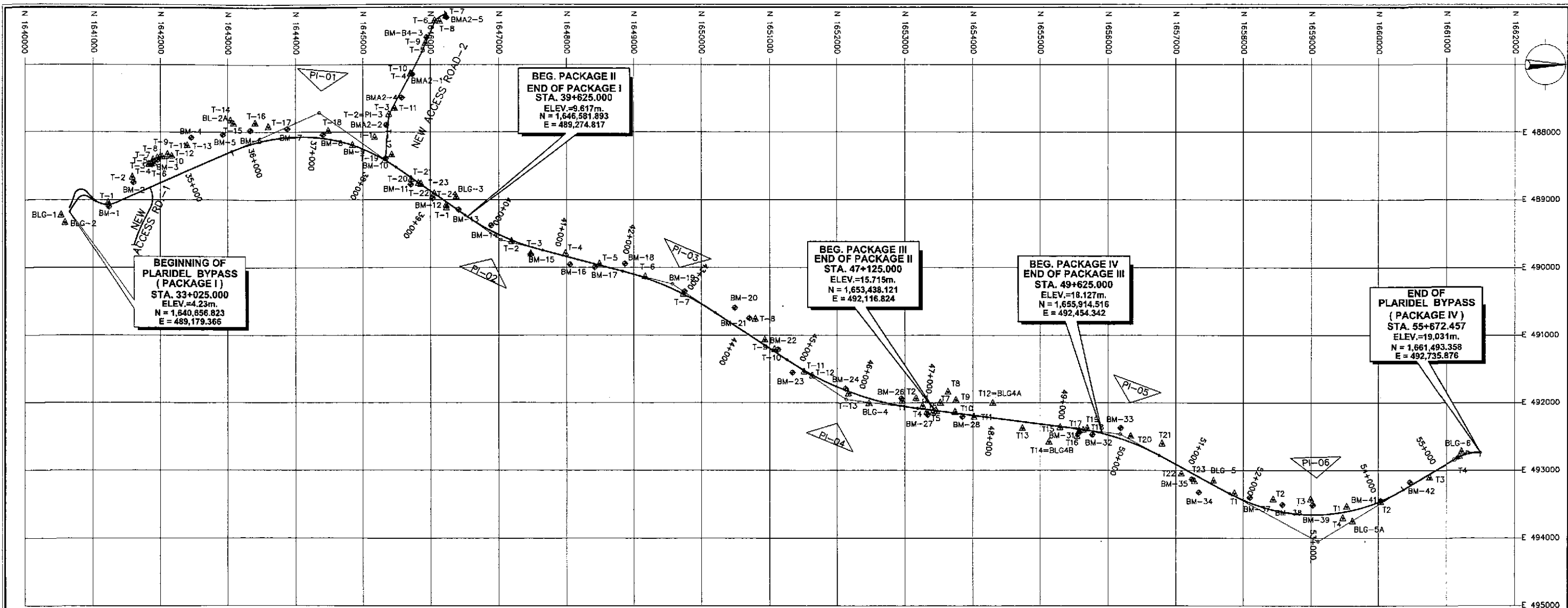


TABLE OF HORIZONTAL AND VERTICAL CONTROL

CONTROL POINT	COORDINATES		ELEV.	REMARKS
	NORTHING	EASTING		
BM-1	1,641,232.641	489,100.464	3.537	It is loc. on a rice paddy int. on left of the alignment in Bgy. Pungul, Bulacan. It is 20m. from end of dirt rd.
BM-2	1,641,598.386	488,743.032	3.655	It is loc. on a rice paddy intersection on the left of the alignment in Bgy. Pungul, Bulacan. It is 20m. from end of dirt rd.
BM-3	1,641,958.977	488,414.106	5.523	It is loc. on a rice paddy intersection on the left of the alignment in Bgy. Pungul, Bulacan. It is 20m. from end of dirt rd.
BM-4	1,642,460.780	488,080.530	2.685	It is loc. on the intersection of a rice paddy dike on the left side of the alignment in Bgy. Pungul, Bulacan. It is 20m. from end of dirt rd.
BM-5	1,642,928.378	488,037.023	3.065	It is loc. on the intersection of a rice paddy dike on the left side of the alignment in Bgy. Pungul, Bulacan. It is 20m. from end of dirt rd.
BM-6	1,643,398.594	487,978.161	3.339	It is loc. on the side of a concrete road near an electric post in Bgy. Culeto, Plaridel.
BM-7	1,643,883.348	487,952.887	3.883	It is loc. on top of the intersection of a rice paddy dike on the left side of the alignment in Bgy. Culeto, Plaridel.
BM-8	1,644,402.499	488,039.520	5.178	It is loc. on a rice paddy dike on the left side of the alignment in Bgy. Culeto, Plaridel.
BM-9	1,644,847.404	488,197.025	5.382	It is loc. on a rice paddy dike along the alignment in Bgy. Culeto, Plaridel.
BM-10	1,645,345.307	488,388.233	6.802	It is loc. on the side of a dirt road near a fence concrete post on left side of the align. in Bgy. Buhian, Plaridel.
BM-11	1,645,714.384	488,771.939	8.317	It is loc. on the side of a dirt road on the right side of the alignment in Bgy. Buhian, Plaridel.
BM-12	1,646,032.378	488,978.695	8.416	It is loc. on the side of a dirt road on the right side of the alignment in Bgy. Buhian, Plaridel.
BM-13	1,646,415.622	489,148.127	7.699	It is loc. on the side of a dirt road on the right side of the alignment in Bgy. Buhian, Plaridel.
BM-14	1,646,892.978	489,377.904	8.484	It is loc. on a rice paddy dike on the left side of the alignment in Bgy. Buhian, Plaridel.
BM-15	1,647,467.925	489,802.574	8.801	It is loc. on the center of a dirt road on the right side of the alignment in Bgy. San Jose, Bulwag.
BM-16	1,648,054.174	489,953.321	10.801	It is loc. on the int. of the bgy. road & the prov' road on the left side of the align. in Bgy. San Jose, Bulwag.
BM-17	1,648,424.838	489,984.453	10.582	It is loc. on the side of a dirt road where an irr. canal is on the right side of the align. in Bgy. San Jose, Bulwag.
BM-18	1,648,870.652	489,943.559	10.262	It is loc. under a tree on the side of a creek on the left side of the alignment in Bgy. San Jose, Bulwag.
BM-19	1,649,757.184	490,350.187	11.381	It is loc. under a tree on the side of a creek on the left side of the alignment in Bgy. San Jose, Bulwag.
BM-20	1,650,493.060	490,591.185	11.615	It is loc. under a tree near an unfinished house on the left side of the alignment in Bgy. Malamp, Bustos.
BM-21	1,650,705.071	490,746.236	12.246	It is loc. on the side of a dirt road near a culvert about a meter from the int. on the left side of the alignment in Bustos.
BM-22	1,651,121.786	491,211.136	12.593	It is loc. on the side of a dirt road near an irrigation drain on the left side of the alignment in Bgy. Malamp, Bustos.
BM-23	1,651,339.258	491,553.289	18.705	It is loc. on the side of a dirt road near an elect. post on the right side of the alignment in Bgy. Malamp, Bustos.
BM-24	1,652,126.811	491,790.544	14.480	It is loc. on the side of a dirt road near a coconut tree on the left side of the align. in Bgy. Malamp, Bustos.
BM-25	1,652,951.730	491,935.264	17.016	It is loc. on the side of a dirt road near a coconut tree on the left side of the align. in Bgy. Malamp, Bustos.
BM-26	1,653,336.791	492,180.068	18.372	It is loc. on the side of a dirt road near a coconut tree on the left side of the align. in Bgy. Malamp, Bustos.
BM-27	1,653,845.433	492,207.423	12.908	It is loc. on a rice paddy dike on the right side of the alignment in Bgy. Bana Menor, Bustos.
BM-28	1,654,556.301	492,461.715	17.903	It is loc. on the side of a dirt road near an acacia tree on the right side of the align. in Bgy. Tambobong, San Rafael.
BM-29	1,655,771.206	492,471.912	17.387	It is loc. on the side of a dirt road near an elect. post on the right side of the align. in Bgy. Tambobong, San Rafael.

TABLE OF HORIZONTAL AND VERTICAL CONTROL

CONTROL POINT	COORDINATES		ELEV.	REMARKS
	NORTHING	EASTING		
BM-33	1,656,186.911	492,373.317	16.036	It is loc. under an acacia tree on a private lot on the left side of the alignment in Bgy. Tambobong, San Rafael.
BM-34	1,657,343.337	493,325.087	16.228	It is loc. on a rice paddy dike on the left side of the alignment in San Rafael, Bulacan.
BM-35	1,657,239.065	493,124.978	19.935	It is loc. on a rice paddy dike near the intersection on the left side of the alignment in San Rafael, Bulacan.
BM-37	1,658,097.133	493,462.758	25.474	It is loc. on the intersection of a rice paddy dike on the left side of the alignment in San Rafael, Bulacan.
BM-38	1,658,577.840	493,506.635	25.298	It is loc. on a rice paddy int. near a fence concrete post on the right side of the align. in San Rafael, Bulacan.
BM-39	1,659,028.390	493,512.322	25.137	It is loc. on the side of a dirt road on the right side of the alignment in San Rafael, Bulacan.
BM-41	1,660,037.271	493,451.999	28.680	It is loc. on the right side of road under acacia tree near a concrete elec. post 30m. from dirt road in Plaridel.
BM-42	1,660,472.619	493,175.599	18.805	It is loc. on a rice paddy dike on the right side of the alignment in San Rafael, Bulacan.
BM-AZ-1	1,646,237.686	486,306.250	6.524	It is located on side of concrete road bet. two guavas 70m. from end of conc. wall of Ortel, Camp. Plaridel.
BM-AZ-2	1,645,846.661	486,593.542	6.120	It is loc. under a coconut tree on backyard about 3m. from house, 70m. from conc. road in Plaridel.
BM-AZ-3	1,645,739.141	487,142.638	7.237	It is loc. near an abandoned elec. post at rice paddy int. outside the fence of property, Buhian, Plaridel.
BM-AZ-4	1,645,576.225	487,490.381	5.555	It is loc. beside the foot of an elec. tower, about 10m. from Cl. of a dirt road in Bgy. Buhian, Plaridel.
BM-AZ-5	1,645,361.778	487,893.272	4.749	It is loc. beside the foot of an elec. tower, about 10m. from Cl. of a dirt road in Bgy. Buhian, Plaridel.

