

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

CABANATUAN BYPASS - CONTRACT PACKAGE I
(INITIAL STAGE)
STA. 100+480.000 TO STA. 109+920.000



December 2002

KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD

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GENERAL

INDEX OF DRAWINGS

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

CABANATUAN BYPASS - PACKAGE I

(INITIAL STAGE)

SHEET NO.	TITLE OF DRAWING	SHEET NO.	TITLE OF DRAWING	SHEET NO.	TITLE OF DRAWING
	GENERAL				
GC-01	INDEX OF DRAWINGS - 1 OF 2	RI-06a	TRAFFIC SIGNS AND PAVEMENT MARKINGS LAYOUT - 2 OF 2	RM-09	LAYOUT PLAN, STA. 101 + 600.000 TO STA. 103 + 000.000
GC-02	INDEX OF DRAWINGS - 2 OF 2	RI-07	TRAFFIC SIGNAL LIGHT LAYOUT	RM-10	LAYOUT PLAN, STA. 103 + 000.000 TO STA. 104 + 400.000
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GC-04	LEGEND AND SYMBOLS	RI-08	PLAN, CROSS-SECTION AND PROFILE	RM-12	LAYOUT PLAN, STA. 105 + 800.000 TO STA. 107 + 200.000
GC-05	ABBREVIATIONS		INTERSECTIONS A-3 (STA 102+662.760)	RM-13	LAYOUT PLAN, STA. 107 + 200.000 TO STA. 108 + 600.000
GC-06	PROJECT ROAD GENERAL ALIGNMENT & FEATURES	RI-09	PLAN, CROSS-SECTION AND PROFILE	RM-14	LAYOUT PLAN, STA. 108 + 600.000 TO STA. 109 + 920.000
GC-07	HORIZONTAL AND VERTICAL CONTROL MONUMENTS - 1 OF 2		INTERSECTIONS A-4 (STA 103+561.695)		
GC-08	HORIZONTAL AND VERTICAL CONTROL MONUMENTS - 2 OF 2	RI-10	PLAN, CROSS-SECTION AND PROFILE	RS-01	ROADWAY STANDARD DRAWINGS AND DETAILS GEOMETRIC DESIGN STANDARD-1 (HOR. ALIGNMENT/CURVE EASEMENTS)
GC-09	LOCATION OF MATERIAL SOURCES		INTERSECTIONS A-5 (STA 104+047.949)	RS-02	GEOMETRIC DESIGN STANDARD-2 (HORIZONTAL AND VERTICAL CURVES)
GC-10	SUMMARY OF QUANTITIES - 1 OF 2	RI-11	PLAN, CROSS-SECTION AND PROFILE	RS-03	GEOMETRIC DESIGN STANDARD-3 (SUPERELEVATION ATTAINMENT)
GC-11	SUMMARY OF QUANTITIES - 2 OF 2		INTERSECTION A-6 (STA 104+802.195)	RS-04	STANDARD PORTLAND CEMENT CONCRETE PAVEMENT DETAILS
	ROADWAY	RI-12	PLAN, CROSS-SECTION AND PROFILE	RS-05	CONCRETE CURB AND GUTTER DETAILS
	GENERAL ROADWAY	RI-13	GEOMETRIC DESIGN LAYOUT	RS-06	CURB CUT RAMP DETAILS (FOR THE PHYSICALLY HANDICAPPED)
RG-01	GENERAL NOTES (HIGHWAY / CIVIL AND DRAINAGE)	RI-14	PAVING AND GRADING PLAN	RS-07	STANDARD KILOMETER POST AND RIGHT-OF-WAY MARKERS
RG-02	ALIGNMENT TECHNICAL DESCRIPTION	RI-15	TRAFFIC SIGNS AND PAVEMENT MARKINGS LAYOUT	RS-08	STANDARD STEEL BEAM GUARDRAIL
RG-03	LOCATION OF INTERSECTIONS / UNDERPASSES		INTERSECTION A-7 (STA 105+313.890)	RS-09	EMBANKMENT PROTECTION WALLS AND MASONRY RETAINING WALLS
RG-04	SCHEDULE OF GUARDRAIL, TRAFFIC SIGNS, GROUTED RIPRAP AND ROADSIDE PLANTINGS	RI-16	PLAN, CROSS-SECTION AND PROFILE	RS-10	SIDE ROAD APPROACHES AND PRIVATE DRIVEWAY ACCESS
RG-05	SCHEDULE OF PAVEMENT MARKINGS	RI-17	GEOMETRIC DESIGN LAYOUT	RS-11	STANDARD ROAD WORK SIGN AND PROJECT SIGN BOARD DETAILS
RG-06	SCHEDULE OF ROAD RIGHT-OF-WAY MARKERS - 1 OF 2	RI-18	PAVING AND GRADING PLAN	RS-12	STANDARD TRAFFIC SIGN
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	PLAN AND PROFILE	RI-20	INTERSECTION A-8 (STA 106+187.318)	RS-14	MOUNTING/SUPPORT FOR ROAD SIGN - TYP. SIGN MOUNTING DETAILS - 1 OF 2
	ALONG BYPASS		PLAN, CROSS-SECTION AND PROFILE	RS-15	MOUNTING/SUPPORT FOR ROAD SIGN - TYP. SIGN MOUNTING DETAILS - 2 OF 2
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RP-02	PLAN AND PROFILE, STA. 100 + 900.000 TO STA. 101 + 600.000		PLAN, CROSS-SECTION AND PROFILE	RS-17	STANDARD PAVEMENT MARKING - 2 OF 2
RP-03	PLAN AND PROFILE, STA. 101 + 600.000 TO STA. 102 + 300.000	RI-22	INTERSECTION A-10 (STA 108+145.875)	RS-18	REFLECTIVE ROAD STUD AND CONCRETE CHATTER BAR AND DETAILS
RP-04	PLAN AND PROFILE, STA. 102 + 300.000 TO STA. 103 + 000.000	RI-23	PLAN, CROSS-SECTION AND PROFILE	RS-19	TRAFFIC SIGNAL POLE TYPE A & FOUNDATION DETAILS
RP-05	PLAN AND PROFILE, STA. 103 + 000.000 TO STA. 103 + 700.000	RI-24	GEOMETRIC DESIGN LAYOUT	RS-20	TRAFFIC SIGNAL POLE TYPE B, C & D
RP-06	PLAN AND PROFILE, STA. 103 + 700.000 TO STA. 104 + 400.000	RI-25	PAVING AND GRADING PLAN	RS-21	TRAFFIC SIGNAL POLE FOUNDATION DETAILS (TYPE B, C & D)
RP-07	PLAN AND PROFILE, STA. 104 + 400.000 TO STA. 105 + 100.000	RI-26	TRAFFIC SIGNS AND PAVEMENT MARKINGS LAYOUT	RS-22	TYPICAL PLANTING LAYOUT - WITH FRONTAGE ROAD
RP-08	PLAN AND PROFILE, STA. 105 + 100.000 TO STA. 105 + 800.000	RI-27	TRAFFIC SIGNAL LIGHT LAYOUT	RS-23	TYPICAL PLANTING LAYOUT - WITHOUT FRONTAGE ROAD
RP-09	PLAN AND PROFILE, STA. 105 + 800.000 TO STA. 106 + 500.000		INTERSECTION A-11 (STA 108+587.375)	RS-24	TYPES OF PLANTING FORMS & OTHER DETAILS
RP-10	PLAN AND PROFILE, STA. 106 + 500.000 TO STA. 107 + 200.000		PLAN, CROSS-SECTION AND PROFILE		
RP-11	PLAN AND PROFILE, STA. 107 + 200.000 TO STA. 107 + 900.000	RI-28	INTERSECTION A-12 (STA 109+293.827)		
RP-12	PLAN AND PROFILE, STA. 107 + 900.000 TO STA. 108 + 600.000		PLAN, CROSS-SECTION AND PROFILE		
RP-13	PLAN AND PROFILE, STA. 108 + 600.000 TO STA. 109 + 300.000		ROADWAY MISCELLANEOUS DRAWINGS		
RP-14	PLAN AND PROFILE, STA. 109 + 300.000 TO STA. 109 + 920.000		TRAFFIC SIGNS AND PAVEMENT MARKINGS LAYOUT		
RP-15	TYPICAL ROADWAY SECTIONS - 1 OF 2	RM-01	LAYOUT PLAN, STA. 100 + 480.000 TO STA. 101 + 600.000	DG-01	DRAINAGE GENERAL DRAINAGE SCHEDULE OF DRAINAGE STRUCTURES (CROSS PIPE & LATERAL)
RP-16	TYPICAL ROADWAY SECTIONS - 2 OF 2	RM-02	LAYOUT PLAN, STA. 101 + 600.000 TO STA. 103 + 000.000	DG-02	SCHEDULE OF SIDE DITCH / QUANTITIES FOR RCBC
	INTERSECTION DETAILS	RM-03	LAYOUT PLAN, STA. 103 + 000.000 TO STA. 104 + 400.000		
	INTERSECTION A-1 (STA 100+854.341)	RM-04	LAYOUT PLAN, STA. 104 + 400.000 TO STA. 105 + 800.000		
RI-01	PLAN, CROSS-SECTION AND PROFILE	RM-05	LAYOUT PLAN, STA. 105 + 800.000 TO STA. 107 + 200.000	DC-01	DRAINAGE CROSS-SECTIONS ALONG BYPASS DRAINAGE CROSS-SECTION, STA. 100 + 740.000 TO STA. 101 + 334.000
RI-02	GEOMETRIC DESIGN LAYOUT - 1 OF 2	RM-06	LAYOUT PLAN, STA. 107 + 200.000 TO STA. 108 + 600.000	DC-02	DRAINAGE CROSS-SECTION, STA. 101 + 453.000 TO STA. 101 + 925.000
RI-03	GEOMETRIC DESIGN LAYOUT - 2 OF 2	RM-07	LAYOUT PLAN, STA. 108 + 600.000 TO STA. 109 + 920.000	DC-03	DRAINAGE CROSS-SECTION, STA. 102 + 165.000 TO STA. 102 + 654.000
RI-04	PAVING AND GRADING PLAN - 1 OF 2		PLANTING, GUARDRAIL AND R.O.W. LAYOUT	DC-04	DRAINAGE CROSS-SECTION, STA. 102 + 666.000 TO STA. 103 + 550.000
RI-05	PAVING AND GRADING PLAN - 2 OF 2		LAYOUT PLAN, STA. 100 + 480.000 TO STA. 101 + 600.000	DC-05	DRAINAGE CROSS-SECTION, STA. 103 + 566.000 TO STA. 103 + 894.000
RI-06	TRAFFIC SIGNS AND PAVEMENT MARKINGS LAYOUT - 1 OF 2		LAYOUT PLAN, STA. 101 + 600.000 TO STA. 103 + 000.000	DC-06	DRAINAGE CROSS-SECTION, STA. 104 + 039.000 TO STA. 104 + 274.000

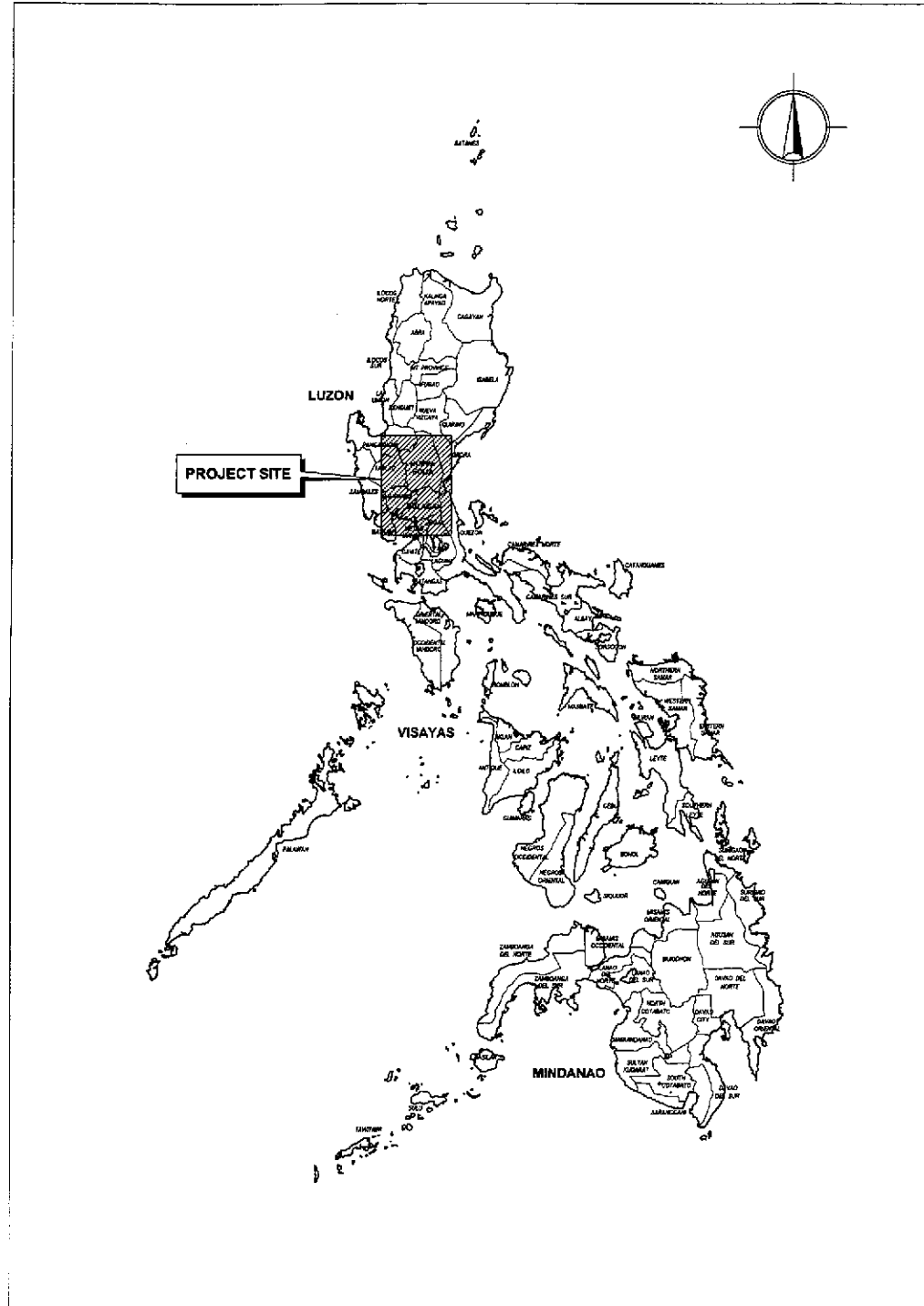
JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DESIGNED	DATE	SIGNATURE	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION :		SCALE :	SHEET CONTENTS :	SHEET NO. :	
	CHECKED	9/27/16	<i>[Signature]</i>		BUREAU OF DESIGN		THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	FULL SIZE A1	INDEX OF DRAWINGS (INITIAL STAGE) Sheet 1 of 2	GC-01
	SUBMITTED	10/15/16	<i>[Signature]</i>		Submitted By:	Reviewed By:	Recommended By:	Approved By:		
			<i>[Signature]</i>	DANILO C. TRAJANO Chief, Highways Division	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES Dir. Director IV	MANUEL M. BONDAN Undersecretary	SIMEON A. DATUMANONG Secretary		