TABLE OF GPS STATION POINTS

CONTROL POINT	COORDINATES		ELEV.	REMARKS
	NORTHING	EASTING		
BLG-1	1,640,535.729	488,225.487	8.931	Loc. at the left guardrail going to Tabang Ext. Drilled on top of the guardrail is an iron steel 1/4x2" about 40 cm. from the last approach of the bridge.
BLG-2	1,640,592.278	488,340.024	10.635	Loc. at the wall railing at the bridge's first approach. Drilled on top of the wall railing is an iron steel 1/4" x 2".
BLG-2A	1,643,045.047	487,830.179	3.777	Loc. in Bgy. Daupang, Guliginto, Bulacan. It is embedded beside an irr. canal, about 150 m. from inter., about 18 m. from an elect. post, 50 m. from BM 16 and about 15 m. from the fence of the house on the other side of the road.
BLG-3	1,646,381.832	488,967.118	8.646	Loc. in Bgy. Malamp, Bustos, Bulacan. It is on the head of an irrigation check valve, outside the Colegio de Inmaculada Concepcion, about 10 m. from the shed and 4 m. from road centerline.
BLG-4	1,652,474.952	492,013.344	18.125	Loc. in Bgy. Malamp, Bustos, Bulacan. It is on the side of an irrigation canal, about 5 m. from the road centerline, 150 m. from a rd. fork, and about 5 m. from the new house.
BLG-4B	1,655,132.400	492,583.581	9.310	Loc. in Bgy. Tambobong, San Rafael, Bulacan. It is emb. on the rd. about 600 m. from inter., 20 m. from the house.
BLG-5	1,657,566.872	493,195.892	22.517	Loc. in Bgy. Sampa, San Rafael, Bulacan. It is emb. on r. side of the rd. going to Royal Northwoods 30 m. from the inter.
BLG-5A	1,659,619.893	493,753.421	29.685	Loc. in Bgy. San Roque, Hulo, San Rafael, Bulacan. It is embedded on the paddy dike 20 m. from the dirt road centerline.

TABLE OF TRAVERSE STATION POINTS

CONTROL POINT	COORDINATES		ELEV.
	NORTHING	EASTING	
T-1	1,641,225.254	489,045.710	3.360
T-2	1,641,583.179	488,669.897	4.030
T-3	1,641,930.464	488,477.698	4.930
T-4	1,641,839.683	488,483.095	5.050
T-5	1,641,887.616	488,474.488	5.120
T-6	1,641,901.421	488,483.363	5.360
T-7	1,641,892.449	488,410.158	5.540
T-8	1,641,957.987	488,384.675	5.080
T-9	1,642,000.959	488,371.561	4.660
T-10	1,642,028.410	488,367.580	6.150
T-11	1,642,108.686	488,330.691	4.630
T-12	1,642,173.014	488,355.198	4.970
T-13	1,642,403.861	488,200.615	4.000
T-14	1,643,045.237	487,830.952	3.700
T-15	1,643,090.558	487,878.132	3.470
T-16	1,643,408.710	487,873.117	2.580
T-17	1,643,804.945	487,925.855	2.930
T-18	1,644,483.168	487,964.415	5.410
T-19	1,645,338.877	488,419.155	6.970
T-20	1,645,721.458	488,700.217	8.030
T-21	1,645,828.207	488,757.963	7.960
T-22	1,645,865.037	488,769.278	8.350
T-23	1,646,058.318	488,913.963	8.080
T-24	1,646,234.573	489,081.303	8.050
T-1	1,646,237.677	488,119.664	7.800
T-2	1,647,190.511	489,613.241	8.530
T-3	1,647,472.147	489,797.550	9.150
T-4	1,647,987.901	489,794.855	9.910
T-5	1,648,499.124	489,951.678	10.960

TABLE OF TRAVERSE STATION POINTS

CONTROL POINT	COORDINATES		ELEV.
	NORTHING	EASTING	
T-6	1,649,171.515	490,135.688	10.900
T-7	1,649,736.908	490,395.363	11.280
T-8	1,650,799.488	490,761.338	12.560
T-9	1,650,932.296	491,070.927	14.800
T-10	1,651,073.140	491,213.182	13.180
T-11	1,651,511.658	491,544.594	18.790
T-12	1,651,834.116	491,604.256	16.560
T-13	1,652,171.172	491,865.395	15.670
T-1	1,652,963.172	491,975.061	17.150
T-2	1,653,166.711	491,937.087	16.340
T-3	1,653,264.574	492,049.167	16.440
T-4	1,653,327.487	492,142.734	16.240
T-5	1,653,411.651	492,150.335	16.680
T-6	1,653,472.407	492,130.939	17.350
T-7	1,653,525.530	492,004.044	17.430
T-8	1,653,537.260	491,842.625	15.430
T-9	1,653,754.181	491,964.051	12.460
T-10	1,653,735.630	491,411.877	14.840
T-11	1,654,020.437	492,214.607	14.240
T-12	1,654,737.523	492,379.170	11.600
T-13	1,655,293.248	492,368.349	9.550
T-14	1,655,545.515	492,498.519	17.830
T-15	1,655,576.842	492,417.335	18.020
T-16	1,655,635.552	492,409.403	17.620
T-17	1,655,697.300	492,385.162	17.490
T-18	1,656,337.537	492,498.250	15.870
T-19	1,656,799.655	492,808.090	20.950
T-20	1,657,085.668	493,052.406	19.510
T-21	1,657,280.628	493,163.137	19.630

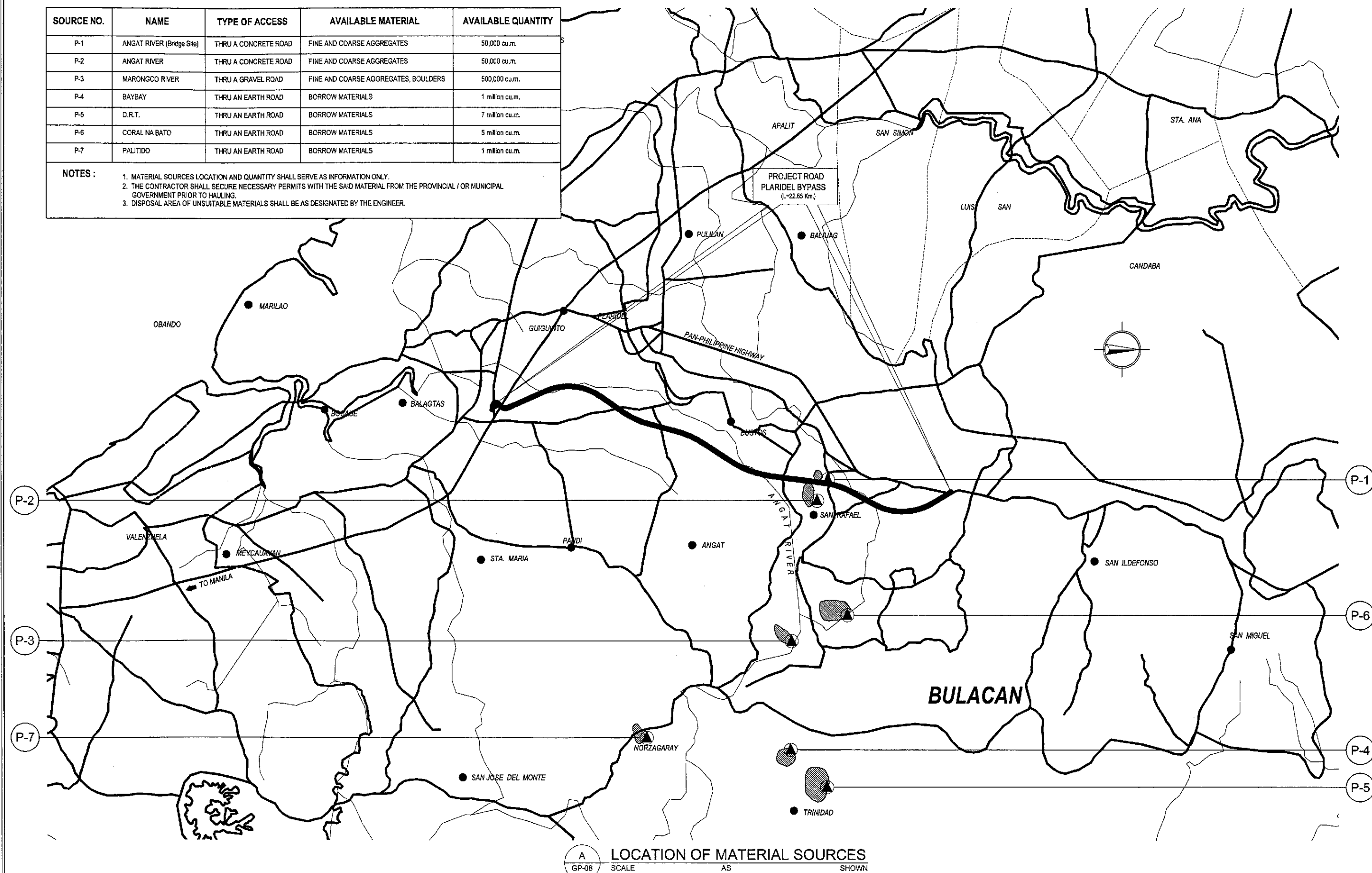
TABLE OF TRAVERSE STATION POINTS

CONTROL POINT	COORDINATES		ELEV.
	NORTHING	EASTING	
T-1	1,657,875.550	493,344.564	25.030
T-2	1,658,442.470	493,433.175	25.310
T-3	1,658,998.440	493,432.436	25.400
T-4	1,659,478.800	493,705.043	26.820
T-5	1,659,535.000	493,536.064	25.000
T-6	1,660,040.380	493,471.255	28.680
T-7	1,660,764.170	493,109.355	12.960
T-8	1,661,191.210	492,796.889	13.460
T-9	1,645,182.514	488,080.020	6.740
T-10	1,645,392.699	487,741.560	4.900
T-11	1,645,474.603	487,648.546	5.950
T-12	1,645,710.343	487,137.423	7.460
T-13	1,645,921.298	486,682.762	6.100
T-14	1,646,065.278	486,350.580	7.190
T-15	1,646,230.317	486,282.985	8.960
T-16	1,646,137.594	486,360.509	7.750
T-17	1,645,932.065	486,685.036	6.280
T-18	1,645,718.320	486,350.070	7.500
T-19	1,645,478.867	487,651.111	6.040
T-20	1,645,434.836	488,340.248	7.060

SOURCE NO.	NAME	TYPE OF ACCESS	AVAILABLE MATERIAL	AVAILABLE QUANTITY
P-1	ANGAT RIVER (Bridge Site)	THRU A CONCRETE ROAD	FINE AND COARSE AGGREGATES	50,000 cu.m.
P-2	ANGAT RIVER	THRU A CONCRETE ROAD	FINE AND COARSE AGGREGATES	50,000 cu.m.
P-3	MARONGCO RIVER	THRU A GRAVEL ROAD	FINE AND COARSE AGGREGATES, BOULDERS	500,000 cu.m.
P-4	BAYBAY	THRU AN EARTH ROAD	BORROW MATERIALS	1 million cu.m.
P-5	D.R.T.	THRU AN EARTH ROAD	BORROW MATERIALS	7 million cu.m.
P-6	CORAL NA BATO	THRU AN EARTH ROAD	BORROW MATERIALS	5 million cu.m.
P-7	PALITIDO	THRU AN EARTH ROAD	BORROW MATERIALS	1 million cu.m.

**NOTES :**

1. MATERIAL SOURCES LOCATION AND QUANTITY SHALL SERVE AS INFORMATION ONLY.
2. THE CONTRACTOR SHALL SECURE NECESSARY PERMITS WITH THE SAID MATERIAL FROM THE PROVINCIAL / OR MUNICIPAL GOVERNMENT PRIOR TO HAULING.
3. DISPOSAL AREA OF UNSUITABLE MATERIALS SHALL BE AS DESIGNATED BY THE ENGINEER.