INDEX OF DRAWINGS

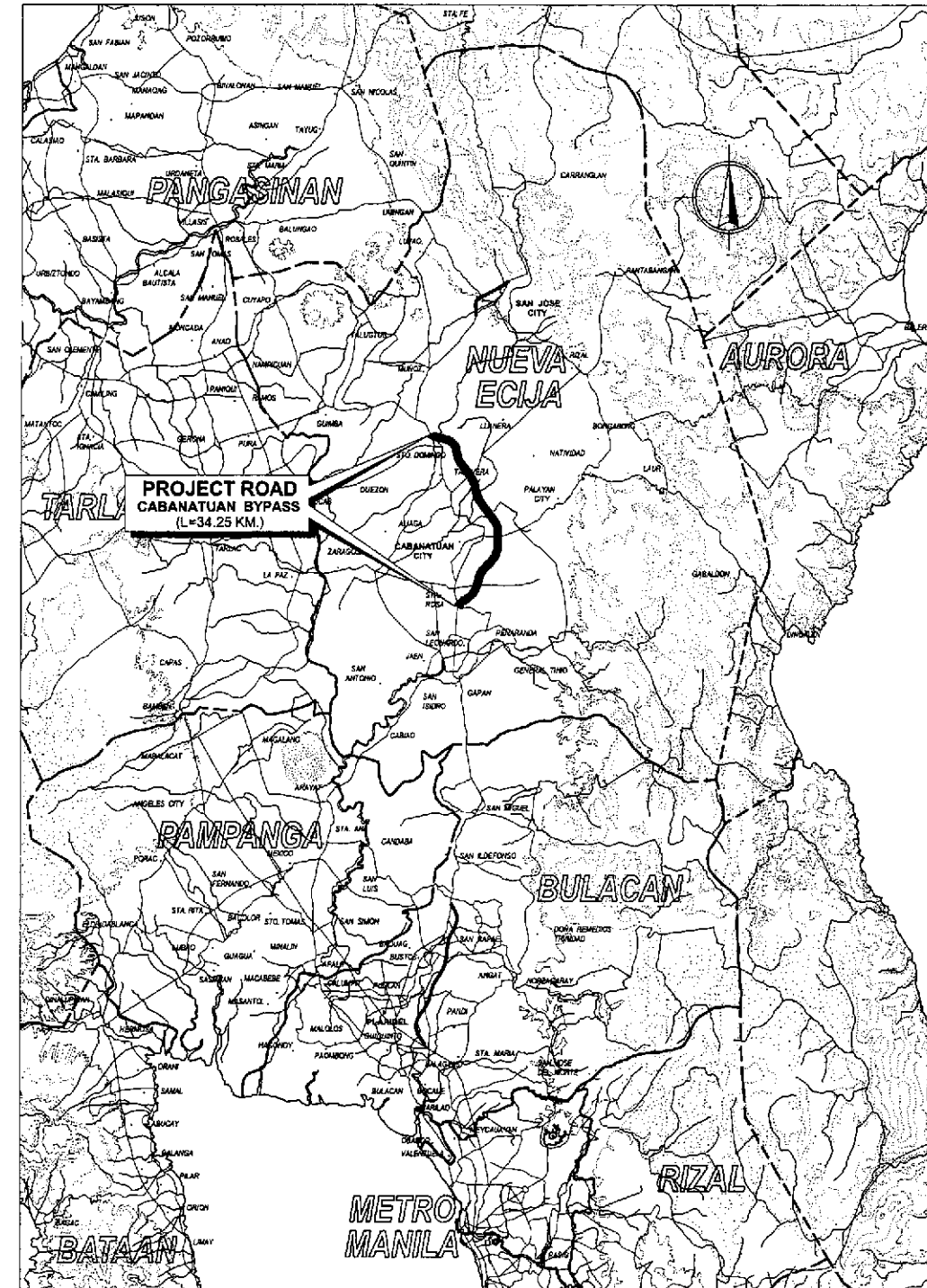
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY CABANATUAN BYPASS - PACKAGE I (INITIAL STAGE)

SHEET NO.	TITLE OF DRAWING	SHEET NO.	TITLE OF DRAWING	SHEET NO.	TITLE OF DRAWING
DC-13	DRAINAGE CROSS-SECTION, STA. 108 + 134.000 TO STA. 108 + 500.000	B1-08	ABUTMENT SHEAR KEY & RISER DETAILS (SAME AS B2-09)	FA-09	ENGR'S FIELD OFFICE - FRONT & RIGHT SIDE ELEVATION OF STEEL STUD FRAMES AND SCHEMATIC DIAGRAMS
DC-14	DRAINAGE CROSS-SECTION, STA. 108 + 582.000 TO STA. 108 + 940.000	B1-09	PIER P1 BAR ARRANGEMENT	FA-10	ENGR'S LIVING QTRS - REAR & LEFT SIDE ELEVATION OF STEEL STUD FRAMES AND SCHEMATIC DIAGRAMS
DC-15	DRAINAGE CROSS-SECTION, STA. 109 + 120.000 TO STA. 109 + 534.000	B1-10	PIER SHEAR KEY & RISER DETAILS (SAME AS B2-11)	FA-11	ENGR'S FIELD OFFICE & LIVING QUARTERS - DETAIL OF CONNECTIONS, DETAILS 1 TO 15
DC-16	DRAINAGE CROSS-SECTION, STA. 109 + 574.000 TO STA. 109 + 912.000	B1-11	ABUTMENT PROTECTION AND SIDE DRAIN DETAILS	FA-12	ROOF FRAMING PLAN, SCHEMATIC DIAGRAM, PURLIN CONNECTION AND CROSS BRACING CONNECTION
DC-17	ALONG CROSSROAD DRAINAGE CROSS-SECTION, INTERSECTION A-1, A-4, A-9 & A-10	B2-01	BRIDGE NO. 2 (STA 104+998.328 TO 105+062.188) GEN. PLAN, ELEVATION & SECTIONS	FE-01	ELECTRICAL ENGR'S FIELD OFFICE / LABORATORY - LIGHTING LAYOUT, POWER LAYOUT & ELECTRICAL SYMBOLS AND GENERAL NOTES
DS-01	DRAINAGE STANDARD DRAWINGS AND DETAILS STANDARD DETAILS OF REINFORCED CONCRETE BOX CULVERT (RCBC)	B2-02	DECK FRAMING PLAN AND SECTIONS	FE-02	ENGR'S LIVING QTRS - LIGHTING LAYOUT, POWER LAYOUT & ELECTRICAL SYMBOLS AND GENERAL NOTES
DS-02	STANDARD DETAILS OF REINFORCED CONCRETE BOX CULVERT (RCBC) BARRELS	B2-03	AASHTO TYPE IV GIRDER (EXTERIOR SPAN)	FE-03	ENGR'S FIELD OFFICE & LIVING QUARTERS - SCHEDULE OF LOADS AND COMPUTATIONS & ELECTRICAL RISER DIAGRAM
DS-03	STANDARD DETAILS OF RCBC WINGWALLS	B2-04	AASHTO TYPE IV GIRDER (INTERIOR SPAN)	FP-01	PLUMBING ENGR'S FIELD OFFICE & LIVING QUARTERS - SEWER AND WATER LINE LAYOUT AND ISOMETRIC DIAGRAM
DS-04	STANDARD LOW DEPTH TYPE BOX CULVERT - 1 OF 2	B2-05	CONCRETE POURING SEQUENCE AND DIAPHRAGM DETAILS	FP-02	ENGR'S FIELD OFFICE & LIVING QUARTERS - SEPTIC TANK DETAILS
DS-05	STANDARD LOW DEPTH TYPE BOX CULVERT - 2 OF 2	B2-06	ABUTMENT A1 & A2 MAINWALL REINFORCEMENT DETAILS	FX-01	EXTERNAL ENGR'S FIELD OFFICE & LIVING QUARTERS - PLOT PLAN, ELEVATION OF FENCE & GATE AND TYPICAL FOUNDATION DETAIL
DS-06	STD RCPC, METHOD OF PIPE INSTALL. & TYP. BEDDING FOR CONDUITS	B2-07	ABUTMENT A1 & A2 WINGWALL REINFORCEMENT DETAILS		
DS-07	STANDARD REINFORCED CONCRETE HEADWALL FOR RCPC	B2-08	APPROACH SLAB PLAN, SECTIONS & DETAILS (SAME AS B1-07)		
DS-08	STANDARD DRAINAGE DITCHES	B2-09	ABUTMENT SHEAR KEY & RISER DETAILS (SAME AS B1-08)		
DS-09	STANDARD COMBINATION CURB INLET MANHOLE	B2-10	PIER P1 & P2 BAR ARRANGEMENT		
DS-10	SPECIAL JUNCTION BOX MANHOLE	B2-11	PIER SHEAR KEY & RISER DETAILS (SAME AS B1-10)		
DS-11	STANDARD REINFORCED CONCRETE CATCH BASIN FOR RCPC	B2-12	ABUTMENT PROTECTION AND SIDE DRAIN DETAILS		
DS-12	TYPICAL DRAINAGE CROSS-SECTIONS	BS-01	STANDARD DRAWINGS TYPICAL BEARING PAD, EXP. JOINT, BEARING SLEEVE & ANCHOR BAR		
DS-13	STANDARD MAINTENANCE MARKERS	BS-02	TYPICAL SIDEWALK, RAILING AND DRAIN DETAILS		
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UP-02	GEN. PLAN, ELEV. & SECTION, B-1 UNDERPASS (STA. 101+980.000)	ES-01	ELECTRICAL NOTES & LEGENDS, SCHEMATIC CONTROL DIAG. & DUCT SECTION		
UP-03	GEN. PLAN, ELEV. & SECTION, B-2 UNDERPASS (STA. 103+040.000)	ES-02	SERVICE POLE DETAILS		
UP-04	GEN. PLAN, ELEV. & SECTION, B-3 UNDERPASS (STA. 105+760.000)	ES-03	STREET LIGHT POLE DETAILS		
UP-05	GEN. PLAN, ELEV. & SECTION, B-4 UNDERPASS (STA. 107+157.432)	EI-01	ROADWAY LIGHTING LAYOUT FOR INTERSECTION ROADWAY LIGHTING AND LOAD SCHEDULE, INTERSECTION A-1 (STA 100+854.341)	OE-01	OTHERS ELECTRICAL UTILITY RELOCATION REFERENCE LAYOUT PLAN LAYOUT PLAN, STA. 100 + 480.000 TO STA. 101 + 600.000
UP-06	GEN. PLAN, ELEV. & SECTION, B-5 UNDERPASS (STA. 107+640.000)	EI-02	ROADWAY LIGHTING AND LOAD SCHEDULE, INTERSECTION A-10 (STA 108+145.875)	OE-02	LAYOUT PLAN, STA. 101 + 600.000 TO STA. 103 + 000.000
UP-07	CONCRETE COVER DETAIL (3.0m) WITH BOX SUPPORT			OE-03	LAYOUT PLAN, STA. 103 + 000.000 TO STA. 104 + 400.000
UP-08	CONCRETE COVER DETAIL (6.0m) WITH BOX SUPPORT			OE-04	LAYOUT PLAN, STA. 104 + 400.000 TO STA. 105 + 800.000
UP-09	BOX CULVERT WINGWALL DETAIL			OE-05	LAYOUT PLAN, STA. 105 + 800.000 TO STA. 107 + 200.000
UP-10	SPECIAL CULVERT BARREL DETAIL			OE-06	LAYOUT PLAN, STA. 107 + 200.000 TO STA. 108 + 600.000
UP-11	BOX CULVERT BARREL BAR SCHEDULE			OE-07	LAYOUT PLAN, STA. 108 + 600.000 TO STA. 109 + 920.000
UP-12	BOX CULVERT APPROACH SLAB DETAIL			OC-01	CONE PENETRATION TEST (CPT) PROFILE, STA. 100 + 734.000 TO STA. 105 + 334.000
BG-01	BRIDGE GENERAL BRIDGE LOCATION MAP	FA-01	ENGINEER'S FIELD OFFICE & LIVING QUARTERS ARCHITECTURAL PERSPECTIVE AND TABLE OF CONTENTS	OC-02	PROFILE, STA. 105 + 534.000 TO STA. 109 + 884.000
BG-02	GENERAL NOTES FOR BRIDGES - 1 OF 2	FA-02	ENGR'S FIELD OFFICE - FLOOR PLAN, ELEVATIONS, CROSS-SECTIONS AND REFLECTED CEILING PLAN		
BG-03	GENERAL NOTES FOR BRIDGES - 2 OF 2	FA-03	ENGR'S LIVING QTRS - FLOOR PLAN, ELEVATIONS, CROSS-SECTIONS AND REFLECTED CEILING PLAN		
BG-04	SUMMARY OF QUANTITIES FOR BRIDGE NO. 1 & 2	FA-04	ENGR'S FIELD OFFICE / LABORATORY - ROOF PLAN, CROSS-SECTION AND SCHEDULE OF DOORS & WINDOWS		
B1-01	BRIDGE NO. 1 (STA 102+925.552 TO STA 102+976.812) GEN. PLAN, ELEVATION & SECTIONS	FA-05	ENGR'S LIVING QUARTERS - ROOF PLAN, CROSS-SECTION AND SCHEDULE OF DOORS & WINDOWS		
B1-02	DECK FRAMING PLAN AND SECTIONS	FA-06	ENGR'S FIELD OFFICE & LIVING QUARTERS - FOUNDATION PLAN, R.C. RAMP DETAIL, DETAIL OF F-1, P-1 WF1 & DESIGN CRITERIA		
B1-03	AASHTO TYPE IV GIRDER	FA-07	ENGR'S FIELD OFFICE / LABORATORY - FRONT & RIGHT SIDE ELEVATION OF STEEL STUD FRAMES AND SCHEMATIC DIAGRAMS		
B1-04	CONCRETE POURING SEQUENCE AND DIAPHRAGM DETAILS	FA-08	ENGR'S LIVING QTRS - REAR & LEFT SIDE ELEVATION OF STEEL STUD FRAMES AND SCHEMATIC DIAGRAMS		
B1-05	ABUTMENT A1 & A2 MAINWALL REINFORCEMENT DETAILS				
B1-06	ABUTMENT A1 & A2 WINGWALL REINFORCEMENT DETAILS				
B1-07	APPROACH SLAB PLAN, SECTIONS & DETAILS (SAME B2-08)				

	DESIGNED	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)	SCALE : FULL SIZE A1	SHEET CONTENTS : INDEX OF DRAWINGS (INITIAL STAGE) Sheet 2 of 2	SHEET NO. : GC-02
	CHECKED	9/27/02			BUREAU OF DESIGN	Submitted By:	Reviewed By:	Recommended By:	Approved By:				
	SUBMITTED	10/15/02			OFFICE OF THE SECRETARY	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONDAN Undersecretary				



2 KEY MAP
GC-03 NOT TO SCALE



1 VICINITY MAP
GC-03 NOT TO SCALE

	DESIGNED	DATE	SIGNATURE	<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	PROJECT AND LOCATION :			SCALE :	SHEET CONTENTS :	SHEET NO. :	
	CHECKED	10/15/02	S. ROSE		<p>BUREAU OF DESIGN</p> <p>Submitted By: DANILLO C. TRAJANO Project Director</p> <p>Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division</p> <p>Recommended By: GILBERTO S. REYES DIC, Director IV</p> <p>Office of the Secretary</p> <p>Recommended By: MANUEL M. BONDAN Undersecretary</p> <p>Approved By: SIMEON A. DATUMANONG Secretary</p>	<p>THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)</p>			FULL SIZE A1	KEY AND VICINITY MAP	GC-03
	SUBMITTED	10/16/02	M. YACHIYO		<p>CABANATUAN BYPASS - CONTRACT PACKAGE I</p>						

LEGEND AND SYMBOLS



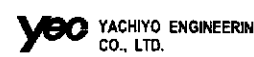

EXISTING FEATURES	
ROAD	
CONTOUR	
ORIGINAL GROUND	
CONCRETE FENCE	
BARBED WIRE FENCE	
HOUSE	
TREES	
BRIDGE	
SINGLE PIPE CULVERT	
DOUBLE PIPE CULVERT	
BOX CULVERT	
DITCH LINE/ IRRIGATION LINE	
IRRIGATION LINE	
RIVER/CREEK	
ELECTRIC POST	
KILOMETER POST	
TRAVERSE STATION POINT	
BENCHMARK	
FISH POND	
NATIONAL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

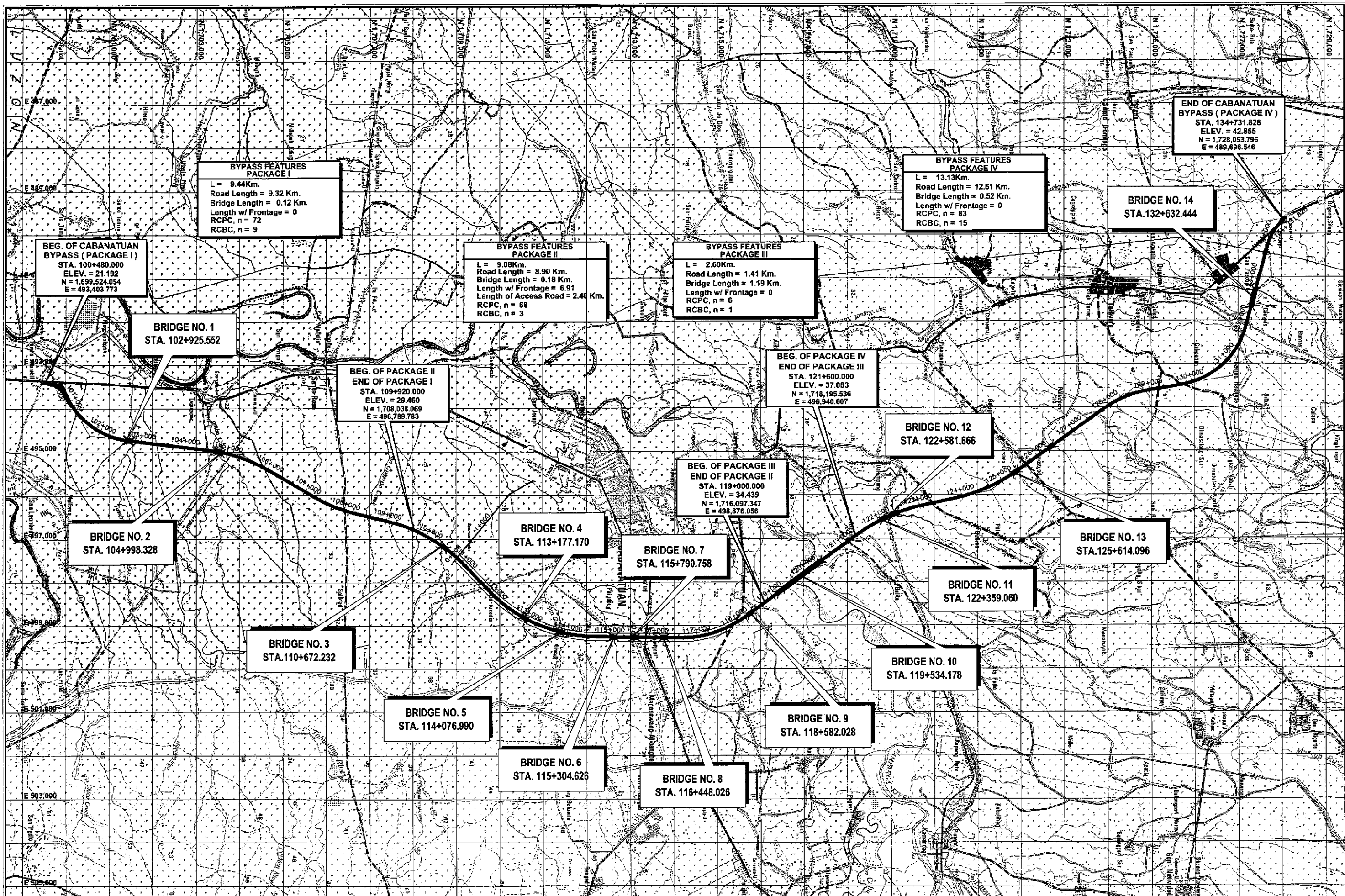
NEW DESIGN FEATURES	
PROJECT ROAD	
SERVICE OR FRONTAGE ROAD ALONG BYPASS	
CONTOUR	
RIGHT-OF-WAY LIMIT	
POINT OF INTERSECTION	
POINT OF INTERSECTION NO.	
☉ OF PROJECT ROAD	
FINISHED GRADE ON PROFILE	
BRIDGE	
SINGLE RC PIPE CULVERT	
DOUBLE RC PIPE CULVERT	
BOX CULVERT	
EARTH DITCH FLOW	
DIRECTION OF FLOW	
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	

<p>JAPAN INTERNATIONAL COOPERATION AGENCY</p> <p> KATAHIRA & ENGINEERS INTERNATIONAL</p> <p> YEO YACHIYO ENGINEERING CO., LTD.</p>	DESIGNED: 9/27/02 CHECKED: 10/15/02 SUBMITTED: 10/16/02	DATE: 9/27/02 SIGNATURE: J. ACACIO S. GILBERT M. BONDAN	<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	BUREAU OF DESIGN Submitted By: DANILO C. TRAJANO Project Director Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division Recommended By: GILBERTO S. REYES OIC, Director IV Office of the Secretary Recommended By: MANUEL M. BONDAN 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 (Paridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE I	SCALE : NOT TO SCALE FULL SIZE A1	SHEET CONTENTS : LEGEND AND SYMBOLS	SHEET NO. : GC-04
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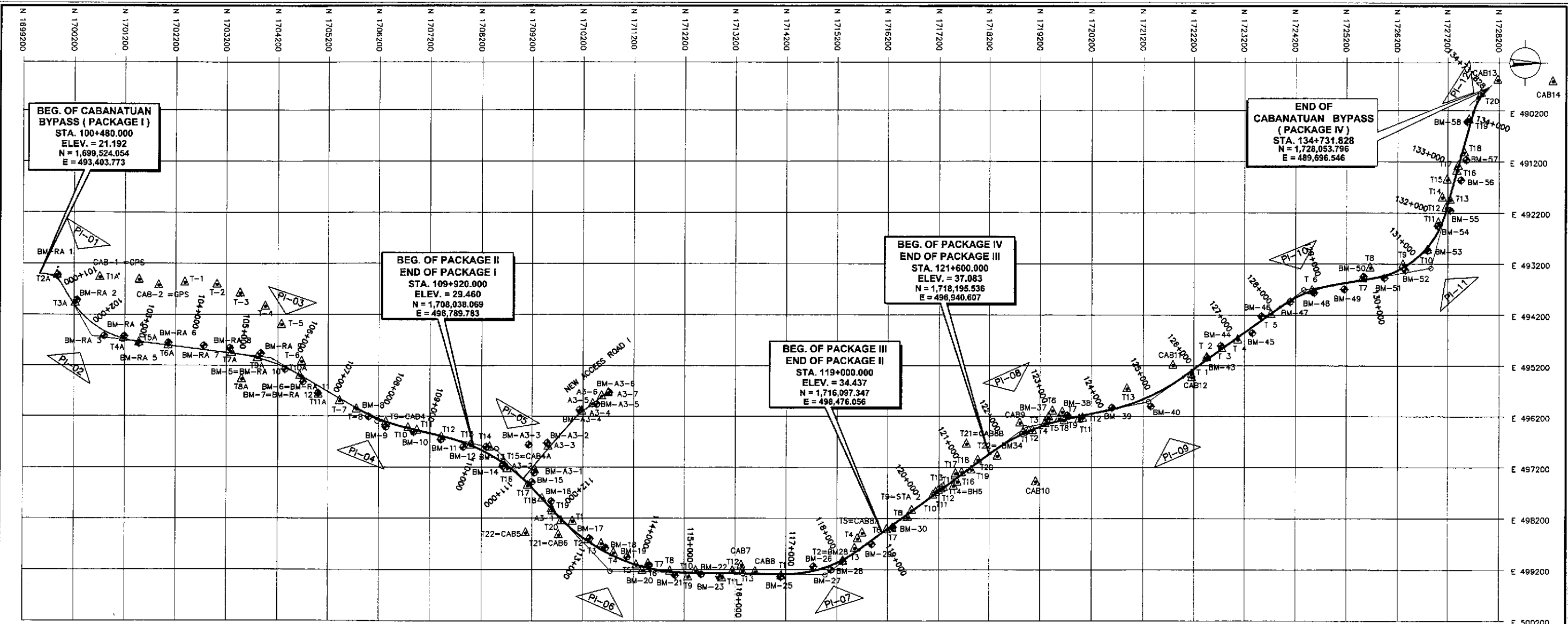
ABBREVIATIONS

A	PARAMETER (CLOTHOID)	DIST.	DISTANCE	Lo	SUPERELEVATION RUN-OFF	NIC	NOT INCLUDED IN CONTRACT
ABAN	ABANDON	DMV.	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 ²	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	Ts	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 ³	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	⊕	BASELINE
C & G	CURB AND GUTTER	IRRIG.	IRRIGATION	RCBG	REINFORCED CONCRETE BOX GIRDER	⊖	CENTERLINE
CULV.	CULVERT	JT.	JOINT	RCDG	REINFORCED CONCRETE DECK GIRDER	∞	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	∅	DIAMETER
DEPT.	DEPARTMENT	FIX	FIX BEARING	REINF.	REINFORCED	⊘	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		

 JAPAN INTERNATIONAL COOPERATION AGENCY  KATAHIRA & ENGINEERS INTERNATIONAL  YACHIO ENGINEERING CO., LTD.	DESIGNED	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)	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	9/21/02	<i>[Signature]</i>	BUREAU OF DESIGN Submitted By: DANILLO C. TRAJANO Reviewed By: JOSEFINA M. ALAGAR Recommended By: GILBERTO S. REYES (See cover sheet for Signatures/Approvals) Office of the Secretary Approved By: MANUEL M. BONDAN (See cover sheet for Signatures/Approvals) SIMEON A. DATUMANONG Secretary	CABANATUAN BYPASS - CONTRACT PACKAGE I	NOT TO SCALE	ABBREVIATIONS	GC-05
	SUBMITTED	10/16/02	<i>[Signature]</i>	Project Director Chief, Highways Division OIC, Director IV Undersecretary		FULL SIZE A1		



	DESIGNED	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/15/02	<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)	1:40,000	PROJECT ROAD GENERAL ALIGNMENT / FEATURES	GC-06
	SUBMITTED	10/16/02	<i>[Signature]</i>	Submitted By:	Reviewed By:	Recommended By:	Approved By:	FULL SIZE A1			
				DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONJAN Undersecretary	SIMEON A. DATUMANONG Secretary	CABANATUAN BYPASS - CONTRACT PACKAGE I		



POLYGON POINT	COORDINATES	ELEV.	REMARKS	
	NORTHING	EASTING		
CAB-1=GPS	1,701,482.713	493,518.251	23.777	Located in Brgy. Tagumpuy, San Leonardo, Nueva Ecija. It is drilled on the left side of the Tambo Bridge's first approach, about 0.05 cm. above the bridge's concrete sidewalk.
CAB-2=GPS	1,701,869.365	493,628.461	22.525	Located in Brgy. Tagumpuy, San Leonardo, Nueva Ecija. It is embedded in an open space 80 m. from highway, 15 m. from dirt road going to an orchard farm, about 40cm x 40cm x 0.05cm above the ground.
CAB-3=GPS	1,706,316.913	495,963.410	25.984	Located in Brgy. Soledad, Sta. Rosa, Nueva Ecija. It is embedded on a 40cm x 40cm conc. mass. beside an irrigation canal, 5m from rd. CL & 3 km. from the highway interchange of Fort Maguway & Cabanatuan City.
T9=CAB4	1,706,340.784	496,322.453	26.299	Located in Brgy. Soledad, Sta. Rosa, Nueva Ecija. It is embedded on a 40 cm x 40 cm conc. mass. on the left side of the rd. going to Fort Maguway & about 370 m. from GPS Sta. CAB-3, about 4 m from rd. CL.
T15=CAB4A	1,708,634.191	497,109.819	27.917	Located in Brgy. Lagos, Sta. Rosa, Nueva Ecija on Diaz property. From the highway northbound take a right turn on Mabini extension, an Mercury Drugstore going to Brgy. Sta. Arcadio. 4.9 km. from the highway take a right turn on the intersection of the dirt road after the one-way bridge with a water pipe rd. It is 1.4 km. from the intersection beside an irrigation canal on the left side.
T21=CAB5	1,709,079.189	498,487.150	31.478	Located in Brgy. Sta. Arcadio, Cabanatuan, Nueva Ecija. From the highway northbound take a right turn on Mabini extension, Mercury Drugstore going to Brgy. Sta. Arcadio. 3.9 km. from the intersection Highway, take a left turn to a dirt road. It is embedded on the right side of the road 200 m. from the Mabini extension road centerline.
T22=CAB6	1,709,731.929	496,528.334	31.285	Located in Brgy. Sta. Arcadio, Cabanatuan, Nueva Ecija. From the highway northbound take a right turn on Mabini extension, Mercury Drugstore going to Brgy. Sta. Arcadio. 3.2 km. from the intersection Highway, take a left turn to a dirt road. It is embedded on the left side of the road near an irrigation dike 500 m. from the Mabini extension road centerline.
CAB7	1,713,329.137	499,115.491	33.348	Located in Brgy. San Isidro, Cabanatuan, Nueva Ecija. It is embedded on the sidewalk of the DPWH 3rd Engineering District driveway, about 20 m. from the centerline of the road.
CAB8	1,713,803.208	499,247.649	33.467	Located in Urban Poor Housing Project, San Isidro, Cabanatuan, Nueva Ecija. going to Palayan City take a left turn to the dirt road beside the DPWH compound leading to the site of the housing project, then turn right. It is embedded on the right side of the dirt road near the electric post 400 m. from the centerline of the highway.
T5=CAB8A	1,715,705.803	498,487.077	34.234	Located in Brgy. Raja, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharika highway to a road before the Valdefuente bridge. 3 km. from the highway, turn left to a bridge.
T21=CAB8B	1,717,745.823	496,746.648	34.436	Location in Brgy. Sapang, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a rt. turn on Maharika highway after the Valdefuente br. to road going to Brgy. Sapang. It is emb. on the left side of the road.
CAB9	1,718,805.446	498,330.000	37.709	Located in Brgy. Bujiran, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharika highway after the Valdefuente bridge to a road going to Brgy. Dalampang. 2.5 km. from the highway taking the left fork turn right at the intersection to a dirt road leading to Brgy. Balite. It is embedded near an irrigation dike 800 m. from the bridge.
CAB10	1,719,118.959	497,481.612	37.713	Located in Brgy. Dalampang, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharika highway after the Valdefuente bridge to a road going to Brgy. Dalampang. 2.5 km. from the highway taking the left fork turn right at the intersection to a dirt road leading to Brgy. Balite. It is embedded near an irrigation dike on the right side. 1.5 km. from the bridge.
CAB11	1,721,785.245	495,194.632	39.489	Located in Homestead I, Talavera, Nueva Ecija. Taking the Maharika highway to Muñoz, turn right on Pinagpanan intersection to the highway going to Pantabangan. 4.3 km. from the intersection turn right to a dirt road. It is embedded on the right beside an irrigation canal 70 m. from the centerline of the highway.
CAB12	1,722,164.049	495,433.809	37.948	Located in Homestead I, Talavera, Nueva Ecija. Taking the Maharika highway to Muñoz, turn right on Pinagpanan intersection to the highway going to Pantabangan. 4.8 km. from the intersection on the right side 50 m. from the centerline of the highway.
CAB13	1,718,173.536	489,601.897	44.230	Located in Brgy. San Pascual, Talavera, Nueva Ecija. It is embedded on the right side of the bridge 2.3 km. from San Pascual market going to San Jose.
CAB14	1,729,259.352	489,626.465	43.827	Located in Brgy. Bagong Silang, Talavera, Nueva Ecija. Take a right turn 3.4 km. from San Pascual market going to San Jose to a dirt road. It is embedded on a nice paddy dike on the right side of the road 500 m. from the highway.