**A**  
GP-08 SCALE AS SHOWN

<b>JICA</b> JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS YEO YACHIYO ENGINEERING CO., LTD.		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN Submitted By: <b>DANILO C. TRAJANO</b> (Project Director) Reviewed By: <b>JOSEFINA M. ALAGAR</b> (Chief, Highways Division) Recommended By: <b>GILBERTO S. REYES</b> (OIC, Director IV) Recommended By: <b>MANUEL M. BONDAN</b> (Undersecretary) Approved By: <b>SIMEON A. DATUMANONG</b> (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) PLARIDEL BYPASS - CONTRACT PACKAGE IV		SCALE : 1:80,000 FULL SIZE A1	SHEET CONTENTS : LOCATION OF MATERIAL SOURCES	SHEET NO. : GP-08
DESIGNED	DATE: 7/1/02	SIGNATURE: [Signature]	PUHL - PMO	Submitted By:	Reviewed By:	Recommended By:	Recommended By:	Approved By:		
CHECKED	7/30/02	5: [Signature]	SCORSE							
SUBMITTED	7/16/02	[Signature]	TEAM LEADER							





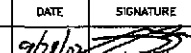




# SUMMARY OF QUANTITIES (ULTIMATE STAGE)

ITEM NO.	DESCRIPTION	UNIT	QUANTITY													
			BYPASS	A-1B	A-19	A-19a	A-20	C-4L	C-4R	A-21	A-22	A-22b	BRIDGE #10	BRIDGE #10 (LEFT)	BRIDGE #10 (RIGHT)	TOTAL
PART C - EARTHWORKS																
100(1)	Clearing and Grubbing	ha	14.10	-	-	-	-	-	-	-	-	-	-	-	-	15.00
101(1)	Removal of Existing Structures and Obstructions	L.S.	1.00	-	-	-	-	-	-	-	-	-	-	-	-	1.00
101(3)a	Removal of Existing PCC Pavement	m2	2,779.40	-	-	-	-	-	-	-	-	-	-	-	-	2,780.00
101(5)b	Relocation of Existing Guardrails	m	340.00	-	-	-	-	-	-	-	-	-	-	-	-	340.00
101(7)	Removal of Existing Slope Protection	m3	-	-	-	-	-	-	-	-	-	-	99.00	-	99.00	198.00
101(8)	Removal of Existing Slope Protection (Hand-laid Rock)	m3	-	-	-	-	-	-	-	-	-	-	48.00	-	48.00	96.00
101(11)	Removal of Existing Combination Concrete Curb & Gutter/Side Strip	m	49.79	-	-	-	-	-	-	-	-	-	-	-	-	50.00
101(12)	Relocation of Existing Road Signs	each	14.00	2.00	4.00	-	2.00	-	-	4.00	-	-	-	-	-	26.00
101(13)	Removal of Existing Road Signs	each	3.00	-	-	-	-	-	-	-	-	-	-	-	-	3.00
103(2)a	Bridge Excavation above OWL (Common Soil)	m3	-	-	-	-	-	-	-	-	-	-	263.00	246.00	251.00	760.00
103(6)	Pipe Culverts and Drain Excavation	m3	25,757.17	-	-	-	-	-	-	-	-	-	-	-	-	25,758.00
103(7)	Granular Backfill for Pipe Culvert	m3	13,745.85	-	-	-	-	-	-	-	-	-	-	-	-	13,746.00
104(1)	Embankment from Roadway Excavation	m3	3,614.16	-	-	268.27	231.72	-	-	174.06	-	-	-	-	-	4,289.00
104(3)	Embankment from Borrow Pit	m3	43,713.47	-	-	-	-	-	-	-	-	-	883.00	487.00	756.00	45,820.00
104(4)	Embankment from Borrow (Selected Granular Material) for Bridge	m3	-	-	-	-	-	-	-	-	-	-	588.00	452.00	475.00	1,515.00
105(1)	Subgrade Preparation (Common Soil)	m2	53,892.94	-	-	926.01	799.84	-	-	600.81	-	-	-	-	-	56,220.00
PART D - BASE AND SUBBASE COURSE																
200(1)	Aggregate Subbase Course	m3	32,331.72	-	-	227.25	196.29	-	-	147.44	-	-	-	28.00	24.00	32,979.00
PART E - SURFACE COURSES																
311(1)b	PCC Pavement (Plain), t=250mm	m2	42,363.81	-	-	-	-	-	-	-	-	-	-	-	-	42,364.00
311(1)c	PCC Pavement (Plain), t=230mm	m2	67,121.03	-	-	549.00	474.20	-	-	356.20	-	-	-	-	-	68,501.00
311(1)d	PCC Pavement (Plain), t=180mm	m2	22,476.52	-	-	-	-	-	-	-	-	-	-	-	-	22,477.00
311(2)	PCC Pavement (Reinforced) t=300mm Approach Slab	m2	-	-	-	-	-	-	-	-	-	-	120.00	82.00	82.00	284.00
PART F - BRIDGE CONSTRUCTION																
400(4)b	Precast Concrete Piles (450mmx450mm), furnished	m	-	-	-	-	-	-	-	-	-	-	1,408.00	1,164.00	1,210.00	3,782.00
400(13)b	Precast Concrete Piles (450mmx450mm), driven	m	-	-	-	-	-	-	-	-	-	-	1,408.00	1,100.00	1,144.00	3,652.00
400(15)b	Test Piles (Concrete Pile 450mmx450mm), furnished & driven	m	-	-	-	-	-	-	-	-	-	-	50.50	50.50	50.50	152.00
400(19)b	Pile shoes for 450mmx450mm Piles	each	-	-	-	-	-	-	-	-	-	-	66.00	52.00	54.00	172.00
401(1)a	Concrete Railing Type A (Concrete Posts and Precast Beams)	m	-	-	-	-	-	-	-	-	-	-	72.00	72.00	72.00	216.00
404(1)	Reinforcing Steel (Grade 40)	kg	-	-	-	-	-	-	-	-	-	-	25,055.00	22,462.00	23,063.00	70,580.00
404(2)	Reinforcing Steel (Grade 60)	kg	-	-	-	-	-	-	-	-	-	-	24,455.00	19,762.00	20,861.00	65,078.00
405(1)b	Structural Concrete Class A (fc=21MPa, max. aggregate 38mm) for small & medium bridges substructures	m3	-	-	-	-	-	-	-	-	-	-	348.00	276.00	296.00	920.00
405(1)d	Structural Concrete Class A1 (fc=21MPa, max. aggregate 20mm) for small & medium bridges PCDG superstructures	m3	-	-	-	-	-	-	-	-	-	-	118.00	95.00	95.00	308.00
405(2)	Structural Concrete Class B (fc=17MPa, max. aggregate 50mm) for plain or lightly reinforced structures	m3	4,300.02	-	-	-	-	-	-	-	-	-	-	-	-	4,301.00
405(3)	Structural Concrete Class C (fc=21MPa, max. aggregate 12mm) for thin reinforced members	m3	-	-	-	-	-	-	-	-	-	-	19.00	35.00	35.00	89.00
405(6)	Lean Concrete (fc=17MPa, max. aggregate 38mm)	m3	-	-	-	-	-	-	-	-	-	-	32.00	38.00	41.00	111.00
406(1)k	Precast Prestressed Structural Concrete Member (AASHTO Girder Type VI L=36m)	each	-	-	-	-	-	-	-	-	-	-	5.00	4.00	4.00	13.00
407(1)c	Elastomeric Bearing Pad, Duro 50 (600x350x50mm)	each	-	-	-	-	-	-	-	-	-	-	10.00	8.00	8.00	26.00



# SUMMARY OF QUANTITIES (ULTIMATE STAGE)

ITEM NO.	DESCRIPTION	UNIT	QUANTITY													TOTAL
			BYPASS	A-18	A-19	A-19a	A-20	C-4L	C-4R	A-21	A-22	A-22b	BRIDGE #10	BRIDGE #10 (LEFT)	BRIDGE #10 (RIGHT)	
407(2)a	Expansion Joint, (±40mm Movement)	m	-	-	-	-	-	-	-	-	-	-	20.00	20.00	20.00	60.00
407(2)g	Expansion Joint, 30mm for bridge sidewalk	m	-	-	-	-	-	-	-	-	-	-	4.00	6.00	6.00	16.00
407(4)	G.I. Drain Pipe Ø 150mm for Bridge Drainage	m	-	-	-	-	-	-	-	-	-	-	3.00	3.00	3.00	9.00
<b>PART G - DRAINAGE AND SLOPE PROTECTION STRUCTURES</b>																
500(1)b4	RCPC Standard Strength (32MPa), Ø 610mm (24")	m	8,673.00	-	-	-	-	-	-	-	-	-	-	-	-	8,673.00
500(1)c3	RCPC Extra Strength (32MPa), Ø 460mm (18")	m	1,546.00	-	-	-	-	-	-	-	-	-	-	-	-	1,546.00
502(2)a1	Drop Inlet Manhole for RCPC 1-Ø460 x 1-Ø460	each	310.00	-	-	-	-	-	-	-	-	-	-	-	-	310.00
502(2)a2	Drop Inlet Manhole for RCPC 1-Ø610 x 1-Ø460	each	272.00	-	-	-	-	-	-	-	-	-	-	-	-	272.00
502(2)c1	Junction Box Converted to Curb Inlet Manhole for RCPC 1-Ø 460 x 1-Ø 460	each	20.00	-	-	-	-	-	-	-	-	-	-	-	-	20.00
502(2)c2	Junction Box Converted to Curb Inlet Manhole for RCPC 1-Ø 610 x 1-Ø 460	each	20.00	-	-	-	-	-	-	-	-	-	-	-	-	20.00
502(2)c14	Junction Box Converted to Curb Inlet Manhole for RCPC 1-Ø 910 x 1-Ø 610	each	12.00	-	-	-	-	-	-	-	-	-	-	-	-	12.00
502(2)c15	Junction Box Converted to Curb Inlet Manhole for RCPC 1-Ø 1070 x 1-Ø 610	each	12.00	-	-	-	-	-	-	-	-	-	-	-	-	12.00
502(2)c34	Junction Box Converted to Curb Inlet Manhole for RCPC 2-Ø 910 x 1-Ø 610	each	5.00	-	-	-	-	-	-	-	-	-	-	-	-	5.00
502(2)c35	Junction Box Converted to Curb Inlet Manhole for RCPC 2-Ø 1070 x 1-Ø 610	each	4.00	-	-	-	-	-	-	-	-	-	-	-	-	4.00
504(5)	Grouted Riprap Class A	m3	298.17	-	-	-	-	-	-	-	-	-	28.00	28.00	44.00	399.00
505(1)	Hand Laid Rock Apron (Loose Boulder Apron)	m3	-	-	-	-	-	-	-	-	-	-	26.00	72.00	41.00	139.00
507(2)c	Steel Sheet Piles (400x85x8mm), furnished & driven	m	-	-	-	-	-	-	-	-	-	-	189.00	-	291.00	480.00
510(1)	Rubble Concrete Slope Protection	m3	-	-	-	-	-	-	-	-	-	-	84.00	87.00	102.00	273.00
<b>PART H - MISCELLANEOUS STRUCTURES</b>																
600(1)a	Concrete Curb, Type A (200x450mm)	m	8,915.74	-	-	-	-	-	-	-	-	-	-	-	-	8,916.00
600(3)a	Combination Concrete Curb & Gutter/Side Strip, Type A (675x364mm)	m	21,306.59	-	-	-	-	-	-	-	-	-	-	-	-	21,307.00
600(3)b	Combination Concrete Curb & Gutter/Side Strip, Type B (675x334mm)	m	11,096.92	-	-	-	-	-	-	-	70.01	-	-	-	-	11,167.00
601(1)	PCC Pavement for Sidewalk (t=100mm)	m2	21,172.96	-	-	75.39	-	-	-	-	-	-	-	-	-	21,249.00
605(1)a	Warning Signs (Triangular 900mm)	each	2.00	-	-	-	-	-	-	-	-	-	-	-	-	2.00
605(2)a	Regulatory Signs (Triangular 1039mm)	each	7.00	-	-	-	-	-	-	-	-	-	-	-	-	7.00
605(2)c	Regulatory Signs (Circular Ø 600mm)	each	11.00	-	-	-	-	-	-	-	-	-	-	-	-	11.00
605(2)d	Regulatory Signs (Rectangular 450x750mm)	each	7.00	-	-	2.00	-	-	-	-	1.00	-	-	-	-	10.00
608(1)	Furnishing and Placing Top Soil	m3	5,385.51	-	-	-	-	-	-	-	-	-	-	-	-	5,386.00
610(1)	Sodding	m2	53,855.10	-	-	-	-	-	-	-	-	-	-	-	-	53,856.00
611(1)a	Trees (Furnishing and Transplanting) Low Tree H < 1.5m	each	77,385.00	-	-	-	-	-	-	-	-	-	-	-	-	77,385.00
611(1)b	Trees (Furnishing and Transplanting) Medium Tree 1.5m < H < 3.0m	each	3,905.00	-	-	-	-	-	-	-	-	-	-	-	-	3,905.00
611(1)c	Trees (Furnishing and Transplanting) High Tree (Young Tree) 1.5m < H < 3.0m	each	40.00	-	-	-	-	-	-	-	-	-	-	-	-	40.00
SPL 611(3)a	Planter Box of CHB (1.00m x 1.00m) for Road Side Plantation	each	1,077.00	-	-	-	-	-	-	-	-	-	-	-	-	1,077.00
SPL 611(4)b	Planter Square Type B (0.68mx1.70m) for Road Side Plantation	each	529.00	-	-	-	-	-	-	-	-	-	-	-	-	529.00
612(1)a	ReflectORIZED Thermoplastic Pavement Markings (White)	m2	5,413.23	91.01	141.13	-	55.81	-	-	87.64	28.29	18.97	-	-	-	5,837.00
SPL 612(2)	Removal of Existing Thermoplastic Pavement Markings	m2	261.82	-	-	-	-	-	-	-	-	-	-	-	-	262.00