POLYGON POINT	COORDINATES	ELEV.	
	NORTHING	EASTING	
T-1	1,702,384.687	493,573.021	24.120
T-2	1,703,019.006	493,611.093	25.138
T-3	1,703,468.521	493,784.646	25.158
T-4	1,703,958.942	494,041.357	23.064
T-5	1,704,278.497	494,398.825	24.467
T-6	1,704,678.169	495,126.982	24.858
T-7	1,705,433.273	495,901.932	26.581
T-8	1,705,767.749	496,069.357	25.809
T10	1,706,773.219	496,434.404	26.138
T11	1,706,952.708	496,479.420	26.405
T12	1,707,425.044	496,615.719	27.154
T13	1,707,989.215	496,773.054	26.251
T14	1,708,364.430	496,806.236	26.328
T16	1,708,712.024	497,235.901	26.873
T17	1,709,113.730	497,562.109	28.882
T18	1,709,405.603	497,811.664	28.874
T19	1,709,594.615	498,010.441	29.779
T20	1,709,784.151	498,252.284	30.803
T1	1,710,005.112	498,263.122	30.580
T2	1,710,312.116	498,622.485	31.125
T3	1,710,565.610	498,702.707	30.008
T4	1,710,812.097	498,879.255	31.231
T5	1,711,258.554	499,111.168	31.156
T6	1,711,382.787	499,215.210	30.671
T7	1,711,497.776	499,088.057	31.048
T8	1,711,921.739	499,233.113	32.252

POLYGON POINT	COORDINATES	ELEV.	
	NORTHING	EASTING	
T9	1,712,273.907	499,348.863	32.889
T10	1,712,426.453	499,228.114	31.587
T11	1,712,945.026	499,366.723	31.508
T12	1,713,152.194	499,229.016	32.291
T13	1,713,350.716	499,234.593	32.273
T1	1,714,114.133	499,323.114	34.149
T2=BM28	1,715,321.664	499,037.069	34.467
T3	1,715,596.979	498,787.732	33.774
T4	1,716,613.303	498,602.331	33.848
T6	1,716,185.824	498,423.235	32.543
T7	1,716,296.557	498,393.392	32.834
T8	1,716,587.270	498,183.258	31.879
T9=STA 2	1,716,668.328	498,048.549	31.202
T10	1,717,083.859	497,743.553	30.319
T11	1,717,142.345	497,587.576	29.731
T12	1,717,194.108	497,557.055	29.770
T13	1,717,249.207	497,518.454	29.818
T14=BM6	1,717,292.610	497,589.139	29.351
T15	1,717,492.542	497,567.432	31.652
T16	1,717,566.385	497,485.342	31.862
T17	1,717,532.758	497,327.722	31.782
T18	1,717,656.358	497,304.011	32.472
T19	1,717,849.166	497,254.812	32.957
T20	1,717,977.354	497,061.014	35.155
T22=BM34	1,718,360.331	496,980.373	35.518
T1	1,718,871.960	496,508.328	38.125

POLYGON POINT	COORDINATES	ELEV.	
	NORTHING	EASTING	
T2	1,718,982.811	496,484.723	37.303
T3	1,719,064.242	496,476.454	38.039
T4	1,719,293.514	496,344.148	37.628
T5	1,719,371.611	496,212.892	36.581
T6	1,719,441.686	496,095.508	36.377
T7	1,719,634.286	496,119.715	36.135
T8	1,719,588.718	496,246.851	36.718
T9	1,719,673.577	496,284.730	36.732
T10	1,719,767.867	496,199.702	36.226
T11	1,718,963.319	496,252.503	36.847
T12	1,720,028.618	496,233.636	37.259
T13	1,720,886.498	495,657.578	35.285
T1	1,722,152.496	495,368.651	40.547
T 2	1,722,462.939	495,042.525	38.470
T 3	1,722,757.770	494,860.054	37.788
T 4	1,723,072.308	494,693.817	39.520
T 5	1,723,722.544	494,191.278	39.407
T 6	1,724,530.996	493,726.864	41.810
T 7	1,725,515.859	493,486.477	43.192
T 8	1,725,664.133	493,279.741	41.739
T 9	1,726,312.622	493,216.325	42.257
T10	1,726,804.440	492,931.296	42.526
T11	1,727,019.693	492,394.752	43.547
T12	1,727,173.457	492,109.850	44.051
T13	1,727,252.658	491,953.012	45.106
T14	1,727,099.761	491,908.990	44.528

POLYGON POINT	COORDINATES	ELEV.	
	NORTHING	EASTING	
T15	1,727,194.658	491,558.623	42.169
T16	1,727,379.509	491,385.263	41.621
T17	1,727,406.036	491,287.074	44.865
T18	1,727,520.276	491,028.906	44.649
T19	1,727,612.787	490,382.069	43.759
T20	1,717,856.316	489,865.741	42.999
T1A	1,700,708.584	493,470.328	21.763
T2A	1,699,872.437	493,429.951	21.248
T3A	1,700,225.955	493,971.425	21.778
T4A	1,701,172.767	494,669.142	22.334
T5A	1,701,480.491	494,751.668	21.417
T6A	1,702,058.314	494,809.178	23.519
T7A	1,703,307.889	494,952.400	23.684
T8A	1,703,499.259	495,470.561	23.820
T9A	1,703,804.341	495,051.975	24.100
T10A	1,704,643.472	495,403.742	25.612
T11A	1,705,012.234	495,771.069	26.653
A3-1	1,709,804.105	498,057.325	30.283
A3-2	1,709,258.422	497,255.095	27.497
A3-3	1,709,521.785	496,792.013	27.996
A3-4	1,710,182.293	496,102.911	26.914
A3-5	1,710,393.491	495,958.847	26.810
A3-6	1,710,571.283	495,803.951	27.141
A3-7	1,710,701.618	495,743.236	27.061

	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :	
	DESIGNED	1/12/02		BUREAU OF DESIGN			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Paridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE I	1:40,000 FULL SIZE A1	HORIZONTAL AND VERTICAL CONTROL MONUMENTS Sheet 1 of 2	GC-07
	CHECKED	10/15/02		Submitted By:	Reviewed By:	OFFICE OF THE SECRETARY				
SUBMITTED	10/16/02		DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highway Division	GILBERTO S. REYES DIC, Director IV	Recommended By:				

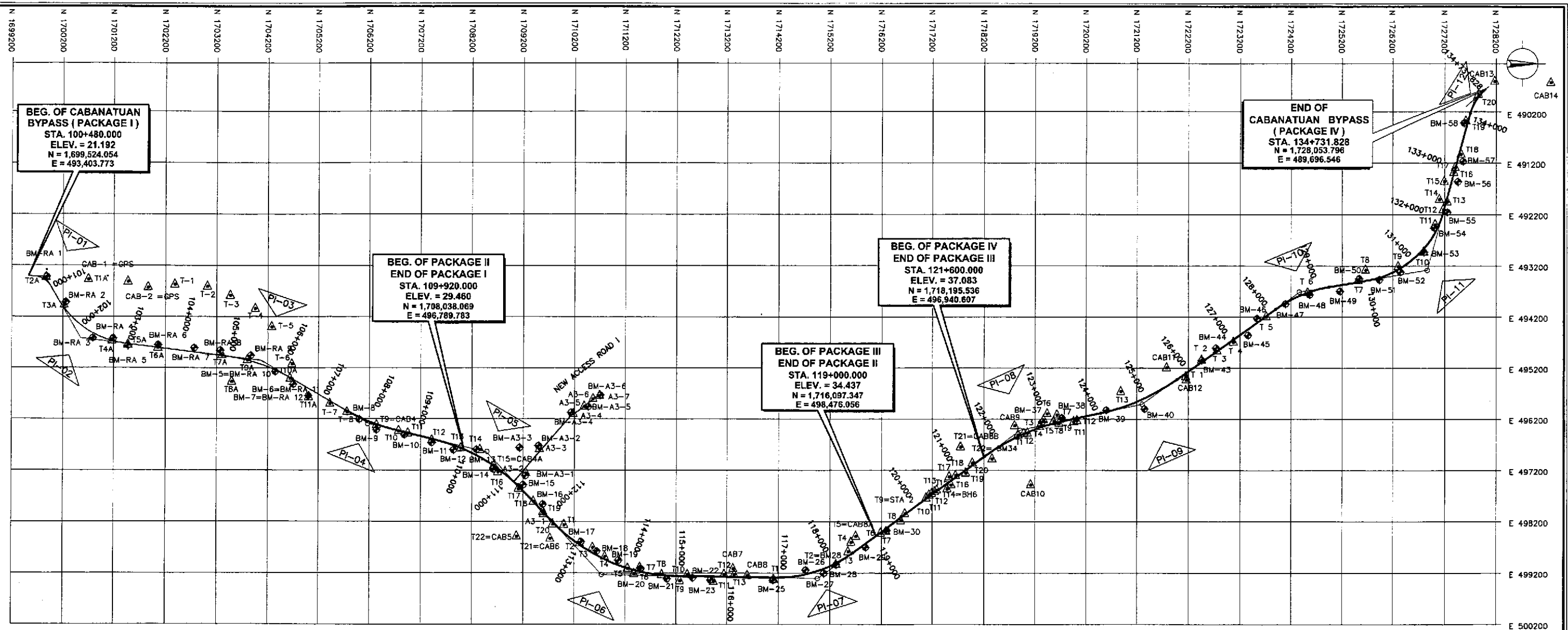


TABLE OF HORIZONTAL AND VERTICAL CONTROL			
POLYGON POINT	COORDINATES	ELEV.	REMARKS
	NORTHING EASTING		
BM-RA 1	1,699,880.470 493,418.310	21.773	It is located on the left side of the national highway going north at the beginning of the bypass re-alignment under an acacia tree near the steel fence corner of a building in San Leonardo.
BM-RA 2	1,700,254.842 493,913.436	21.832	It is located on the left side of the road alignment placed on the side of a road (dirt) 1.50 m. from its centerline and approximately 3 m. away from the top bank of an irrigation canal beside an acacia tree.
BM-RA 3	1,700,792.820 494,617.824	22.451	It is located on the right side of the bypass alignment placed on top of a rice paddy intersection in the middle of a ricefield.
BM-RA 4	1,701,192.044 494,624.849	22.845	It is located on the left side of the alignment placed on the top bank of a fishpond underneath two acacia trees in Brgy. Tagumpay, San Leonardo.
BM-RA 5	1,701,481.927 494,768.231	21.587	It is located on the left side of the alignment placed in the middle of a ricefield beside a nipa hut in Brgy. Tagumpay, San Leonardo.
BM-RA 6	1,702,062.462 494,751.855	22.910	It is located on the left side of the alignment placed on the side of a road 2 m. from its centerline beside an electric post in Brgy. Tagumpay, San Leonardo.
BM-RA 7	1,702,761.108 494,810.381	22.874	It is located on the right side of the road alignment placed on the top bank of a creek 3.50 m. from its centerline and under a durian tree in Brgy. Tagumpay, San Leonardo.
BM-RA 8	1,703,271.267 494,855.750	23.741	It is located on the left side of the alignment placed on the side of a road (gravel) 2 m. away from the centerline and 4 m. from the top bank of an irrigation canal in Brgy. Tagumpay, Sta. Rosa.
BM-RA 9	1,703,867.668 494,960.590	23.977	It is located on the left side of the alignment placed on the side of a road 1.50 m. away from the centerline.
BM-5	1,704,582.828 495,238.110	25.505	It is located on the left side of the alignment placed on the side of a dirt road 1.50 m. away from its centerline and 80 cm. from the top of an irrigation canal.
BM-6	1,704,703.014 495,521.310	25.723	It is located on the left side of the alignment placed on top of a rice paddy intersection in the middle of a ricefield in Brgy. Tagumpay, Sta. Rosa.
BM-7	1,705,058.152 495,590.387	27.032	It is located on the right side of the alignment placed on top of a check gate of an irrigation canal in Brgy. Soledad, Sta. Rosa.
BM-8	1,705,401.638 496,021.555	26.111	It is located on the right side of the alignment placed on top of a rice paddy intersection in the middle of a ricefield in Brgy. Soledad, Sta. Rosa.
BM-9	1,706,337.897 498,411.732	27.188	It is located on the right side of the alignment placed on the side of the concrete road 3 m. away from its centerline in Brgy. Soledad, Sta. Rosa.
BM-10	1,706,881.482 496,511.250	26.538	It is located on the right side of the alignment placed on the intersection of a rice paddy in the middle of a ricefield in Brgy. Soledad, Sta. Rosa.
BM-11	1,707,413.404 496,559.842	27.220	It is located on the right side of the road alignment placed on the top bank of irrigation canal 1.20 m. from its centerline under the shades of an acacia tree in Brgy. Soledad, Sta. Rosa.
BM-12	1,707,844.454 498,802.502	27.148	It is located on the right side of the alignment placed on the side of a ricefield owned by Mr. Alejo Villared in Brgy. Tagumpay, Sta. Rosa.
BM-13	1,708,291.751 496,799.903	26.656	It is located on the right side of the alignment placed on the side of a ricefield under a palawan tree in Brgy. Tagumpay, Sta. Rosa.
BM-14	1,708,620.284 497,180.515	28.714	It is located on the right side of the road alignment placed on the top bank of irrigation canal 1.50 m. from its centerline and 3 m. away the side of a road in Brgy. Tagumpay, Sta. Rosa.
BM-15	1,709,200.415 497,484.887	28.668	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from the centerline at Brgy. Sta. Arcadia, Cabanatuan City.
BM-16	1,709,584.212 497,862.962	29.530	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from the centerline at Brgy. Sta. Arcadia, Cabanatuan City.
BM-17	1,710,336.115 498,592.643	31.009	It is located on the left side of the alignment placed on the side of road (gravel) 1.80 m. away from its centerline in Brgy. Sta. Arcadia.
BM-18	1,710,649.187 498,773.128	30.565	It is located on the left side of the alignment placed on the intersection of rice paddy in the middle of a ricefield in the side of Brgy. Valle Cruz.
BM-19	1,711,076.185 498,651.653	31.218	It is located on the left side of the alignment placed on the side of a ricefield underneath two mango trees in Brgy. Valle Cruz.

TABLE OF HORIZONTAL AND VERTICAL CONTROL			
POLYGON POINT	COORDINATES	ELEV.	REMARKS
	NORTHING EASTING		
BM-20	1,711,512.317 499,109.688	31.389	It is located on the left side of the alignment placed on a rice paddy intersection in the middle of a ricefield in Brgy. Valle Cruz.
BM-21	1,712,021.897 499,309.940	32.857	It is located on the right side of the alignment placed on the side of a road 1.80 m. away from its centerline and almost 3.50 m. away from the top bank of an irrigation canal in Brgy. Valle Cruz at the side of an electric post.
BM-22	1,712,529.312 499,291.424	32.692	It is located on the right side of the alignment placed on a bank of a creek approximately 3 m. away from its centerline in Brgy. Valle Cruz.
BM-23	1,712,881.166 499,335.652	32.766	It is located on the right side of the alignment placed on a bank of a creek approximately 3 m. away from its top bank at Brgy. San Isidro, Cabanatuan City.
BM-25	1,714,097.795 499,338.845	34.013	It is located on the right side of the alignment placed on the side of a road (dirt) 1.50 m. away from its centerline and approximately 3 m. from the top bank of an irrigation canal in Brgy. San Isidro.
BM-26	1,714,739.668 499,138.544	33.408	It is located on the left side of the alignment placed on the side of a road intersection 2 m. away from its centerline adjacent to a subdivision known as Grand Victoria Estate, Brgy. Cruz Raja.
BM-27	1,715,085.051 499,202.403	33.926	It is located on the right side of the alignment placed on the intersection of a rice paddy in the middle of a ricefield in Brgy. Cruz Raja.
BM-28	1,715,321.684 499,037.089	34.467	It is located on the right side of the alignment placed on the side of the barangay road 2 m. away from its centerline at Brgy. Cruz Raja at the side of an electric post.
BM-29	1,715,891.768 498,699.775	34.622	It is located on the right side of the alignment placed on the side of a barangay road under an acacia tree 1.50 m. away from its centerline Brgy. Cruz Raja.
BM-30	1,716,304.852 498,373.638	32.793	It is located on the right side of the alignment placed on the uppermost top bank of a canal at the side of a nipa hut in Brgy. Obrero, Cabanatuan City.
BM-34	1,718,360.331 496,980.373	35.518	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from its centerline between 2 concrete lines in Brgy. Soledad, Cabanatuan City 3 m. away from an irrigation canal's top bank.
BM-36	1,719,342.545 496,251.677	37.133	It is located on the left side of the alignment placed underneath a mango tree in the middle of a vegetable plantation in Brgy. Pulo, Cabanatuan City.
BM-37	1,719,342.545 496,251.677	37.437	It is located on the left side of the alignment placed on the side of a ricefield underneath a mango tree near a house at Brgy. Pulo, Cabanatuan City.
BM-38	1,719,727.496 496,175.032	36.238	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from its centerline and about 1.72 m. away from an irrigation canal's top bank at Brgy. Pulo, Cabanatuan City.
BM-39	1,720,595.956 496,023.421	36.396	It is located on the left side of the alignment placed on the intersection of a rice paddy in the middle of a ricefield at Brgy. Pulo, Cabanatuan City.
BM-40	1,721,353.720 495,998.525	36.993	It is located on the right side of the alignment placed underneath a group of coconut tree in the middle of a ricefield in Brgy. Dimasalang Sur, Talavera.
BM-43	1,722,462.946 495,042.546	38.534	It is located on the left side of the alignment placed on the side of a dirt road 1.50 m. away from its centerline beside a concrete poles with marking: BM-43=1-8.
BM-44	1,722,735.654 494,806.172	38.406	It is located on the left side of the alignment placed on the side of a dirt road intersection 1.50 m. away from its centerline beside a barangay sideboard Brgy. Poludipod, Talavera.
BM-45	1,723,356.627 494,554.149	40.327	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from its centerline beside a nipa hut at Brgy. Poludipod, Talavera.
BM-46	1,723,535.448 494,225.815	39.229	It is located on the left side of the alignment placed on the side of a road 2 m. away from its centerline beside a camachile tree.
BM-47	1,724,094.093 493,940.197	39.500	It is located on the right side of the alignment placed on the intersection of a rice paddy in the middle of a ricefield and about 50 m. away from the top bank of a creek at Brgy. Dimasalang Sur, Talavera.
BM-48	1,724,565.996 493,762.388	42.048	It is located on the right side of the alignment placed on the side of a dirt road 2 m. away from its centerline and 4 m. away from the top bank of an irrigation canal, Brgy. Dimasalang Sur, Talavera.
BM-49	1,725,157.190 493,693.948	42.110	It is located on the right side of the alignment placed on the side of a road 3 m. away from its centerline and 1 m. away from a canal, Brgy. Gulod, Talavera.
BM-50	1,725,535.580 493,447.698	43.895	It is located on the left side of the alignment placed on the side of a road 8 m. away from its centerline beside an electric post, Brgy. Gulod, Talavera.

TABLE OF HORIZONTAL AND VERTICAL CONTROL			
POLYGON POINT	COORDINATES	ELEV.	REMARKS
	NORTHING EASTING		
BM-51	1,725,936.648 493,468.459	43.274	It is located on the right side of the alignment placed in the intersection of a rice paddy in the middle of a ricefield 150 m. away from the centerline of a concrete barangay road, Brgy. Gulod, Talavera.
BM-52	1,726,352.052 493,919.807	43.317	It is located on the right side of the alignment placed at the side of a dirt road 1.5 m. away from the centerline of the dirt road in Brgy. Banlas Hacienda, Talavera.
BM-53	1,726,804.440 492,831.296	42.900	It is located on the right side of the alignment right in the middle of a ricefield at the side of a well placed in the rice paddy intersection.
BM-54	1,727,002.842 492,456.434	43.790	It is located on the left side of the alignment 3 m. away from the dirt road centerline and 6 m. away from the top of an irrigation canal beneath a camachile tree.
BM-55	1,727,251.355 492,153.048	44.219	It is located on the right side of the alignment near the corner of concrete wall/fence. It is 3 m. away from the centerline of an existing road 5 m. wide at Brgy. Campos, Talavera.
BM-56	1,727,456.793 491,960.117	42.069	It is located on the left side of the alignment 70 m. away underneath a mango tree in Brgy. Campos, Talavera.
BM-57	1,727,557.279 491,163.464	45.294	It is located on the right side of the alignment placed on the top of a ricefield near the side of a road under a coconut tree in Brgy. Lombay, Talavera.
BM-58	1,727,578.123 490,416.550	43.530	It is located on the right side of the alignment placed on the side of a ricefield under a row of coconut trees in Brgy. Lombay, Talavera.

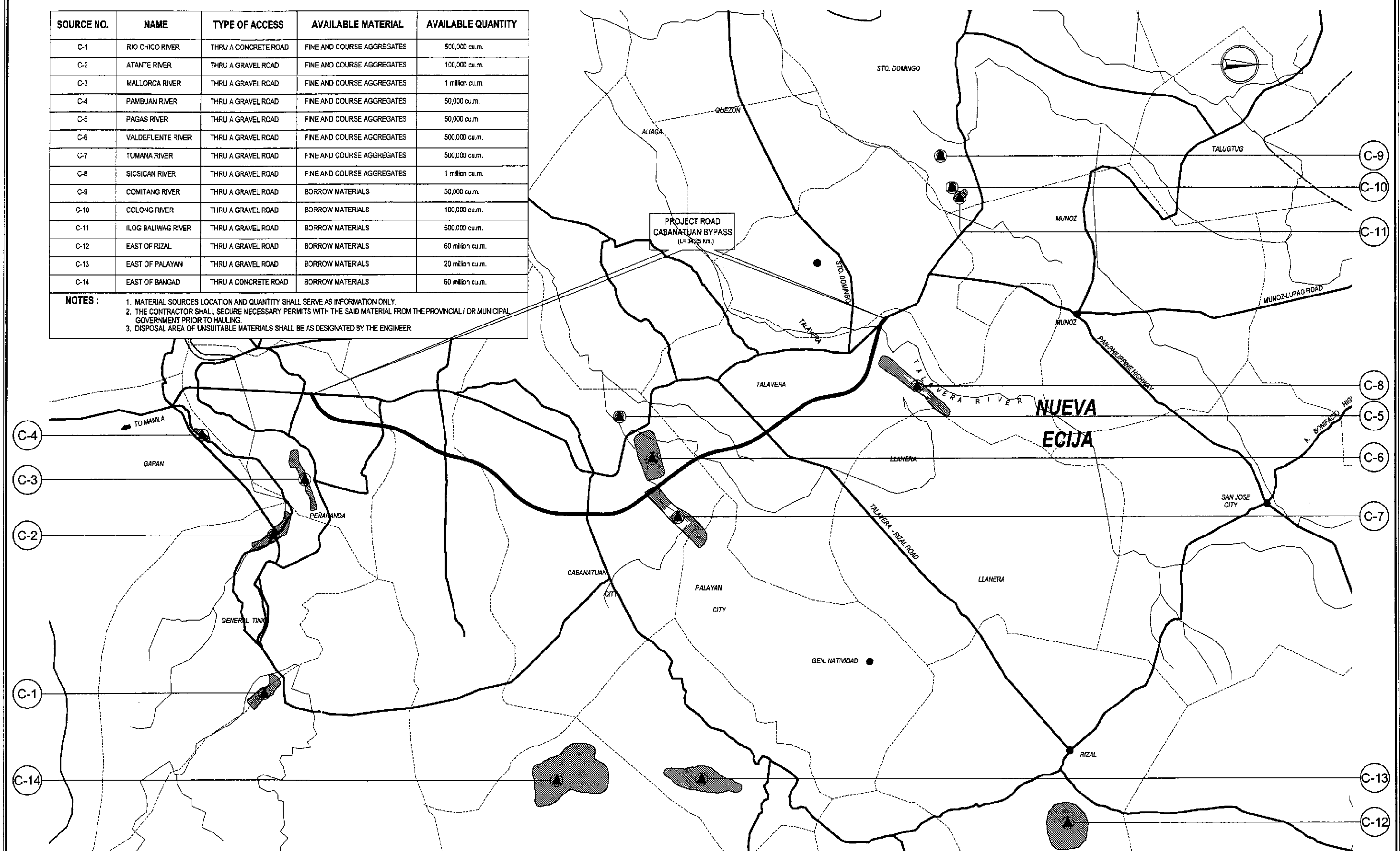
NEW ACCESS ROAD 1 - TABLE OF HORIZONTAL AND VERTICAL CONTROL			
POLYGON POINT	COORDINATES	ELEV.	REMARKS
	NORTHING EASTING		
BM-A3-1	1,709,244.996 497,307.583	27.574	It is located on the right side of the access road placed on the side of the access road 60 m. away from its centerline between 2 coconut trees along extra farm road in Brgy. Sta. Arcadia, Cabanatuan City.
BM-A3-2	1,709,500.218 496,724.144	28.740	It is located on the left side of the access road placed on the side of a narrow tree 5 m. away from existing irrigation road near a house in Brgy. Sta. Arcadia, Cabanatuan City.
BM-A3-3	1,709,133.419 496,759.539	26.389	It is located on the right side of the access road placed on the top bank of an irrigation canal beside an irrigation canal and 40 m. away from its centerline in Brgy. Sta. Arcadia, Cabanatuan City.
BM-A3-4	1,710,136.779 496,074.308	26.388	It is located on the left side of the access road alignment beside an acacia tree placed on the side of a dirt road 4 m. away from its centerline in Brgy. Arcadia, Cabanatuan City.
BM-A3-5	1,710,471.747 495,959.612	26.096	It is located on the right side of the access road alignment placed on the intersection of a rice paddy near a barbed wire fence 30 m. away from the centerline of a dirt road in Brgy.
BM-A3-6	1,710,716.388 495,728.826	28.696	It is located on the right side of the road alignment near Bato bridge on its gutter 15 m. away from its 1st approach in Brgy.

		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 : 1:40,000 FULL SIZE A1		SHEET CONTENTS : HORIZONTAL AND VERTICAL CONTROL MONUMENTS Sheet 2 of 2		SHEET NO. : GC-08	
DESIGNED	9/27/02	SIGNATURE			BUREAU OF DESIGN Submitted By:		OFFICE OF THE SECRETARY Recommended By:		Approved By:		(See cover sheet for Signatures/Approvals)		
CHECKED	10/15/02	SIGNATURE			Chief, Highways Division		Recommended By:		Approved By:		(See cover sheet for Signatures/Approvals)		
SUBMITTED	10/14/02	SIGNATURE			Project Director		Recommended By:		Approved By:		(See cover sheet for Signatures/Approvals)		

SOURCE NO.	NAME	TYPE OF ACCESS	AVAILABLE MATERIAL	AVAILABLE QUANTITY
C-1	RIO CHICO RIVER	THRU A CONCRETE ROAD	FINE AND COURSE AGGREGATES	500,000 cu.m.
C-2	ATAMTE RIVER	THRU A GRAVEL ROAD	FINE AND COURSE AGGREGATES	100,000 cu.m.
C-3	MALLORCA RIVER	THRU A GRAVEL ROAD	FINE AND COURSE AGGREGATES	1 million cu.m.
C-4	PAMBUAN RIVER	THRU A GRAVEL ROAD	FINE AND COURSE AGGREGATES	50,000 cu.m.
C-5	PAGAS RIVER	THRU A GRAVEL ROAD	FINE AND COURSE AGGREGATES	50,000 cu.m.
C-6	VALDEFUENTE RIVER	THRU A GRAVEL ROAD	FINE AND COURSE AGGREGATES	500,000 cu.m.
C-7	TUMANA RIVER	THRU A GRAVEL ROAD	FINE AND COURSE AGGREGATES	500,000 cu.m.
C-8	SICSIKAN RIVER	THRU A GRAVEL ROAD	FINE AND COURSE AGGREGATES	1 million cu.m.
C-9	COMITANG RIVER	THRU A GRAVEL ROAD	BORROW MATERIALS	50,000 cu.m.
C-10	COLONG RIVER	THRU A GRAVEL ROAD	BORROW MATERIALS	100,000 cu.m.
C-11	ILOG BALIWAG RIVER	THRU A GRAVEL ROAD	BORROW MATERIALS	500,000 cu.m.
C-12	EAST OF RIZAL	THRU A GRAVEL ROAD	BORROW MATERIALS	60 million cu.m.
C-13	EAST OF PALAYAN	THRU A GRAVEL ROAD	BORROW MATERIALS	20 million cu.m.
C-14	EAST OF BANGAD	THRU A CONCRETE ROAD	BORROW MATERIALS	60 million cu.m.

NOTES:

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



A LOCATION OF MATERIAL SOURCES
GC-09 SCALE AS SHOWN

	DESIGNED	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 I	SCALE : 1:80,000 FULL SIZE A1	SHEET CONTENTS : LOCATION OF MATERIAL SOURCES	SHEET NO. : GC-09			
	CHECKED	10/27/02	ACACIO								Submitted By:	Reviewed By:	Recommended By:
	SUBMITTED	10/14/02	TRAJANO								DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	DILBERTO S. REYES OC, Director IV


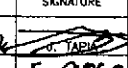
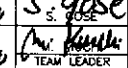
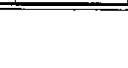
SUMMARY OF QUANTITIES (INITIAL STAGE)