 <b>JAPAN INTERNATIONAL COOPERATION AGENCY</b>		 <b>KATAHIRA &amp; ENGINEERS INTERNATIONAL</b>		 <b>YEC YACHIYO ENGINEERING CO., LTD.</b>		 <b>REPUBLIC OF THE PHILIPPINES</b> <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>				<b>PROJECT AND LOCATION :</b> <b>THE DETAILED DESIGN STUDY ON</b> <b>UPGRADING INTER-URBAN HIGHWAY SYSTEM</b> <b>ALONG THE PAN-PHILIPPINE HIGHWAY</b> <b>(Plaridel, Cabanatuan and San Jose Bypasses)</b> <b>PLARIDEL BYPASS - CONTRACT PACKAGE IV</b>				<b>SCALE :</b> NOT TO SCALE FULL SIZE A1		<b>SHEET CONTENTS :</b> <b>SUMMARY OF QUANTITIES</b> <b>(ULTIMATE STAGE)</b> <b>(2 of 2)</b>		<b>SHEET NO. :</b> <b>GP-10</b>	
DESIGNED	DATE	SIGNATURE	SUBMITTED BY:  DANILLO C. TRAJANO Project Director		REVIEWED BY:  JOSEFINA M. ALAGAR Chief, Highways Division		RECOMMENDED BY:  GILBERTIO S. REYES OIC, Director IV		RECOMMENDED BY:  MANUEL M. BONDON Undersecretary		APPROVED BY:  SIMEON A. DATUMANONG Secretary								

**R O A D W A Y**

# GENERAL NOTES

## HIGHWAY / CIVIL AND DRAINAGE NOTES

### 1.0 DESIGN STANDARDS / SPECIFICATIONS

1.1 ALL GEOMETRIC DESIGN STANDARDS SHALL COMPLY WITH THE VALUES PRESCRIBED IN "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS", 1994 EDITION OF THE AMERICAN ASSOCIATION OF STATE HIGHWAYS AND TRANSPORTATION OFFICIALS (AASHTO), AND "DESIGN GUIDELINES CRITERIA AND STANDARDS" ISSUED BY THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS (DPWH).

1.2 ALL WORKS SHALL COMPLY WITH THE DPWH STANDARD SPECIFICATIONS, 1985 EDITION, VOLUME II, HIGHWAYS, BRIDGES, AND AIRPORTS, AND THE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

### 2.0 SURVEY CONTROLS AND REFERENCES

2.1 HORIZONTAL CONTROL IS BASED THROUGH GLOBAL POSITIONING SYSTEM (GPS) ESTABLISHED BY THE ACRE SURVEYING. CORRESPONDING GPS STATIONS ARE AS FOLLOWS:

GPS STA	NORTHING	EASTING	ELEVATIONS	DESCRIPTION
BLG-1	1640535.729	489225.487	8.931	LOCATED AT THE LEFT GUARDRAIL GOING TO TABANG EXIT. DRILLED ON TOP OF THE GUARDRAIL IS AN IRON STEEL 1/4"x2" ABOUT 40m. FROM THE LAST APPROACH OF THE BRIDGE.
BLG-2	1640592.279	489340.024	10.635	LOCATED AT THE WALL RAILING AT THE END OF THE BRIDGE'S FIRST APPROACH. DRILLED ON TOP OF THE WALL RAILING IS AN IRON STEEL 1/4"x 2".
BLG-2A	1643045.047	487830.179	3.777	LOCATED IN BGY. DAUNGAN, GUGUINTO, BULACAN. IT IS EMBEDDED BESIDE AN IRRIGATION CANAL, ABOUT 150m. FROM INTERSECTION, ABOUT 15m. FROM AN ELECT. POST 50m. FROM BBM 16 AND ABOUT 15m. FROM THE FENCE OF THE HOUSE ON THE OTHER SIDE OF THE ROAD.
BLG-3	1646381.832	488957.118	8.646	LOCATED IN BGY. MATAAS, SAMPALOK, BULHANI, PLARIDEL BULACAN. IT IS ON THE HEAD OF AN IRRIGATION CHECK VALVE, OUTSIDE THE COLEGIO DE IMMACULADA CONCEPCION, ABOUT 10m. FROM THE SHED AND 4.00m. FROM ROAD CENTERLINE.
BLG-4	1652474.952	492013.344	16.125	LOCATED IN BGY. MALAMIG, BUSTOS, BULACAN. IT IS ON THE SIDE OF IRRIG. CANAL, ABOUT 5m. FORM THE ROAD CENTERLINE 150m. FROM FORK, AND ABOUT 5m. FROM THE NEW HOUSE.
BLG-4B	1655132.400	492583.981	9.310	LOCATED IN BGY. TAMBOBONG, SAN RAFAEL, BULACAN. IT IS EMBEDDED ON A ROAD GROUND ABOUT 600m. FROM INTERSECTION, 20m. FROM THE HOUSE.
BLG-5	1657566.872	493155.992	22.017	LOCATED IN BGY. SAMPALOK, SAN RAFAEL, BULACAN. IT IS EMBEDDED ON THE RIGHT SIDE OF THE ROAD GOING TO ROYAL NORTHWOODS 30m. FROM THE INTERSECTION.
BLG-5A	1659619.893	493753.421	29.185	LOCATED IN BGY. SAN ROQUE, HULO, SAN RAFAEL BULACAN. IT IS EMBEDDED ON THE RICE PADDY DIKE 20m. FROM THE DIRT ROAD CENTERLINE.

2.2 VERTICAL CONTROL IS REFERRED TO BM BL-12 ESTABLISHED BY THE BLGS WITH ELEVATION 14.935m. ABOVE MEAN SEA LEVEL LOCATED IN BARIO SABANG, PLARIDEL BULACAN. ALONG NATIONAL HIGHWAY NO.5 ABOUT 120m. NORTH OF KM POST NO 52. IT IS EMBEDDED IN A HOLE DRILLED ON TOP OF THE SOUTH SIDE OF THE FOOTING OF THE MARIANO PONCE MONUMENT. ABOUT 18m. NORTH OF THE CENTERLINE OF THE NATIONAL HIGHWAY, INSIDE THE SABANG ELEMENTARY SCHOOL GROUNDS. MARKED PC & GS BL 12, 1952, ELEV.=14.935.

### 3.0 ALIGNMENT CONTROLS AND REFERENCES

3.1 PROJECT IMPLEMENTATION OF ALL BYPASSES SHALL BE DONE IN TWO(2) CONSTRUCTION STAGES, THE FIRST STAGE IS THE INITIAL STAGE THAT CONSIST OF CONSTRUCTING TWO LANE-TWO WAY HIGHWAY (NORTHBOUND), GRAVEL SURFACE FRONTAGE ROAD AND GRAVEL SURFACE SERVICE ROAD AS SHOWN IN THE TYPICAL SECTIONS. IN THE SECTION WITH FRONTAGE ROAD, A GRAVEL SURFACE FRONTAGE ROAD WILL BE INITIALLY CONSTRUCTED EACH SIDE OF THE HIGHWAY. GRAVEL SURFACE SERVICE ROAD WILL BE PROVIDED IN THE SECTION WITHOUT FRONTAGE ROAD. THE SECOND STAGE IS THE ULTIMATE STAGE THAT INVOLVES THE CONSTRUCTION OF THE TWO LANE PAVEMENT (SOUTH BOUND) CONCRETING OF FRONTAGE ROADS AND CONSTRUCTION OF MEDIAN ISLAND AND OTHER HIGHWAY FACILITIES NOT INCLUDED IN THE INITIAL STAGE.

3.2 THE FOLLOWING MAJOR POINTS CONTROLLED THE DESIGN OF HORIZONTAL AND VERTICAL ALIGNMENT:

#### 3.2.3 ALONG PLARIDEL BYPASS

- NORTH LUZON EXPRESSWAY AND BUROL INTECHANGE AT START OF BYPASS.
- CONSTRUCTION OF AN 18 HECTARE SUBDIVISION (LEFT SIDE OF STA.35+000.00 CENTERLINE).
- FLOODED SECTION AT INTERSECTION WITH SAN JOSE-CAMACHILHAN ROAD (STA. 41+166.00 CENTERLINE).
- A NEWLY BUILT CHURCH AT INTERSECTION WITH BALUAG-SAN RAFAEL ROAD.

3.3 SIMPLE CIRCULAR CURVES, THREE-CENTERED CIRCULAR CURVES AND CLOTHOID CURVES WERE USED FOR HORIZONTAL CURVATURES, AND PARABOLIC CURVES WERE USED TO SMOOTHEN GRADE BREAKS.