ITEM NO.	DESCRIPTION	UNIT	QUANTITY(HIGHWAY AND DRAINAGE)														QUANTITY(BRIDGE)		TOTAL QUANTITY	REMARKS
			BYPASS	RCBC	A-1	A-1a	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12	BRIDGE No. 1		
PART C - EARTHWORKS																				
100(1)	Clearing and Grubbing	ha	32.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.00
100(3)	Individual removal of trees, small (150mm ϕ-900mm)	each	158.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	158.00
100(4)	Individual removal of trees, large (>900mm)	each	19.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.00
101(1)	Removal of Existing Structures and Obstructions	L.S.	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
101(3)a	Removal of Existing PCC Pavement	m ²	1,407.00	-	590	350	-	-	-	-	-	-	-	-	1,200.0	-	-	-	-	3,547.00
102(1)	Unsuitable Excavation	m ³	237,600.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	237,600.00
103(1)	Structure Excavation	m ³	572.13	1,366.19	2.00	-	-	-	-	2.00	-	-	-	-	2.00	2.00	-	-	-	1,947.00
103(2)a	Bridge Excavation above OWL (Common Soil)	m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200.00	234.00	-	434.00
103(2)c	Bridge Excavation below OWL (Common Soil)	m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	128.00	468.00	-	596.00
103(3)a	Gravel Foundation Fill	m ³	49.53	125.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	175.00
103(6)	Pipe Culverts and Drain Excavation	m ³	8,777.33	-	86.88	-	-	-	-	32.58	-	-	-	-	25.34	54.30	-	-	-	8,977.00
103(7)	Granular Backfill for Pipe Culvert	m ³	4,666.96	-	48.02	-	-	-	-	18.01	-	-	-	-	14.01	30.02	-	-	-	4,777.00
104(1)	Embankment from Roadway Excavation	m ³	2,736.14	-	361.10	130.60	17.61	27.17	13.88	9.67	43.84	34.32	23.17	22.73	352.52	13.35	7.57	-	-	3,794.00
104(3)	Embankment from Borrow Pit	m ³	809,580.55	-	3,534.53	180.69	1,398.14	637.78	1,390.04	727.14	464.02	421.58	992.47	616.86	492.58	344.03	915.01	756.00	610.00	623,042.00
104(4)	Embankment from Borrow (Selected Granular Material) for Bridge	m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	592.00	-	533.00	1,125.00
105(1)	Subgrade Preparation (Common Soil)	m ²	3,657.10	-	1,567.18	391.74	96.66	203.32	80.00	101.20	283.46	366.13	189.42	187.54	1,410.50	123.68	54.97	-	-	8,713.00
PART D - BASE AND SUBBASE COURSE																				
200(1)	Aggregate Subbase Course	m ³	34,750.71	-	1,055.26	298.84	-	-	-	-	-	-	-	-	535.03	-	-	30.00	30.00	36,700.00
201(1)	Aggregate Base Course	m ³	12,957.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,958.00
PART E - SURFACE COURSES																				
300(1)	Gravel Surface Course	m ³	7,463.09	-	-	-	104.16	106.80	104.72	92.57	119.48	102.08	99.75	103.70	-	94.55	82.78	-	-	8,474.00
311(1)b	PCC Pavement (Plain), t=250mm	m ²	74,140.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74,141.00
311(1)c	PCC Pavement (Plain), t=230mm	m ²	-	-	2,228.47	467.59	-	-	-	-	-	-	-	-	1,864.95	-	-	-	-	4,362.00
311(2)	PCC Pavement (Reinforced) t=300mm Approach Slab	m ²	159.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118.00	118.00	396.00
PART F - BRIDGE CONSTRUCTION																				
400(4)b	Precast Concrete Piles (450mmx450mm), furnished	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	638.00	810.00	1,448.00
400(13)b	Precast Concrete Piles (450mmx450mm), driven	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	547.00	686.00	1,233.00
400(15)b	Test Piles (Concrete Pile 450mmx450mm), furnished & driven	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32.75	41.00	74.00
400(19)b	Pile shoes for 450mmx450mm Piles	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.00	102.00	177.00
401(1)a	Concrete Railing Type A (Concrete Posts and Precast Beams)	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102.00	127.00	229.00
404(1)	Reinforcing Steel (Grade 40)	kg	10,291.64	82,102.89	137.84	-	-	-	137.84	-	-	-	-	-	137.84	137.84	-	34,784.00	43,701.00	171,431.00
404(2)	Reinforcing Steel (Grade 50)	kg	65,248.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36,738.00	59,410.00	161,396.00
405(1)a	Structural Concrete Class A (f'c=21MPa, max. aggregate 38mm) for heavily reinforced structures	m ³	810.30	952.56	3.10	-	-	-	3.10	-	-	-	-	-	3.10	3.10	-	-	-	1,778.00
405(1)b	Structural Concrete Class A (f'c=21MPa, max. aggregate 38mm) for small & medium bridges substructures	m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	413.00	588.00	1,001.00
405(1)d	Structural Concrete Class A1 (f'c=21MPa, max. aggregate 20mm) for small & medium bridges PCDG superstructures	m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	165.00	213.00	378.00
405(2)	Structural Concrete Class B (f'c=17MPa, max. aggregate 50mm) for plain or lightly reinforced structures	m ³	1,785.80	-	17.54	-	-	-	6.58	-	-	-	-	-	5.12	10.97	-	-	-	1,827.00
405(3)	Structural Concrete Class C (f'c=21MPa, max. aggregate 12mm) for thin reinforced members	m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.00	35.00	65.00
405(6)	Lean Concrete (f'c=17MPa, max. aggregate 38mm)	m ³	24.75	62.49	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00	66.00	174.00
406(1)a	Precast Prestressed Structural Concrete Member (AASHTO Girder Type IV L=20m)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.00	10.00
406(1)b	Precast Prestressed Structural Concrete Member (AASHTO Girder Type IV L=22m)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00
406(1)d	Precast Prestressed Structural Concrete Member (AASHTO Girder Type IV L=25m)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.00	-	10.00
407(1)c	Elastomeric Bearing Pad, Duro 60 (600x350x50mm)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00	30.00	50.00
407(2)a	Expansion Joint, t=40mm Movement	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00	20.00	40.00
407(2)b	Expansion Joint, 30mm for bridge sidewalk	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.00	4.00	8.00
407(4)	G.I. Drain Pipe Ø 150mm for Bridge Drainage	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00	6.00	11.00
PART G - DRAINAGE AND SLOPE PROTECTION STRUCTURES																				
500(1)c3	RCPC Extra Strength (32MPa), Ø 480mm (18")	m	108.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108.00
500(1)c6	RCPC Extra Strength (32MPa), Ø 910mm (36")	m	1,304.00	-	24.00	-	-	-	9.00	-	-	-	-	-	7.00	15.00	-	-	-	1,368.00
500(1)c7	RCPC Extra Strength (32MPa), Ø 1070mm (42")	m	328.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	328.00
500(1)c8	RCPC Extra Strength (32MPa), Ø 1220mm (48")	m	534.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	534.00
502(2)a1	Drop Inlet Manhole for RCPC 1-Ø 460 x 1-Ø 460	each	9.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.00
502(4)a1	U-shaped Concrete Ditch W=0.50m x H=0.50m	m	660.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	660.00
502(7)a	Trapezoidal Lined Ditch B=450mm, H=500mm, 1:1.00	m	1,772.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,772.00
504(5)	Grouted Riprap Class A	m ³	3,680.60	233.01	-	88.02	-	-	-	-	-	-	-	-	-	-	-	220.00	50.00	4,270.00
506(1)	Hand Laid Rock Apron (Loose Boulder Apron)	m ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	121.00	-	121.00
507(2)b	Steel Sheet Piles (400x85x8mm), furnished & driven	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	819.00
509(1)	Gabions	m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	352.00
510(1)	Rubble Concrete Slope Protection	m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108.00

	DESIGNED	DATE	SIGNATURE	 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION :			SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/14/2022	<i>[Signature]</i>		THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)			FULL SIZE A1	SUMMARY OF QUANTITIES (INITIAL STAGE) 1 of 2	GC-10
	SUBMITTED	10/14/2022	<i>[Signature]</i>		CABANATUAN BYPASS - CONTRACT PACKAGE I					
P.H.L. - P.W.O. Bureau of Design 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. BONDAN Undersecretary Approved By: SIMEON A. DATUMANONG Secretary										

SUMMARY OF QUANTITIES (INITIAL STAGE)

ITEM NO.	DESCRIPTION	UNIT	QUANTITY(HIGHWAY AND DRAINAGE)														QUANTITY(BRIDGE)		TOTAL QUANTITY	REMARKS	
			BYPASS	RCBC	A-1	A-1a	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12	BRIDGE No. 1			BRIDGE No. 2
PART H - MISCELLANEOUS STRUCTURES																					
600(3)a	Combination Concrete Curb & Gutter/Side Strip, Type A (675x364mm)	m	1,638.00	-	268.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,086.00	
602(1)	Right-of-Way Concrete Monuments	each	388.00	-	11.00	-	8.00	14.00	17.00	11.00	8.00	8.00	13.00	12.00	15.00	8.00	8.00	-	-	519.00	
602(2)	Maintenance Marker Posts for Drainage Structure	each	124.00	-	2.00	-	-	-	2.00	-	-	-	-	2.00	2.00	-	-	-	-	132.00	
602(3)	Kilometer Posts	each	9.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.00	
603(3)a	Metal Guardrails (Metal Beam) Type A (Embedded in soil)	m	2,147.00	-	120.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,267.00	
605(1)a	Warning Signs (Triangular 900mm)	each	25.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.00	
605(2)a	Regulatory Signs (Triangular 1039mm)	each	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	
605(2)b	Regulatory Signs (Octagonal 600mm)	each	-	-	-	-	-	-	-	-	2.00	2.00	-	-	-	-	-	-	-	4.00	
605(2)c	Regulatory Signs (Circular Ø 600mm)	each	8.00	-	1.00	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	11.00	
605(2)d	Regulatory Signs (Rectangular 450x750mm)	each	3.00	-	-	-	-	-	-	-	2.00	2.00	-	-	-	-	-	-	-	7.00	
605(3)c	Informatory Signs (Type B, double post)	each	2.00	-	1.00	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	4.00	
605(3)d	Informatory Signs (Type C, double post)	each	2.00	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	3.00	
608(1)	Furnishing and Paving Top Soil	m ³	20,985.41	-	83.24	6.57	88.40	60.71	89.30	57.73	67.62	70.30	76.62	59.01	37.31	53.77	59.78	-	-	21,796.00	
610(1)	Sodding	m ²	104,927.05	-	832.36	65.74	884.01	607.12	892.97	577.34	676.19	703.03	766.19	590.13	373.15	537.75	597.79	-	-	113,031.00	
611(1)c	Trees (Furnishing and Transplanting) High Tree (Young Tree) 1.5m < H < 3.0m	each	902.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	902.00	
612(1)a	Reflectorized Thermoplastic Pavement Markings (White)	m ²	3,054.47	-	137.40	-	-	-	-	-	-	2.62	2.29	-	-	-	-	-	-	3,331.00	
612(1)b	Reflectorized Thermoplastic Pavement Markings (Yellow)	m ²	141.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	142.00	
SPL 620(1)a	Traffic Signal Pole Type A (Mast Arm Post H=6.0m)	each	4.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.00	
SPL 620(1)b	Traffic Signal Pole Type B (Ø114.3mm x 4.2m)	each	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.00	
SPL 620(1)c	Traffic Signal Pole Type C (Ø114.3mm x 3.4m)	each	9.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.00	
SPL 620(1)d	Traffic Signal Pole Type D (Ø114.3mm x 3.0m)	each	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.00	
SPL 620(2)a	Traffic Signal Lamps Type A (6 vehicle lamps)	each	3.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.00	
SPL 620(2)b	Traffic Signal Lamps Type B (3 vehicle lamps)	each	20.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00	
SPL 620(2)c	Traffic Signal Lamps Type C (2 pedestrian lamps)	each	10.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.00	
SPL 620(4)a	Street Lighting Poles (Single Lamp)	each	-	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	1.00	
SPL 620(4)b	Street Lighting Poles (Dual Lamp)	each	28.00	-	5.00	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	38.00	
SPL 620(4)c	Street Lighting Service Pole with Panel	each	-	-	1.00	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	2.00	

	DESIGNED	9/27/02	SIGNATURE		SUBMITTED BY	9/15/02	SIGNATURE		TEAM LEADER	
	CHECKED		REVIEWED BY		RECOMMENDED BY		APPROVED BY		SECRETARY	
	SUBMITTED		PROJECT DIRECTOR		CHIEF, HIGHWAYS DIVISION		UNDERSECRETARY		SECRETARY	

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN	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 : SUMMARY OF QUANTITIES (INITIAL STAGE) 2 of 2	SHEET NO. : GC-11
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R O A D W A Y

GENERAL NOTES

HIGHWAY / CIVIL AND DRAINAGE

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, 1995 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
CAB-1	1,701,482.713	493,518.261	23.777	Located in Brgy. Tagumpay, San Leonardo, Nueva Ecija. It is drilled on the left side of the Tambo Bridge's first approach, about 0.05 cm. above the bridge's concrete sidewalk.
CAB-2	1,701,869.179	493,628.408	22.525	Located in Brgy. Tagumpay, San Leonardo, Nueva Ecija. It is embedded in an open space 80 m. from highway, 15 m. from dirt road going to an ostrich farm, about 40cm x 40cm & 0.05cm above the ground.
CAB-3	1,706,316.913	495,963.410	25.984	Located in Brgy. Soledad, Sta. Rosa, Nueva Ecija. It is embedded on a 40cm x 40cm conc. mans. beside an irri. canal about 8m from rd. CL & 3 km. from the highway intersec. of Fort Magsaysay & Cabanatuan City.
CAB-4	1,706,340.784	496,322.453	26.299	Located in Brgy. Soledad, Sta. Rosa, Nueva Ecija. It is embedded on a 40 cm x 40 cm conc. mans. on the left side of the rd. going to Fort Magsaysay & about 370 m. from GPS Sta. CAB-3, about 4 m from rd. CL.
CAB-4A	1,708,633.059	497,110.500	27.917	Located in Brgy. Tagpos, Sta. Rosa, Nueva Ecija on Diaz property. From the highway northbound take a right turn on Mabini extension, on Mercury Drugstore going to Brgy. Sta. Arcadia. 4.9 km. from the highway take a right turn on the intersection of the dirt road after the one-way bridge with a water pipe rail. It is 1.4 km. from the intersection beside an irrigation canal on the left side.
CAB-5	1,709,079.199	498,487.150	31.478	Located in Brgy. Sta. Arcadia, Cabanatuan, Nueva Ecija. From the highway northbound take a right turn on Mabini extension, Mercury Drugstore going to Brgy. Sta. Arcadia. 3.9 km. from the intersection highway, take a left turn to a dirt road it is embedded on the right side of the road 200 m. from the Mabini extension road centerline.
CAB-6	1,709,731.859	498,528.332	31.285	Located in Brgy. Sta. Arcadia, Cabanatuan, Nueva Ecija. From the highway northbound take a right turn on Mabini extension, Mercury Drugstore going to Brgy. Sta. Arcadia. 3.2 km. from the intersection highway, take a left turn to a dirt road it is embedded on the left side of the road near an irrigation dike 500 m. from the Mabini extension road centerline.
CAB-7	1,713,329.143	499,115.186	33.346	Located in Brgy. San Isidro, Cabanatuan, Nueva Ecija. It is embedded on the sidewalk of the DPWH 3rd Engineering District driveway, about 20 m. from the centerline of the road.
CAB-8	1,713,603.208	499,247.649	33.467	Located in Urban Poor Housing Project, San Isidro, Cabanatuan, Nueva Ecija. Going to Palayan City take a left turn to the dirt road beside the DPWH compound leading to the site of the housing project, then turn right. It is embedded on the right side of the dirt road near the electric post 400 m. from the centerline of the highway.
CAB8A	1,715,705.803	498,487.077	34.234	Located in Brgy. Raja, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway to a road before the Valdefuente bridge. 3 km. from the highway, turn left to a bridge.
CAB8B	1,717,749.623	496,746.648	34.436	Location in Brgy. Sapang, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a rt. turn on Maharlika highway after the Valdefuente br. to road going to Brgy. Sapang. It is emb. on the left side of the road.
CAB9	1,718,805.446	496,330.000	37.709	Located in Brgy. Buliran, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway after the Valdefuente bridge to a road going to Brgy. Dalampang. 2.5 km. from the highway taking the left fork turn right at the intersection to a dirt road leading to Brgy. Balite. It is embedded near an irrigation dike 800 m. from the bridge.
CAB10	1,719,118.959	497,481.612	37.713	Located in Brgy. Dalampang, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway after the Valdefuente bridge to a road going to Brgy. Dalampang. 2.5 km. from the highway taking the left fork turn right at the intersection to a dirt road leading to Brgy. Balite. It is embedded near an irrigation dike on the right side, 1.9 km. from the bridge.
CAB11	1,721,785.046	495,194.942	39.469	Located in Homestead I, Talavera, Nueva Ecija. Taking the Maharlika highway to Muñoz, turn right on Pinagpangan intersection to the highway going to Pantabangan. 4.3 km. from the intersection turn right to a dirt road. It is embedded on the right beside an irrigation canal 70 m. from the centerline of the highway.
CAB12	1,722,163.770	495,433.939	37.949	Located in Homestead I, Talavera, Nueva Ecija. Taking the Maharlika highway to Muñoz, turn right on Pinagpangan intersection to the highway going to Pantabangan. 4.8 km. from the intersection on the right side 50 m. from the centerline of the highway.
CAB13	1,718,173.662	489,601.903	44.230	Located in Brgy. San Pascual, Talavera, Nueva Ecija. It is embedded on the right side of the bridge 2.3 km. from San Pascual market going to San Jose.
CAB14	1,729,259.352	489,626.465	43.627	Located in Brgy. Bagong Silang, Talavera, Nueva Ecija. Take a right turn 3.4 km. from San Pascual market going to San Jose to a dirt road. It is embedded on a rice paddy dike on the right side of the road 500 m. from the highway.