3.4 DESIGN OF VERTICAL ALIGNMENT WAS CONTROLLED BY THE DESIGN MAXIMUM FLOODLEVEL, 25-YEAR RETURN PERIOD FOR EMBANKMENT. 50-YEAR RETURN PERIOD FOR BRIDGE AND DRAINAGE STRUCTURES MINIMUM COVERING AS INDICATED IN THE PROFILES.

3.5 EXISTING PAVEMENT GRADES OF PAN-PHILIPPINE HIGHWAY.

### 4.0 DIMENSIONS

4.1 DISTANCES AND ELEVATIONS SHOWN ON THE PLANS ARE IN METERS (m) AND IN MILLIMETERS (mm) UNLESS OTHERWISE SPECIFIED. OTHER UNITS OF MEASUREMENT ARE EXPRESSED IN THE MORE APPROPRIATE UNITS OF THE S.I. SYSTEM AS ADOPTED IN THE DPWH STANDARD SPECIFICATIONS, 1995 (VOLUME II).

### 5.0 STATIONINGS

5.1 CENTERLINE STATIONINGS OF THE PROJECT WERE BASED FROM THE NEAREST KILOMETER STATION ALONG THE NORTH LUZON EXPRESSWAY WHICH IS KM 33.

5.2 ROAD STATIONS AND ELEMENTS OF CURVE, BOTH HORIZONTAL AND VERTICAL ALIGNMENTS, ARE RELATIVE TO THE ROAD CENTERLINE/BASELINE UNLESS OTHERWISE INDICATED ON PLANS.

### 6.0 ELEVATION AND GRADES

6.1 ELEVATIONS AND GRADES AS DESCRIBED IN THE PROFILE GRADE ARE TOP OF CROWN ALONG THE CENTERLINE. FINISHED GRADE AS SHOWN WILL BE REFERRED BASE FROM PAVEMENT SLOPE

### 7.0 HORIZONTAL TRANSITIONS

7.1 HORIZONTAL TRANSITIONS FOR ROADWAY TAPERINGS/WIDENINGS ARE DESIGNED TO BE STAKED OUT BY THE OFFSETS FROM THE BASELINE INCREASING OR DECREASING ALONG THE DIRECTION OF TRAFFIC.

### 8.0 UTILIZATION OF GRAVEL MATERIALS

8.1 GRAVEL MATERIALS ALONG THE GRAVEL CROSS ROAD IN THE INITIAL STAGE SHALL BE EXCAVATED AND RECONSTRUCTED AS SUBBASE MATERIALS TO THICKNESS AS SHOWN AND INDICATED ON THE TYPICAL SECTIONS FOR THE ULTIMATE STAGE, RECONSTRUCTION OF THE SUBBASE MENTIONED SHALL BE DONE, FOLLOWING THE NORMAL REQUIREMENT IN SUBGRADE PREPARATION.

### 9.0 REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS

9.1 ARTICLE 4.7 OF THE "GENERAL REQUIREMENTS AND COVENANTS" IS HEREBY AMENDED AS FOLLOWS:

THE REMOVAL OF BUILDINGS, HOUSES, FENCES, UTILITY POLES AND OTHER PUBLIC UTILITIES WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR BUT WILL BE REMOVED BY THE RESPECTIVE OWNERS, OR THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS PRIOR TO CONSTRUCTION.

### 10.0 ROAD CONNECTIONS AND PRIVATE ENTRANCES

10.1 OPENINGS FOR DRIVEWAYS OR PRIVATE ENTRANCES SHALL BE CONSTRUCTED ONLY ALONG SECTIONS OF THE PROJECT ROAD WHERE FRONTAGE ROADS AND/OR TURNOUTS ARE TO BE PROVIDED. SUCH CONNECTIONS SHALL BE DETERMINED BY THE ENGINEER AND SHALL BE CONSTRUCTED IN SUCH A MANNER AS TO INSURE PROPER CONNECTION AND RIDING QUALITY.

10.2 ROAD CONNECTIONS SHALL BE CONSTRUCTED AS SHOWN ON PLANS. THE ROAD STRUCTURE OF EACH CONNECTION SHALL BE AS RECOMMENDED IN THE DRAWING.

10.3 THE INTERSECTIONS NOT SHOWN ON THE DRAWINGS SHALL REQUIRE PLANS SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTIONS.

10.4 THE LIMIT OF CONSTRUCTION FOR ROAD CONNCTIONS AND PRIVATE ENTRANCES SHALL BE AS SHOWN IN THE DRAWING OR AS INDICATED BY THE ENGINEER.

### 11.0 DRAINAGE STRUCTURES

11.1 EXACT LOCATIONS, SLOPES, OUTFALLS, AND INVERT ELEVATIONS OF DRAINAGE STRUCTURES SHALL BE CHECKED IN THE FIELD BY THE ENGINEER. MINOR ADJUSTMENTS MAY BE MADE TO SUIT ACTUAL FIELD CONDITIONS UPON APPROVAL OF THE ENGINEER.

11.2 EXISTING DRAINAGE STRUCTURES THAT ARE FAULTY, BROKEN DOWN, OR NOT IN GOOD WORKING CONDITION SHALL BE DETERMINED IN THE FIELD. RECONSTRUCTION, REPAIR AND/OR REPLACEMENT OF SAME SHALL BE DIRECTED BY THE ENGINEER, AND SHALL CONFORM TO THE STANDARDS AS SHOWN IN THE DRAWINGS.

11.3 EXISTING DRAINAGE STRUCTURES OR PARTS THEREOF REMOVED BY THE CONTRACTOR THAT ARE STILL SERVICEABLE SHALL BE TURNED OVER TO THE GOVERNMENT AND SHALL BE DEPOSITED AT A PLACE DESIGNATED BY THE ENGINEER WITHOUT ANY COMPENSATION. EXTREME PRECAUTIONS SHALL BE EXERCISED BY THE CONTRACTOR NOT TO DAMAGE THESE MATERIALS DURING THE REMOVAL AND HANDLING OPERATION.

11.4 THE CLEANING, UNCLOGGING AND/OR RELAYING OF REINFORCED CONCRETE PIPES, CONSTRUCTION OF CHANNELS AND DITCHES AS DIRECTED BY THE ENGINEER TO ENSURE AN OPERATIONAL TEMPORARY DRAINAGE SYSTEM DURING THE CONSTRUCTION PERIOD SHALL BE UNDERTAKEN BY THE CONTRACTOR WITHOUT ANY COMPENSATION.

### 12.0 ACCESSIBILITY LAW:

12.1 STRICT COMPLIANCE WITH BATAS PAMBANSA BILANG 344 AND ITS IMPLEMENTING RULES AND REGULATIONS SHALL BE IMPOSED.

### 13.0 TREE PLANTING ALONG NATIONAL ROADS

13.1 DPWH DEPARTMENT ORDER NO. 15, SERIES OF 2000 AND ITS REQUIREMENTS SHALL BE IMPOSED. THE PLANTING OF TREES ALONG NATIONAL ROADS SHALL BE MADE A STANDARD COMPONENT OF ALL ROAD CONSTRUCTION AND IMPROVEMENT PROJECTS TO ENHANCE QUALITY OF ENVIRONMENT.

### 14.0 DESIGN DATA / REFERENCES




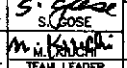
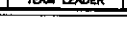
#### 14.1 REPORTS

- FEASIBILITY STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHIL HIGHWAY (PLARIDEL, CABANATUAN AND SAN JOSE BYPASSES), FINAL REPORT, NOVEMBER 1999.

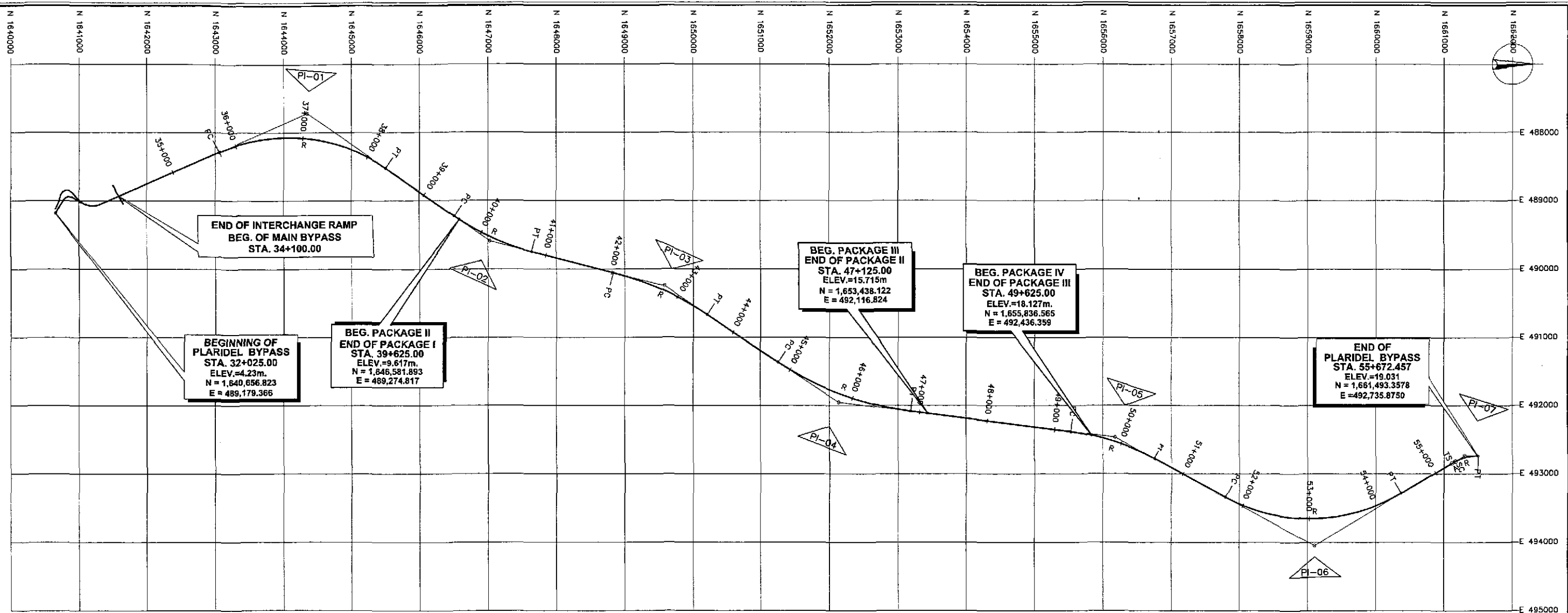
- DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY, BASIC DESIGN REPORT, SEPTEMBER 2001.

#### 14.2 DRAWINGS

- FEASIBILITY STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHIL HIGHWAY (PLARIDEL, CABANATUAN AND SAN JOSE BYPASSES).
- DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY, BASIC DESIGN DRAWINGS, SEPTEMBER 2001.

 JAPAN INTERNATIONAL COOPERATION AGENCY		 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 : FULL SIZE A1	SHEET CONTENTS : GENERAL NOTES (HIGHWAY AND DRAINAGE)	SHEET NO. : RG-01
DESIGNED	9/28/02	SIGNATURE		REVIEWED BY	MANUEL M. BONGAN			
CHECKED	9/30/02	SIGNATURE		REVIEWED BY	SIMEON A. DATUMANONG			
SUBMITTED	10/4/02	SIGNATURE		REVIEWED BY				
		TEAM LEADER	DANILO C. TRAJANO	CHIEF, HIGHWAYS DIVISION	GILBERTO S. REYES			
			JOSEFINA M. ALACAR	CHIEF, HIGHWAYS DIVISION	SIMEON A. DATUMANONG			





ELEMENTS OF CURVES

P.I. No.	STATION	DISTANCE	AZIMUTH	TANGENT $\Theta_s$	DEFLECTION ANGLE	A R	Ls Lc	STATION
BEG.	34+100.00							
01	37+150.085	3,050.085	156°12'23"	1,405.622	58°41'37"	2,500.000	2,560.993	PC=35+744.463 PT=38+305.456
02	40+170.351	3,270.517	214°54'01"	631.471	20°27'17"	3,500.000	1,249.501	PC=39+538.880 PT=40+788.381
03	42+784.272	2,627.362	194°26'44"	762.261	19°13'42"	4,500.000	1,510.187	PC=42+022.011 PT=43+532.197
04	45+849.871	3,079.935	213°40'26"	1,055.870	26°24'35"	4,500.000	2,074.218	PC=44+794.002 PT=46+868.219
05	49+888.421	4,076.071	187°15'51"	653.242	21°08'39"	3,500.000	1,291.623	PC=49+235.179 PT=50+526.802
06	53+197.990	3,324.430	208°24'30"	1,481.484	59°20'57"	2,600.000	2,693.177	PC=51+716.506 PT=54+409.683
07	55+491.631	2,563.432	149°03'33"	217.897	32°44'53"	188.072	54.417	TS=55+273.735 SC=55+328.152 PT=55+672.457
END	55+672.457	191.336	02°23'54"	02°23'54"		550.000	344.305	

TABLE OF COORDINATES

P.I. No.	NORTHING	EASTING	NORTHING	EASTING
BEG.	1,641,555.403	488,947.023		
01	1,644,346.248	487,716.493	PC 1,643,060.096 PT 1,645,499.069	488,283.579 488,520.712
02	1,647,028.564	489,587.713	PC 1,646,510.662 PT 1,647,640.071	489,226.418 489,745.240
03	1,649,572.862	490,243.134	PC 1,648,834.700 PT 1,650,207.221	490,052.981 490,665.781
04	1,652,135.007	491,950.849	PC 1,651,257.304 PT 1,653,183.402	491,365.407 492,084.356
05	1,656,179.303	492,466.239	PC 1,655,531.364 PT 1,656,753.942	492,383.641 492,777.019

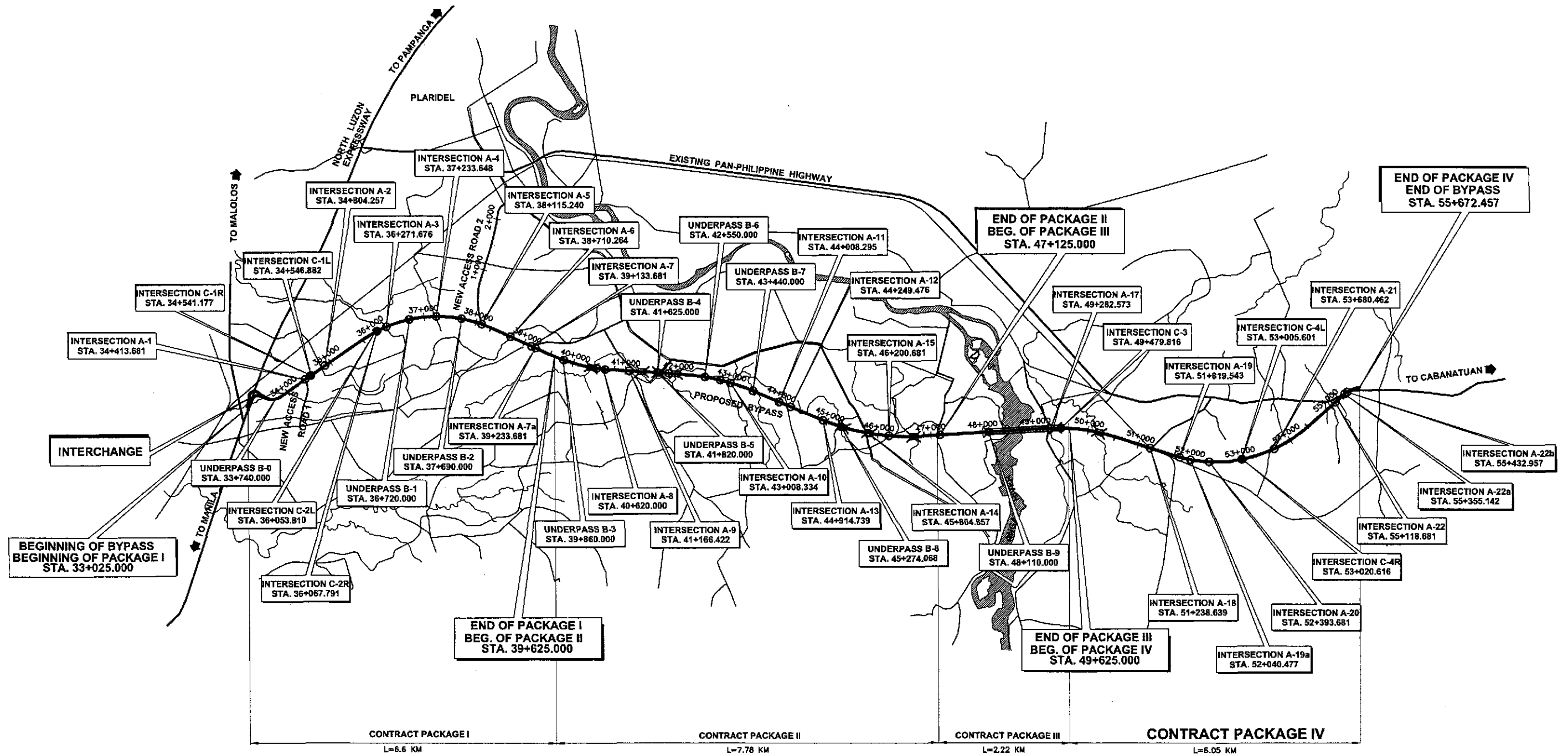
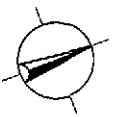
TABLE OF COORDINATES

P.I. No.	NORTHING	EASTING	NORTHING	EASTING
06	1,659,103.466	494,047.839	PC 1,657,800.382 PT 1,660,374.132	493,343.022 493,286.129
07	1,661,302.117	492,729.842	TS 1,661,115.228 SC 1,661,162.283 PT 1,661,493.358	492,841.874 492,814.552 492,735.876
END	1,661,493.358	492,735.876		

<b>JICA</b> JAPAN INTERNATIONAL COOPERATION AGENCY <b>K&amp;E</b> KATAHIRA & ENGINEERS INTERNATIONAL <b>yeo</b> YACHIYO ENGINEERING CO., LTD.		DATE: 9/14/02 DESIGNED: [Signature] CHECKED: [Signature] SUBMITTED: 10/14/02	DATE: 9/14/02 DESIGNED: [Signature] CHECKED: [Signature] SUBMITTED: 10/14/02	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) PLARIDEL BYPASS - CONTRACT PACKAGE IV	SCALE: 1:30,000 FULL SIZE A1	SHEET CONTENTS: ALIGNMENT TECHNICAL DESCRIPTION	SHEET NO.: RG-02
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LEGEND:

- Intersection Type A ( At grade )
- ⊕ Intersection Type B ( Underpass )
- Intersection Type C ( Only access to frontage roads )
- ≡ Bridge





A LOCATION OF PROPOSED INTERSECTIONS ALONG BYPASS  
RG-03 SCALE 1:40,000

<p>JICA JAPAN INTERNATIONAL COOPERATION AGENCY</p>		<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>		<p>PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)</p>		<p>SCALE : 1:40,000 FULL SIZE A1</p>	<p>SHEET CONTENTS : LOCATION OF INTERSECTIONS ALONG BYPASS</p>	<p>SHEET NO. : RG-03</p>
<p>DESIGNED 9/18/02 CHECKED 7/30/02 SUBMITTED 10/16/02</p>	<p>DATE 9/18/02 7/30/02 10/16/02</p>	<p>SIGNATURE <i>[Signature]</i> 5.902 <i>[Signature]</i> TEAM LEADER</p>	<p>PROJECT - PMO SUBMITTED BY: DANILLO C. TRAJANO Project Director</p>	<p>BUREAU OF DESIGN REVIEWED BY: JOSEFINA M. ALAGAR Chief, Highways Division</p>	<p>OFFICE OF THE SECRETARY RECOMMENDED BY: GILBERTO S. REYES OIC, Director IV</p>	<p>RECOMMENDED BY: MANUEL M. BONDAN Undersecretary</p>	<p>APPROVED BY: SIMEDON A. DATUMANONG Secretary</p>	

**SCHEDULE OF TRAFFIC SIGNS**  
CONTRACT PACKAGE IV (ULTIMATE STAGE)

**SCHEDULE OF PLANTINGS, RELOCATION OF GUARDRAILS**  
CONTRACT PACKAGE IV (ULTIMATE STAGE)

ITEM 605 (1) WARNING SIGNS (TRIANGULAR 900mm)			ITEM 605 (2)c REGULATORY SIGNS (RECTANGULAR 450x750mm)			SCHEDULE OF RELOCATION OF GUARDRAILS				1.) SIDEWALK PLANTING (MIDDLE TREE)					
STATION	REF. NO.	REMARKS	STATION	REF. NO.	REMARKS	STATION		LENGTH (m)	LOCATION	STATION		LENGTH (L.M.)			
						FROM	TO			FROM	TO	LEFT	RIGHT		
51+077	W2-8**	RIGHTSIDE MAIN BYPASS	01+020	R3-6P	LEFT SIDE INTERSECTION A-18	50 + 054.42	50 + 218.42	164	LEFT SIDE OF BYPASS	49 + 400	51 + 100	475	475		
51+399	W2-8**	LEFT SIDE MAIN BYPASS	00+972	R3-6P**	RIGHT SIDE INTERSECTION A-19	BRIDGE NO. 10				50 + 100	50 + 800	600	600		
51+665	W2-8**	RIGHTSIDE MAIN BYPASS	01+016	R3-6P**	LEFT SIDE INTERSECTION A-19	50 + 263.33	50 + 439.33	176	LEFT SIDE OF BYPASS	50 + 800	51 + 500	640	640		
51+980	W2-8**	LEFT SIDE MAIN BYPASS	00+037	R2-6A*	RIGHT SIDE INTERSECTION A-19a					51 + 500	52 + 200	660	560		
52+280	W2-8R*	RIGHTSIDE MAIN BYPASS	00+055	R2-4P*	LEFT SIDE INTERSECTION A-19a					52 + 200	52 + 900	700	660		
52+553	W2-6L*	LEFT SIDE MAIN BYPASS	01+016	R3-6P**	LEFT SIDE INTERSECTION A-20					52 + 900	53 + 600	680	680		
53+498	W2-8**	RIGHTSIDE MAIN BYPASS	00+982	R3-6P**	RIGHT SIDE INTERSECTION A-21					53 + 800	54 + 300	640	640		
53+865	W2-8**	LEFT SIDE MAIN BYPASS	01+018	R3-6P**	LEFT SIDE INTERSECTION A-21					54 + 300	55 + 000	700	700		
55+000	W3-1**	RIGHTSIDE MAIN BYPASS	00+950	R3-6P*	RIGHT SIDE INTERSECTION A-22					55 + 000	55+672.45	100	100		
55+085	W2-10L	CENTER ISLAND PAN-PHIL HIGHWAY													
55+260	W3-1	LEFT SIDE MAIN BYPASS	ITEM 605 (2)d REGULATORY SIGNS (CIRCULAR 600mm DIA.)												
55+299	W2-8	RIGHTSIDE MAIN BYPASS													
55+338	W8-3A	LEFT SIDE PAN-PHIL HIGHWAY	STATION	REF. NO.	REMARKS										
55+441	W4-2R	RIGHTSIDE MAIN BYPASS	50+220	R6-4	RIGHTSIDE MAIN BYPASS										
55+546	W2-9R	LEFT SIDE MAIN BYPASS	50+225	R6-4*	RIGHTSIDE MAIN BYPASS										
00+927	W5-3	LEFT SIDE INTERSECTION A-22	50+250	R6-4*	LEFT SIDE MAIN BYPASS										
			50+260	R6-4**	LEFT SIDE MAIN BYPASS										
ITEM 605 (2)a REGULATORY SIGNS (TRIANGULAR 1039mm)			51+221	R3-15*	CENTER ISLAND MAIN BYPASS	2.) OUTER SEPARATION PLANTING(LEFT SIDE)									
STATION	REF. NO.	REMARKS	51+256	R3-15*	CENTER ISLAND MAIN BYPASS	STATION		LENGTH (L.M.)							
			51+805	R3-15*	CENTER ISLAND MAIN BYPASS	FROM	TO	1-B(1)	1-B(2)	1-B(3)	1-B(4)	1-B(5)	1-B(6)	1-B(7)	1-B(8)
55+102	R1-2	RIGHTSIDE MAIN BYPASS	51+835	R3-15*	CENTER ISLAND MAIN BYPASS	49 + 400	50 + 100	0	0	0	0	0	475	0	0
51+207	R1-2*	RIGHTSIDE MAIN BYPASS	52+383	R3-15*	CENTER ISLAND MAIN BYPASS	50 + 100	50 + 800	0	0	0	0	0	569	0	65
51+271	R1-2*	LEFT SIDE MAIN BYPASS	52+409	R3-15*	CENTER ISLAND MAIN BYPASS	50 + 800	51 + 500	0	0	0	0	94	536	0	0
51+805	R1-2*	RIGHTSIDE MAIN BYPASS	53+664	R3-15*	CENTER ISLAND MAIN BYPASS	51 + 500	52 + 200	0	0	0	0	91	535	0	0
51+838	R1-2*	LEFT SIDE MAIN BYPASS	53+697	R3-15*	CENTER ISLAND MAIN BYPASS	52 + 200	52 + 900	0	0	0	0	70	557	0	0
52+379	R1-2*	RIGHTSIDE MAIN BYPASS	54+938	R2-5*	LEFT SIDE MAIN BYPASS	52 + 900	53 + 600	0	0	0	0	0	700	0	0
53+644	R1-2*	RIGHTSIDE MAIN BYPASS	55+036	R2-3	CENTER ISLAND PAN-PHIL HIGHWAY	53 + 600	54 + 300	0	0	0	0	68	537	28	0
53+718	R1-2*	LEFT SIDE MAIN BYPASS	55+102	R3-15	CENTER ISLAND MAIN BYPASS	54 + 300	55 + 000	0	83	0	22	0	534	0	0
			55+107	R3-13A	CENTER ISLAND PAN-PHIL HIGHWAY	55 + 000	55+672.45	0	0	0	0	31	68	12	0
ITEM 605 (2)b REGULATORY SIGNS (OCTAGONAL 600mm)			55+146	R3-15	CENTER ISLAND MAIN BYPASS	3.) OUTER SEPARATION PLANTING (RIGHT SIDE)									
STATION	REF. NO.	REMARKS	55+338	R2-6	LEFT SIDE PAN-PHIL HIGHWAY	STATION		LENGTH (L.M.)							
			55+421	R3-15	CENTER ISLAND MAIN BYPASS	FROM	TO	1-B(1)	1-B(2)	1-B(3)	1-B(4)	1-B(5)	1-B(6)	1-B(7)	1-B(8)
00+983	R1-1A**	RIGHT SIDE INTERSECTION A-18	55+442	R3-15	CENTER ISLAND MAIN BYPASS	49 + 400	50 + 100	0	0	0	0	0	475	0	0
01+016	R1-1A**	LEFT SIDE INTERSECTION A-18	00+980	R3-15	CENTER ISLAND OF INTERSECTION A-22	50 + 100	50 + 800	0	0	0	0	0	569	0	81
00+972	R1-1A**	RIGHT SIDE INTERSECTION A-19	01+018	R3-15	CENTER ISLAND OF INTERSECTION A-22	50 + 800	51 + 500	0	0	0	0	92	535	0	0
01+016	R1-1A**	LEFT SIDE INTERSECTION A-19				51 + 500	52 + 200	0	0	0	0	87	541	0	0
01+016	R1-1A**	LEFT SIDE INTERSECTION A-20	ITEM 605 (3) INFORMATORY SIGNS			52 + 200	52 + 900	0	0	0	0	86	604	0	0
00+982	R1-1A**	RIGHT SIDE INTERSECTION A-21	STATION	REF. NO.	REMARKS	52 + 900	53 + 600	0	0	0	0	0	640	0	0
01+018	R1-1A**	LEFT SIDE INTERSECTION A-21				53 + 600	54 + 300	0	0	0	0	72	597	25	0
ITEM 605 (2)c REGULATORY SIGNS (RECTANGULAR 450x750mm)			a. 2710 x 1630mm			54 + 300	55 + 000	0	83	0	22	0	534	0	0
STATION	REF. NO.	REMARKS	55+105	GS-17	RIGHTSIDE MAIN BYPASS	55 + 000	55+672.45	0	0	0	0	35	68	10	0
			b. 1866 x 1630mm			4.) CENTER MEDIAN PLANTING									
51+221	R2-7(L)*	CENTER ISLAND MAIN BYPASS	55+145	GS-13	LEFT SIDE MAIN BYPASS	STATION		LENGTH (L.M.)							
51+256	R2-7(L)*	CENTER ISLAND MAIN BYPASS	c. 2160 x 1380mm			FROM	TO	1-A(1)	1-A(2)	1-A(3)	1-A(4)	1-A(5)	1-A(6)	1-A(7)	1-A(8)
51+805	R2-7(L)*	CENTER ISLAND MAIN BYPASS	55+338	GS-14	CENTER ISLAND PAN-PHIL HIGHWAY	49 + 400	50 + 100	0	0	0	0	0	480	0	0
51+835	R2-7(L)*	CENTER ISLAND MAIN BYPASS				50 + 100	50 + 800	0	0	0	0	0	554	0	88
52+409	R2-7(L)*	CENTER ISLAND MAIN BYPASS				50 + 800	51 + 500	0	0	70	24	0	533	0	38
53+664	R2-7(L)*	CENTER ISLAND MAIN BYPASS				51 + 500	52 + 200	0	0	70	24	0	540	0	39
53+697	R2-7(L)*	CENTER ISLAND MAIN BYPASS	NOTE:			52 + 200	52 + 900	0	0	35	11	0	556	35	38
55+102	R2-7(L)	CENTER ISLAND MAIN BYPASS	* - NEW SIGNS			52 + 900	53 + 600	0	0	0	4	0	677	0	19
55+146	R2-7(L)	CENTER ISLAND MAIN BYPASS	** - EXISTING AND TO BE RELOCATED			53 + 600	54 + 300	0	0	70	61	0	500	0	20
55+291	R3-1PA	RIGHT SIDE PAN-PHIL HIGHWAY	UNMARKED - EXISTING AND TO REMAIN			54 + 300	55 + 000	0	0	0	0	0	673	0	13
55+421	R2-7(L)	CENTER ISLAND MAIN BYPASS				55 + 000	55+672.45	0	0	105	60	0	109	35	140
00+980	R3-6P	RIGHT SIDE INTERSECTION A-18													

 <b>JICA</b> JAPAN INTERNATIONAL COOPERATION AGENCY		DATE: 9/28/02 DESIGNED: J. TAPIA CHECKED: S. JOSE SUBMITTED: 10/16/02		SIGNATURE:  TEAM LEADER		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN Submitted By: DANILLO C. TRAJANO, Project Director Reviewed By: JOSEFINA M. ALAGAR, Chief, Highways Division Recommended By: GILBERTO S. REYES, G.C. Director IV Approved By: MANUEL M. BONGAN, Undersecretary Approved By: SIMEON A. DATUMANONG, 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) PLARIDEL BYPASS - CONTRACT PACKAGE IV		SCALE : FULL SIZE A1		SHEET CONTENTS : SCHEDULE OF TRAFFIC SIGNS, PLANTINGS AND RELOCATION OF GUARDRAILS		SHEET NO. : <b>RG-04</b>	
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**SCHEDULE OF PAVEMENT MARKINGS**  
**CONTRACT PACKAGE IV (ULTIMATE STAGE)**  
**ITEM 612(1) - REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS**

1.0 CENTER LINE				2.3 LEFT SIDE, RIGHT EDGE OF FRONTAGE ROAD				2.7 RIGHT SIDE, LEFT EDGE OF FRONTAGE ROAD				4.0 CONTINUITY LINE			
STATION		LENGTH	REMARKS	STATION		LENGTH	REMARKS	STATION		LENGTH	REMARKS	STATION		LENGTH	REMARKS
FROM	TO	(m)		FROM	TO	(m)		FROM	TO	(m)		FROM	TO	(m)	
00+905.00	00+981.57	56.57 *	A-18: 100mm x 3.0m @ 4.50m GAP	00+958.26	53+727.94	35.60	LT OF A-21 TO FRONTAGE ROAD	49+625.00	51+076.21	1451.21	FRONTAGE ROAD	51+136.14	51+179.71	43.57	(RS) 150mm x 1.0m @ 3.0m GAP
00+981.57	00+981.57	20.00	A-18: 100mm UNBROKEN LINE	53+727.94	53+801.85	73.91	FRONTAGE ROAD	51+136.14	51+201.63	65.49	FRONTAGE ROAD	51+295.24	51+340.25	45.01	(LS) 150mm x 1.0m @ 3.0m GAP
01+018.43	01+038.43	20.00	A-18: 100mm UNBROKEN LINE	53+801.85	54+939.59	1077.77	FRONTAGE ROAD	51+201.63	01+032.48	24.32	FRONTAGE ROAD TO RT OF A-18	51+725.04	51+775.59	50.55	(RS) 150mm x 1.0m @ 3.0m GAP
01+038.40	01+150.00	111.60 *	A-18: 100mm x 3.0m @ 4.50m GAP	54+939.46	55+092.15	93.69	FRONTAGE ROAD	01+019.21	51+051.40	20.63	LT OF A-18 TO FRONTAGE ROAD	51+875.00	51+920.00	45.00	(LS) 150mm x 1.0m @ 3.0m GAP
00+800.00	00+952.77	152.77 *	A-19: 100mm x 3.0m @ 4.50m GAP	55+092.15	00+974.35	23.75	FRONTAGE ROAD TO RT OF A-22	51+051.40	51+665.09	613.69	FRONTAGE ROAD	52+448.60	52+493.60	45.00	(LS) 150mm x 1.0m @ 3.0m GAP
00+952.77	00+972.77	20.00	A-19: 100mm UNBROKEN LINE	2.4 LEFT SIDE, LEFT EDGE OF FRONTAGE ROAD				51+725.04	51+801.81	76.77	FRONTAGE ROAD	53+559.11	53+804.11	45.00	(RS) 150mm x 1.0m @ 3.0m GAP
01+016.70	01+036.70	20.00	A-19: 100mm UNBROKEN LINE	STATION		LENGTH	REMARKS	51+801.81	01+018.37	15.21	FRONTAGE ROAD TO RT OF A-19	53+756.82	53+801.82	45.00	(LS) 150mm x 1.0m @ 3.0m GAP
01+036.70	01+110.00	73.30 *	A-19: 100mm x 3.0m @ 4.50m GAP	FROM	TO	(m)		01+018.37	51+837.51	15.21	LT OF A-19 TO FRONTAGE ROAD	54+998.53	55+043.53	45.00 *	(RS) 150mm x 1.0m @ 3.0m GAP
01+017.42	01+047.42	30.00	A-20: 100mm UNBROKEN LINE	49+625.00	51+225.88	1600.88	FRONTAGE ROAD	51+837.51	52+375.87	538.36	FRONTAGE ROAD	55+185.78	55+230.78	45.00 *	(LS) 150mm x 1.0m @ 3.0m GAP
01+047.42	01+121.19	73.77 *	A-20: 100mm x 3.0m @ 4.50m GAP	51+225.88	00+959.61	36.70	FRONTAGE ROAD TO RT OF A-18	52+375.87	01+018.44	15.32	FRONTAGE ROAD TO RT OF A-20	55+335.27	55+380.27	45.00 *	(RS) 150mm x 1.0m @ 3.0m GAP
00+785.00	00+949.04	164.04 *	A-21: 100mm x 3.0m @ 4.50m GAP	00+959.61	00+959.61	54.61	RIGHT OF A-18	01+018.44	52+411.50	15.79	LT OF A-20 TO FRONTAGE ROAD	5.0 CHEVRON			
00+949.04	00+979.04	30.00	A-21: 100mm UNBROKEN LINE	00+959.61	00+953.78	48.78	LEFT OF A-18	52+411.50	53+499.10	1057.60	FRONTAGE ROAD	STATION		LENGTH	REMARKS
01+019.91	01+049.91	30.00	A-21: 100mm UNBROKEN LINE	00+953.78	51+275.65	27.33	LT OF A-18 TO FRONTAGE ROAD	53+499.10	53+636.51	77.52	FRONTAGE ROAD	FROM	TO	(m)	
01+049.91	01+120.00	70.09 *	A-21: 100mm x 3.0m @ 4.50m GAP	51+275.65	51+808.26	532.61	FRONTAGE ROAD	53+636.51	01+037.97	32.24	FRONTAGE ROAD TO RT OF A-21	51+076.21	51+097.55	21.34	RIGHT OF MAIN BYPASS
01+080.00	01+160.00	80.00 *	A-22: 100mm x 3.0m @ 4.50m GAP	51+808.26	00+972.77	12.88	FRONTAGE ROAD TO RT OF A-19	01+037.97	53+696.48	24.84	LT OF A-21 TO FRONTAGE ROAD	51+074.55	51+136.14	61.59	RIGHT OF MAIN BYPASS
01+086.54	01+026.54	20.00 *	A-22b: 100mm UNBROKEN LINE	00+972.77	00+972.77	172.77	RIGHT OF A-19	53+696.48	54+938.36	1241.88	FRONTAGE ROAD	51+340.31	51+400.24	59.93	LEFT OF MAIN BYPASS
01+026.54	01+090.00	63.46 *	A-22b: 100mm x 3.0m @ 4.50m GAP	00+972.77	00+967.60	167.60	LEFT OF A-19	54+938.36	55+095.63	97.10	FRONTAGE ROAD	51+400.24	51+400.24	21.34	LEFT OF MAIN BYPASS
2.0 EDGE LINES				00+967.60	51+837.62	22.35	LT OF A-19 TO FRONTAGE ROAD	55+095.63	01+020.40	20.03	FRONTAGE ROAD TO RT OF A-22	51+665.09	51+665.51	21.42	RIGHT OF MAIN BYPASS
2.1 LEFT SIDE, OUTER EDGE OF MAIN BYPASS				51+837.62	53+663.76	1826.14	FRONTAGE ROAD	2.8 RIGHT SIDE, RIGHT EDGE OF FRONTAGE ROAD				51+665.09	51+725.04	58.95	RIGHT OF MAIN BYPASS
STATION		LENGTH	REMARKS	53+663.76	00+956.41	42.76	FRONTAGE ROAD TO RT OF A-21	FROM	TO	LENGTH	REMARKS	51+725.04	51+980.20	60.20	LEFT OF MAIN BYPASS
FROM	TO	(m)		00+956.41	00+956.41	18.22	RIGHT OF A-21	49+625.00	51+201.63	1576.63	FRONTAGE ROAD	51+980.20	51+980.20	19.31	LEFT OF MAIN BYPASS
49+625.00	51+232.09	1607.09	MAIN BYPASS	00+956.41	53+727.94	42.99	LEFT OF A-21	51+201.63	01+046.30	27.33	FRONTAGE ROAD TO RT OF A-18	52+493.63	52+555.15	61.52	LEFT OF MAIN BYPASS
51+232.09	00+980.79	15.76	MAIN BYPASS TO RT OF A-18	53+727.94	55+092.15	1364.21	FRONTAGE ROAD	01+046.30	01+150.00	103.70 *	RIGHT OF A-18	52+555.15	52+555.15	20.87	LEFT OF MAIN BYPASS
00+980.79	00+987.67	19.43	LEFT OF A-18	55+092.15	00+982.39	25.69	FRONTAGE ROAD TO RT OF A-22	01+150.00	01+150.00	110.00 *	LEFT OF A-18	53+499.10	53+522.67	23.57	RIGHT OF MAIN BYPASS
01+047.42	51+340.31	93.24	MAIN BYPASS	00+982.39	54+935.89	190.62	RT OF A-22 TO PAN-PHIL HIGHWAY	01+040.00	51+251.40	36.70	LEFT OF A-18 TO FRONTAGE ROAD	53+522.67	53+558.99	61.63	RIGHT OF MAIN BYPASS
51+340.31	51+803.35	403.11	MAIN BYPASS	2.5 RIGHT SIDE, OUTER EDGE OF MAIN BYPASS				01+251.40	51+801.81	550.41	FRONTAGE ROAD	53+558.99	53+636.51	61.63	LEFT OF MAIN BYPASS
51+803.35	00+986.03	17.62	MAIN BYPASS TO RT OF A-19	FROM	TO	LENGTH	REMARKS	51+801.81	01+033.11	22.84	FRONTAGE ROAD TO RT OF A-19	53+636.51	54+959.48	21.12	RIGHT OF MAIN BYPASS
00+986.03	00+990.29	8.68	LEFT OF A-19	49+625.00	50+960.00	1335.00 *	MAIN BYPASS	01+033.11	01+110.00	76.89 *	RIGHT OF A-19	54+959.48	54+998.53	61.81	RIGHT OF MAIN BYPASS
00+990.29	51+920.00	98.49	MAIN BYPASS	50+960.00	51+076.21	116.21	MAIN BYPASS	01+110.00	01+110.00	74.52 *	LEFT OF A-19	54+998.53	54+998.53	51.91	LEFT OF MAIN BYPASS
51+920.00	52+384.53	404.33	MAIN BYPASS	51+076.21	51+210.00	73.86 *	MAIN BYPASS	01+035.48	51+837.51	24.83	LEFT OF A-19 TO FRONTAGE ROAD	55+098.53	55+098.53	51.45	CENTER OF MAIN BYPASS
52+384.53	52+493.63	98.19	MAIN BYPASS	51+210.00	51+229.57	19.57	MAIN BYPASS	51+837.51	52+034.98	187.47	FRONTAGE ROAD	55+098.53	55+098.53	51.45	CENTER OF MAIN BYPASS
52+493.63	53+673.55	1119.75	MAIN BYPASS	51+229.57	51+256.00	314.66 *	MAIN BYPASS	52+034.98	52+375.87	268.55	FRONTAGE ROAD	55+098.53	55+098.53	51.45	CENTER OF MAIN BYPASS
53+673.55	00+979.04	18.80	MAIN BYPASS TO RT OF A-21	51+256.00	01+032.48	19.55	RIGHT OF A-18	52+375.87	01+033.94	23.54	FRONTAGE ROAD TO RT OF A-20	55+070.27	55+081.54	11.27 *	CENTER OF PAN-PHIL HIGHWAY
00+979.04	00+987.20	28.94	LEFT OF A-21	01+032.48	01+012.19	19.55	RIGHT OF A-18	01+033.94	01+121.19	87.25 *	RIGHT OF A-20	55+340.00	55+355.14	15.14 *	CENTER OF A-22a
53+689.36	53+801.85	112.49	MAIN BYPASS	01+012.19	51+245.34	15.76 *	LT OF A-18 TO MAIN BYPASS	01+121.19	01+121.19	87.25 *	LEFT OF A-20	01+040.00	01+080.00	40.00 *	CENTER OF A-22a
53+801.85	54+939.59	1077.77	MAIN BYPASS	51+245.34	51+665.09	105.09	MAIN BYPASS	01+033.94	52+411.50	23.54	LEFT OF A-20 TO FRONTAGE ROAD	7.0 ARROWS			
54+939.59	55+111.73	113.27	MAIN BYPASS	51+665.09	51+800.04	75.00 *	MAIN BYPASS	52+411.50	53+636.51	1225.01	FRONTAGE ROAD	ARROW TYPE	NUMBER OF ARROWS	LOCATION	
00+974.35	00+990.36	16.01 *	RIGHT OF A-22	51+800.04	51+815.61	15.57	MAIN BYPASS	53+636.51	01+053.71	37.24	FRONTAGE ROAD TO RT OF A-21	A	2	APPROACHING INTERSECTION A-18	
54+935.89	55+131.82	195.93 *	LEFT OF PAN-PHIL HIGHWAY	51+815.61	52+380.00	544.10 *	MAIN BYPASS	01+053.71	01+120.00	66.29 *	RIGHT OF A-21	C	4	APPROACHING INTERSECTION A-18	
55+131.82	00+976.51	68.97 *	RT OF PAN-PHIL HIGHWAY TO LT OF A-22	52+380.00	01+018.37	8.88	RIGHT OF A-19	01+120.00	01+120.00	76.52 *	LEFT OF A-21	C	4	APPROACHING INTERSECTION A-19	
00+976.51	55+139.37	22.74 *	LEFT OF A-22 TO MAIN BYPASS	01+018.37	51+835.90	16.00	LT OF A-19 TO MAIN BYPASS	01+043.48	53+696.48	42.26	LEFT OF A-2				