- 2.2 VERTICAL CONTROL IS REFERRED TO BM DEJ-7 ESTABLISHED BY THE CAB'S WITH ELEVATION 46.695m. ABOVE MEAN SEA LEVEL, LOCATED IN THE BARRIO OF CABU, CABANATUAN CITY, IN THE PROVINCE OF NUEVA ECJA, ALONG THE ROAD TO LAUR. IT IS A DRILLED HOLE ON THE NORTH SIDE OF THE BRIDGE FROM THE SW ENTRANCE OF THE ROAD. STATION MARK IS A BRASS ROD ABOUT 1 CM. DIA. SET IN A DRILLED HOLE MARKED DEJ-7 1982.

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 CABANATUAN BYPASS
- FLOODING OCCURENCE ALONG PAN-PHIL. HIGHWAY FROM KM POST 102 TO KM POST 104. (LEFT SIDE, KM 100+480 TO KM 102+000)
 - NATIONAL POWER CORPORATION TRANSMISSION TOWER (NEAR BEG. AND END OF BYPASS)
 - EXISTING LANDFILL AREA (LEFT SIDE, KM 115+700 CENTERLINE)
- 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 FLOOD LEVEL, 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 POST STATION ALONG THE PAN-PHILIPPINE HIGHWAY WHICH IS KM.100 NEAR THE START OF BYPASS.
- 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 ARE TOP OF CROWN ALONG THE CENTERLINE. FINISHED GRADE AS SHOWN IN THE TYPICAL SECTION WILL BE REFERRED FROM TOP OF CROWN AND 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 CONNECTIONS AND PRIVATE ENTRANCES SHALL BE AS SHOWN IN THE DRAWING OR AS DETERMINED 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, UNBLOCKING 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.

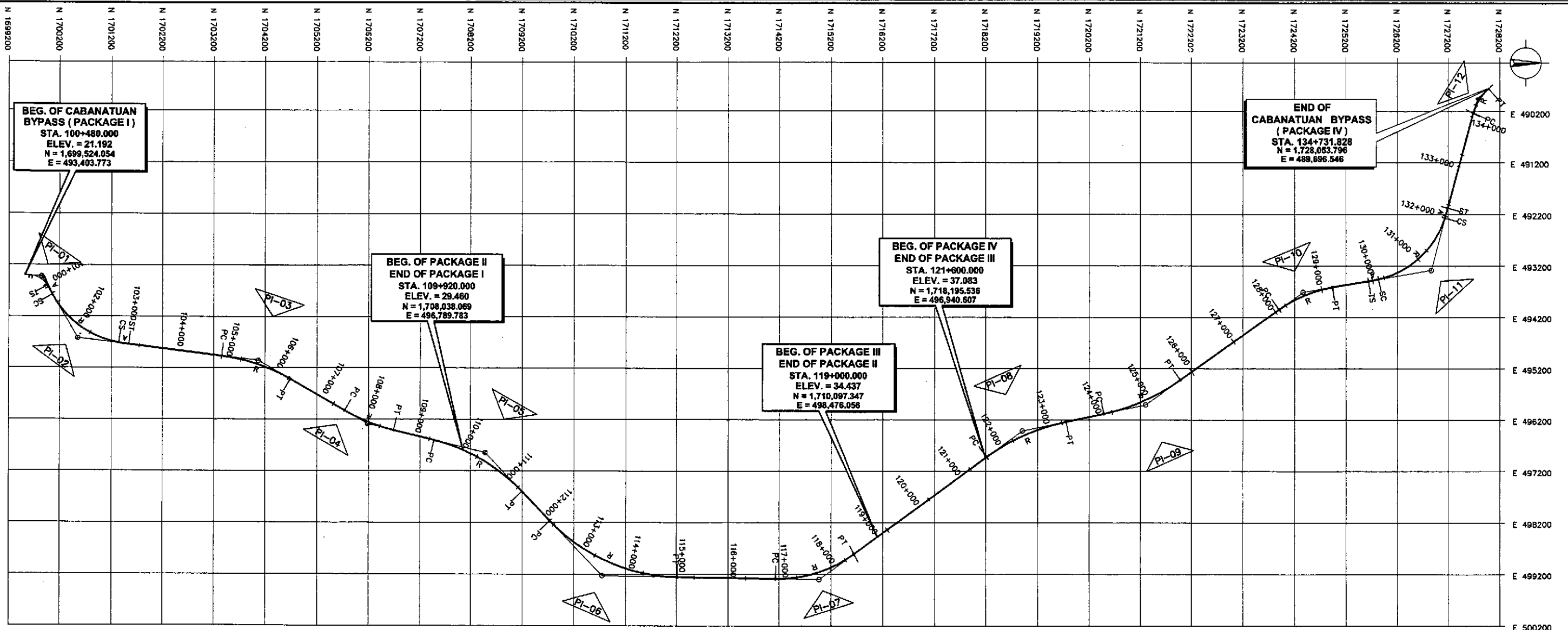
13.0 TREE PLANTING ALONG NATIONAL ROADS

- 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  KATAHIRA & ENGINEERS INTERNATIONAL  YACHIYO ENGINEERING CO., LTD.	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :	
	DESIGNED	9/27/02		BUREAU OF DESIGN				THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	FULL SIZE A1	GENERAL NOTES HIGHWAY/ CIVIL AND DRAINAGE	RG-01
	CHECKED	10/15/02		Submitted By:	Reviewed By:	Recommended By:	Approved By:				
SUBMITTED	10/16/02		DANILO C. TRAJANO Project Director	JOSEFINA M. ALADAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONGAN Undersecretary	SIMEDON A. DATUMANONG Secretary				



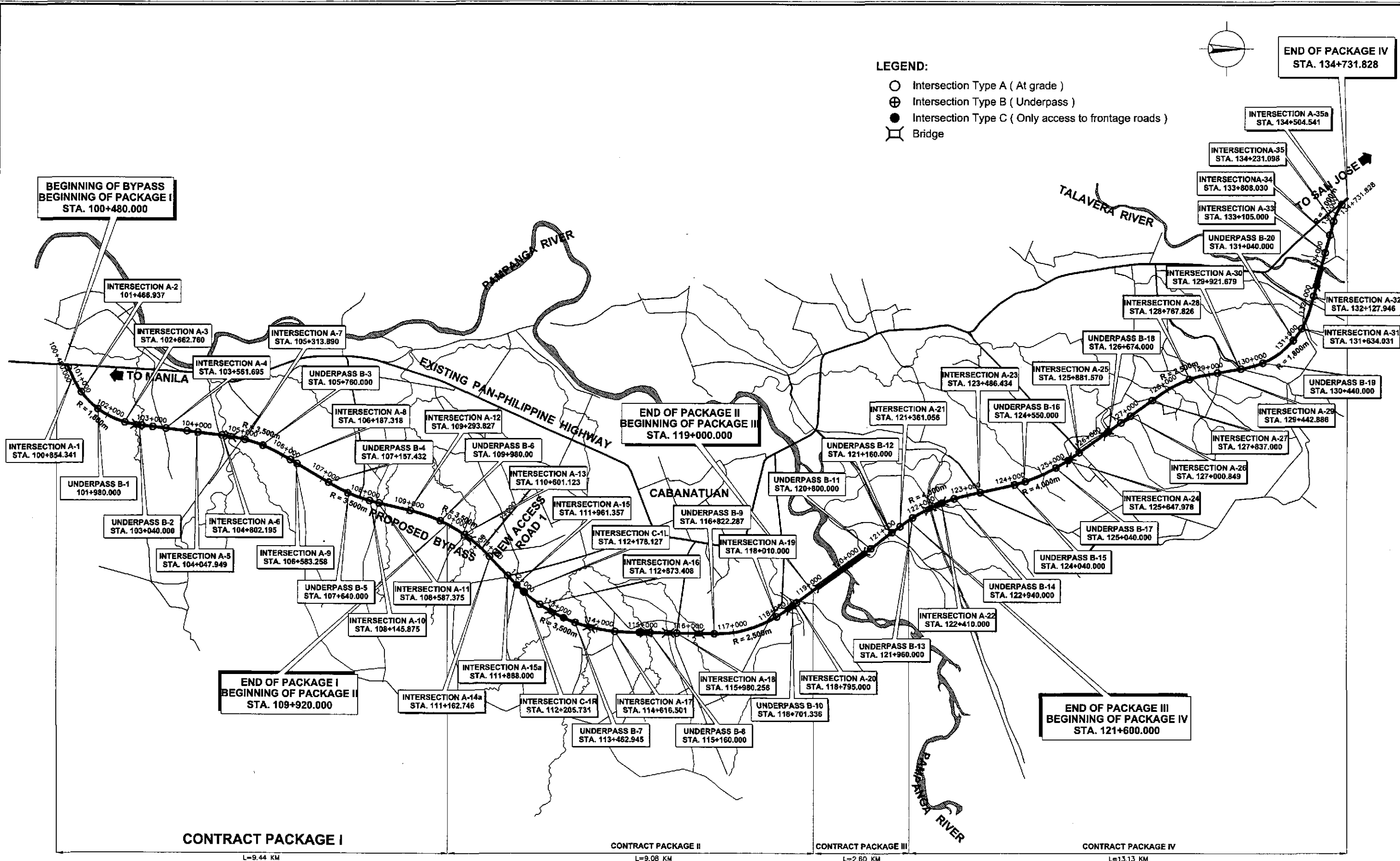
P.I. No.	STATION	DISTANCE	AZIMUTH	TANGENT Ts	DEFLECTION ANGLE	A R	Ls Lc	STATION
BEG.	100+480.00							
01	100+806.146	326.146	183°25'21"	246.146	56°16'36"	160.000	64.000	TS=100+580.000 SC=100+624.000 CS=100+952.888 ST=101+016.888
02	102+155.940	1,385.199	239°41'57"	147.870	52°39'26"	400.000	328.886	TS=101+164.756 SC=101+364.756
03	105+572.571	3,544.720	187°02'31"	720.109	3°10'59"	1,800.000	1,454.277	TS=102+819.034 SC=103+019.034
04	108+003.789	2,451.020	210°17'39"	514.528	23°15'08"	3,500.000	1,420.397	PC=104+852.482 PT=106+272.658
05	110+360.304	2,363.853	193°34'05"	1,035.121	16°43'34"	3,500.000	1,021.737	PC=107+489.241 PT=108+510.979
06	113+591.799	4,225.526	180°57'37"	1,469.788	32°57'04"	3,500.000	2,012.865	PC=109+325.183 PT=111+338.048
07	117+660.785	4,885.881	143°48'12"	840.295	45°33'32"	3,500.000	2,783.035	PC=112+122.011 PT=114+905.048
					37°09'25"	2,500.000	1,621.273	PC=116+820.490 PT=118+441.763

P.I. No.	STATION	DISTANCE	AZIMUTH	TANGENT Ts	DEFLECTION ANGLE	A R	Ls Lc	STATION
08	122+487.349	4,885.881	143°48'12"	856.992	24°11'07"	4,000.000	1,888.459	PC=121+630.356 PT=123+318.815
09	124+909.328	2,447.505	167°59'20"	837.385	23°38'52"	4,000.000	1,850.927	PC=124+071.944 PT=125+722.671
10	128+658.998	3,773.512	144°20'28"	577.297	28°00'20"	2,500.000	1,134.704	PC=128+081.701 PT=129+216.405
11	131+169.232	2,530.124	170°20'47"	1,250.689	65°09'11"	600.000	200.000	TS=129+918.543 SC=130+118.543
12	134+365.149	3,450.454	105°11'37"	292.954	3°10'59"	1,800.000	1,848.841	CS=131+965.384 ST=132+165.384
END	134+731.823	382.627	137°50'54"		32°39'23"	1,000.000	589.960	PC=134+072.198 PT=134+642.155

P.I. No.	NORTHING	EASTING	NORTHING	EASTING
BEG.	1,699,524.054	493,403.773		
01	1,699,849.619	493,423.243	TS 1,699,603.912	493,408.549
			SC 1,699,667.855	493,414.070
			CS 1,699,940.066	493,581.402
			ST 1,699,973.809	493,635.763

P.I. No.	NORTHING	EASTING	NORTHING	EASTING
02	1,700,548.505	494,619.209	TS 1,700,048.415	493,763.432
			SC 1,700,152.489	493,934.189
			CS 1,701,334.236	494,712.538
			ST 1,701,532.212	494,740.724
03	1,704,066.486	495,053.779	PC 1,703,351.810	494,985.496
			PT 1,704,688.282	495,417.031
			PC 1,705,738.544	496,030.623
04	1,706,182.811	496,290.171	PT 1,706,682.980	496,410.880
			PC 1,707,474.461	496,601.893
05	1,708,480.693	496,844.734	PT 1,708,192.973	487,585.822
			PC 1,709,732.427	498,184.670
06	1,710,743.806	499,231.154	PT 1,712,213.367	499,255.786
			PC 1,714,128.581	499,287.887
07	1,714,968.738	499,301.870	PT 1,715,648.852	498,805.727
			PC 1,718,220.033	496,922.679
08	1,718,911.622	496,416.576	PT 1,719,749.852	496,238.234
			PC 1,720,486.493	496,081.506
09	1,721,305.544	495,907.244	PT 1,721,985.920	495,419.082
			PC 1,723,902.473	494,043.979
10	1,724,371.527	493,707.438	PT 1,724,940.649	493,610.632
			TS 1,725,632.845	493,482.881
11	1,726,865.824	493,283.184	SC 1,725,829.332	493,455.713
			CS 1,727,137.632	492,268.171
			ST 1,727,193.605	492,076.192
12	1,727,770.121	489,953.318	PC 1,727,893.343	490,238.031
			PT 1,727,987.313	489,756.723
END	1,728,053.796	489,696.546		

	DESIGNED	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)	SCALE : 1:40,000 FULL SIZE A1	SHEET CONTENTS : ALIGNMENT TECHNICAL DESCRIPTION	SHEET NO. : RG-02
	CHECKED	10/15/02	S. S. ACACIO		BUREAU OF DESIGN							
	SUBMITTED	11/14/02	M. K. KUCHIKI		Submitted By: DANILLO 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				



- 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

	DESIGNED	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	10/15/02	<i>S. 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 I	1:40,000	LOCATION OF INTERSECTIONS/ UNDERPASSES ALONG BYPASS	RG-03
	SUBMITTED	10/16/02	<i>Mr. Kuroki</i>	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. BONOAN Undersecretary				

SCHEDULE OF PAVEMENT MARKINGS
CONTRACT PACKAGE I (INITIAL STAGE)
ITEM 612(1) - REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS

1. EDGE LINES				1.4 RIGHT SIDE, INNER EDGE				4.0 CONTINUITY LINE				7.0 ARROWS		
1.1 LEFT SIDE, OUTER EDGE				STATION				STATION				ARROW TYPE		
FROM	TO	LENGTH (m)	REMARKS	FROM	TO	LENGTH (m)	REMARKS	FROM	TO	LENGTH (m)	REMARKS	ARROW TYPE	NUMBER OF ARROWS	LOCATION
100+480.00	100+823.94	343.94	MAIN BYPASS	100+559.17	100+841.68	282.51	APPROACH TO A-1	100+678.94	100+723.94	45.00	(LS) 150mm x 1.0m @ 3.0m GAP	A	4	APPROACHING INTERSECTION A-1
100+823.94	00+036.48	37.37	MAIN BYPASS TO LT OF A-1	100+860.60	101+009.64	149.04	APPROACH TO A-1	100+695.70	100+740.70	45.00	(RS) 150mm x 1.0m @ 3.0m GAP	C	4	APPROACHING INTERSECTION A-1
00+036.48	00+080.96	44.5	LEFT OF A-1	107+949.38	108+131.49	182.11	APPROACH TO A-10	100+896.64	100+941.64	45.00	(LS) 150mm x 1.0m @ 3.0m GAP	A	2	APPROACHING INTERSECTION A-6
00+080.96	00+020.00	12.51	LT OF A-1 TO LT OF PAN-PHIL HIGHWAY	108+160.00	108+330.23	170.23	APPROACH TO A-10	104+700.98	104+745.98	45.00	(RS) 150mm x 1.0m @ 3.0m GAP	C	2	APPROACHING INTERSECTION A-6
00+020.00	00+080.00	60	LEFT OF PAN-PHIL HIGHWAY	00+014.51	00+148.32	133.81	INTERSECTION A-1	104+862.37	104+907.37	45.00	(LS) 150mm x 1.0m @ 3.0m GAP	A	2	APPROACHING INTERSECTION A-7
00+013.69	00+080.00	66.31	RIGHT OF PAN-PHIL HIGHWAY	00+920.00	00+984.89	64.89	INTERSECTION A-10	105+212.15	105+257.15	45.00	(RS) 150mm x 1.0m @ 3.0m GAP	C	2	APPROACHING INTERSECTION A-7
00+013.69	00+100.86	11.63	RT OF PAN-PHIL HIGHWAY TO LT OF A-1	01+014.99	01+040.56	25.57	INTERSECTION A-10	105+371.91	105+416.91	45.00	(LS) 150mm x 1.0m @ 3.0m GAP	A	4	APPROACHING INTERSECTION A-10
00+100.86	00+227.57	126.71	LEFT OF A-1					108+026.99	108+071.99	45.00	(RS) 150mm x 1.0m @ 3.0m GAP	B	4	APPROACHING INTERSECTION A-10
00+033.93	00+227.57	193.64	RIGHT OF A-1					108+219.71	108+264.71	45.00	(LS) 150mm x 1.0m @ 3.0m GAP			
00+033.93	100+878.97	33.20	RIGHT OF A-1 TO MAIN BYPASS											
100+878.97	104+787.90	3908.93	MAIN BYPASS											
104+787.90	00+986.37	16.76	MAIN BYPASS TO RT OF A-6											
00+986.37	00+986.37	10.32	RIGHT OF A-6											
00+986.37	00+988.54	12.49	LEFT OF A-6											
00+988.54	104+820.60	23.40	LEFT OF A-6 TO MAIN BYPASS											
104+820.60	105+302.75	482.15	MAIN BYPASS											
105+302.75	00+987.40	23.77	MAIN BYPASS TO RT OF A-7											
00+987.40	00+987.40	11.57	RIGHT OF A-7											
00+987.40	00+986.04	10.21	LEFT OF A-7											
00+986.04	105+329.73	16.52	LEFT OF A-7 TO MAIN BYPASS											
105+329.73	108+117.47	2787.74	MAIN BYPASS											
108+117.47	00+969.77	23.16	MAIN BYPASS TO RT OF A-10											
00+969.77	00+969.77	109.77	RIGHT OF A-10											
00+969.77	00+978.15	118.15	LEFT OF A-10											
00+978.15	108+163.88	24.51	LEFT OF A-10 TO MAIN BYPASS											
108+163.88	109+920.00	1756.12	MAIN BYPASS											
100+834.61	100+845.29	11.68	LT CORNER ISLAND OF A-1											
00+009.67	00+019.54	9.87	LT CORNER ISLAND OF A-1											
100+834.61	00+019.54	15.95	LT CORNER ISLAND OF A-1											
100+858.97	100+868.81	9.84	RT CORNER ISLAND OF A-1											
00+009.67	00+017.93	8.26	RT CORNER ISLAND OF A-1											
100+868.81	00+017.93	13.27	RT CORNER ISLAND OF A-1											

NOTE:
A - LEFT/RIGHT ARROW
COMBINATION OF STRAIGHT AND LEFT ARROWS OR
B - STRAIGHT AND RIGHT ARROWS
C - STRAIGHT ARROW

1.2 RIGHT SIDE, OUTER EDGE				3.0 LANE LINE				6.0 BARRIER LINES				8.0 PEDESTRIAN AND STOP LINES			
FROM	TO	LENGTH (m)	REMARKS	FROM	TO	LENGTH (m)	REMARKS	FROM	TO	LENGTH (m)	REMARKS	LOCATION	AREA (m ²)	REMARKS	
100+480.00	104+791.72	4311.72	MAIN BYPASS	100+560.00	100+840.70	280.70	(LS) INNER LANE LINE 150mmx3.0m @ 4.50m GAP	101+051.64	101+261.64	210.00	LEFT SIDE	INT. A-1	9.92	SIGNALIZED	
104+791.72	01+023.31	23.40	MAIN BYPASS TO RT OF A-6	100+723.94	100+840.70	116.76	(LS) OUTER LANE LINE 150mmx3.0m @ 4.50m GAP	104+430.98	104+640.98	210.00	RIGHT SIDE	A-1	14.05		
01+023.31	01+025.48	2.17	RIGHT OF A-6	100+560.00	100+810.70	250.70	(RS) OUTER LANE LINE 150mmx3.0m @ 4.50m GAP	104+967.37	105+152.15	389.56	BOTH SIDES	MAIN BYPASS	29.90	UN SIGNALIZED	
01+025.48	104+824.32	16.76	LEFT OF A-6 TO MAIN BYPASS	100+740.70	100+810.70	70.00	(RS) INNER LANE LINE 150mmx3.0m @ 4.50m GAP	105+476.91	105+686.91	210.00	LEFT SIDE	INT. A-6	6.12	UN SIGNALIZED	
104+824.32	105+294.09	469.77	MAIN BYPASS	100+810.70	100+840.70	60.00	(RS) 2 - LANE LINE 150mm UNBROKEN	107+701.97	107+911.97	210.00	RIGHT SIDE	INT. A-7	21.34	UN SIGNALIZED	
105+294.09	01+024.28	16.61	MAIN BYPASS TO RT OF A-7	100+866.64	100+896.64	60.00	(LS) 2 - LANE LINE 150mm UNBROKEN	108+364.71	108+574.71	210.00	LEFT SIDE	A-7	6.12		
01+024.28	105+326.98	25.33	LEFT OF A-7 TO MAIN BYPASS	100+896.64	100+941.64	45.00	(LS) INNER LANE LINE 150mmx3.0m @ 4.50m GAP								
105+326.98	108+128.14	2801.16	MAIN BYPASS	100+866.64	100+941.64	75.00	(RS) LANE LINE 150mmx3.0m @ 4.50m GAP								
108+128.14	01+021.76	24.30	MAIN BYPASS TO RT OF A-10	104+745.98	104+785.98	40.00	(RS) LANE LINE 150mm UNBROKEN								
01+021.76	01+100.00	78.24	RIGHT OF A-10	104+822.37	104+862.37	40.00	(LS) LANE LINE 150mm UNBROKEN								
01+100.00	01+100.00	70.01	LEFT OF A-10	105+257.15	105+297.15	40.00	(RS) LANE LINE 150mm UNBROKEN								
01+029.99	01+173.85	22.96	LEFT OF A-10 TO MAIN BYPASS	105+331.91	105+371.91	40.00	(LS) LANE LINE 150mm UNBROKEN								
108+173.85	109+920.00	1746.15	MAIN BYPASS	108+071.99	108+104.33	32.34	(RS) LANE LINE 150mmx3.0m @ 4.50m GAP								
				108+104.33	108+134.33	30.00	(RS) LANE LINE 150mm UNBROKEN								
				108+164.47	108+194.47	30.00	(LS) LANE LINE 150mm UNBROKEN								
				108+194.47	108+219.71	25.24	(LS) LANE LINE 150mmx3.0m @ 4.50m GAP								
				00+015.71	00+045.71	30.00	(LS) LANE LINE 100mm UNBROKEN (A-1)								
				00+045.71	00+147.57	101.86	(LS) LANE LINE 100mmx3.0m @ 4.50m GAP (A-1)								
				00+147.57	00+977.77	30.00	(RS) LANE LINE 100mm UNBROKEN (A-10)								
				00+977.77	00+947.77	27.77	(RS) LANE LINE 100mmx3.0m @ 4.50m GAP (A-10)								
				00+947.77	00+947.77	27.77	(RS) LANE LINE 100mmx3.0m @ 4.50m GAP (A-10)								
				01+022.19	01+042.19	20.00	(LS) LANE LINE 100mm UNBROKEN (A-10)								

 JICA JAPAN INTERNATIONAL COOPERATION AGENCY	 KEI KATAHIRA & ENGINEERS INTERNATIONAL	 YEO YACHIYO ENGINEERING CO., LTD.	DESIGNED	DATE	SIGNATURE	 DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Paridei, Cabanatuan and San Jose Bypasses)				SCALE :	SHEET CONTENTS :	SHEET NO. :	
			CHECKED	10/15/02	<i>[Signature]</i>		Submitted By:	Reviewed By:	Recommended By:	Approved By:	CABANATUAN BYPASS - CONTRACT PACKAGE I	FULL SIZE A1	SCHEDULE OF PAVEMENT MARKINGS	RG-05
			SUBMITTED	10/16/02	<i>[Signature]</i>		DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONDAN Undersecretary				

SCHEDULE OF ROAD RIGHT-OF-WAY MARKERS

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING	POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING	POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING	POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING	POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
BYPASS - LEFT SIDE																								
1L	100+480	-12.000	1,699,524.771	493,391.794	54L	102+460	-16.000	1,700,995.481	494,599.233	108L	104+940	-23.000	1,703,441.934	494,954.565	162L	107+240	-17.000	1,705,531.913	495,890.217	5R	100+560	16.000	1,699,602.956	493,424.520
2L	100+500	-13.000	1,699,544.795	493,391.990	55L	102+540	-16.000	1,701,069.801	494,626.843	109L	105+005.830	-23.059	1,703,507.387	494,964.888	163L	107+480	-17.000	1,705,739.140	496,011.283	6R	100+600	16.000	1,699,642.358	493,427.286
3L	100+520	-14.000	1,699,564.819	493,392.186	56L	102+600	-16.000	1,701,126.305	494,645.368	110L	105+056.162	-23.751	1,703,557.410	494,972.974	164L	107+580	-17.000	1,705,825.686	496,060.488	7R	100+620	17.000	1,699,661.486	493,430.388
4L	100+540	-15.000	1,699,584.843	493,392.381	57L	102+655.135	-16.074	1,701,178.767	494,660.652	111L	105+080	-24.000	1,703,581.049	494,977.132	165L	107+600	-18.000	1,705,843.630	496,069.150	8R	100+640	17.000	1,699,680.411	493,433.341
5L	100+560	-16.000	1,699,604.867	493,392.577	58L	102+669.704	-16.801	1,701,192.887	494,663.737	112L	105+100	-23.000	1,703,600.629	494,981.932	166L	107+620	-19.000	1,705,861.618	496,077.707	9R	100+660	18.000	1,699,698.931	493,438.207
6L	100+580	-16.000	1,699,624.953	493,393.831	59L	102+740	-17.000	1,701,260.539	494,680.224	113L	105+120	-22.000	1,703,620.175	494,986.842	167L	107+660	-19.000	1,705,896.800	496,096.277	10R	100+680	18.000	1,699,717.413	493,443.020
7L	100+600	-17.000	1,699,645.356	493,394.422	60L	102+800	-17.000	1,701,318.717	494,692.363	114L	105+140	-21.000	1,703,639.687	494,991.863	168L	107+680	-18.000	1,705,914.014	496,106.300	11R	100+700	19.000	1,699,735.307	493,449.696
8L	100+620	-17.000	1,699,665.896	493,396.675	61L	102+820	-18.000	1,701,338.372	494,694.993	115L	105+160	-20.000	1,703,659.164	494,996.994	169L	107+700	-16.000	1,705,930.838	496,117.120	12R	100+760	19.000	1,699,787.791	493,472.179
9L	100+640	-18.000	1,699,686.668	493,398.904	62L	102+840	-19.000	1,701,358.056	494,697.409	116L	105+180	-19.000	1,703,678.606	495,002.235	170L	107+780	-16.000	1,706,002.295	496,152.285	13R	100+780	20.000	1,699,803.958	493,482.253
10L	100+660	-19.000	1,699,707.357	493,402.179	63L	102+860	-20.000	1,701,377.773	494,699.631	117L	105+220	-19.000	1,703,717.835	495,011.098	171L	107+860	-16.000	1,706,074.537	496,185.768	14R	100+800	20.000	1,699,820.107	493,492.260
11L	100+680	-20.000	1,699,727.905	493,406.497	64L	102+880	-21.000	1,701,397.522	494,701.681	118L	105+240	-18.000	1,703,737.179	495,016.671	172L	107+880	-17.000	1,706,093.121	496,192.970	15R	100+820	21.000	1,699,835.147	493,503.869
12L	100+700	-22.000	1,699,748.583	493,410.905	65L	102+900	-22.000	1,701,417.302	494,703.580	119L	105+304.988	-18.047	1,703,800.593	495,032.337	173L	107+920	-17.000	1,706,129.606	496,208.887	16R	100+874	21.000	1,699,874.342	493,536.697
13L	100+720	-24.000	1,699,769.108	493,416.375	66L	102+920	-25.000	1,701,437.385	494,703.370	120L	105+331.837	-18.918	1,703,826.925	495,038.329	174L	107+940	-18.000	1,706,148.305	496,215.768	17R	100+900	20.000	1,699,892.289	493,553.643
14L	100+760	-24.000	1,699,807.637	493,434.033	67L	102+980	-25.000	1,701,496.593	494,711.107	121L	105+380	-19.000	1,703,873.658	495,051.015	175L	107+960	-19.000	1,706,167.038	496,222.540	18R	100+920	19.000	1,699,905.530	493,567.338
15L	100+820	-25.000	1,699,862.238	493,466.693	68L	103+000	-22.000	1,701,516.030	494,716.555	122L	105+400	-18.000	1,703,892.727	495,057.465	176L	107+980	-20.000	1,706,185.804	496,229.202	19R	100+940	19.000	1,699,917.300	493,582.315
16L	100+874	-25.509	1,699,906.542	493,503.138	69L	103+020	-21.000	1,701,535.745	494,720.001	123L	105+420	-18.000	1,703,912.034	495,063.063	177L	108+000	-21.000	1,706,204.603	496,235.755	20R	100+960	18.000	1,699,929.148	493,597.317
17L	100+900	-24.000	1,699,924.750	493,523.940	70L	103+040	-20.000	1,701,555.472	494,723.446	124L	105+440	-17.000	1,703,931.023	495,069.730	178L	108+080	-21.000	1,706,278.701	496,264.612	21R	100+980	17.000	1,699,940.473	493,613.047
18L	100+920	-23.000	1,699,937.894	493,540.569	71L	103+060	-19.000	1,701,575.198	494,726.890	125L	105+500	-17.000	1,703,988.633	495,087.509	179L	108+120	-21.227	1,706,316.069	496,278.189	22R	101+080	17.000	1,699,990.975	493,698.832
19L	100+940	-22.000	1,699,950.159	493,557.795	72L	103+080	-18.000	1,701,594.925	494,730.334	126L	105+560	-17.000	1,704,045.929	495,106.273	180L	108+159.227	-21.703	1,706,352.946	496,290.850	23R	101+180	17.000	1,700,041.433	493,785.175
20L	100+960	-20.000	1,699,960.680	493,576.111	73L	103+200	-18.000	1,701,714.020	494,745.046	127L	105+580	-18.000	1,704,065.280	495,111.800	181L	108+260	-22.000	1,706,448.005	496,322.346	24R	101+280	17.000	1,700,092.653	493,871.418
21L	100+980	-18.000	1,699,970.212	493,594.591	74L	103+220	-17.000	1,701,733.746	494,748.490	128L	105+620	-18.000	1,704,103.231	495,125.075	182L	108+280	-21.000	1,706,466.659	496,329.281	25R	101+300	16.000	1,700,104.030	493,888.036
22L	101+000	-17.000	1,699,979.892	493,612.541	75L	103+300	-17.000	1,701,813.143	494,758.298	129L	105+640	-19.000	1,704,122.490	495,130.935	183L	108+300	-19.000	1,706,485.066	496,337.067	26R	101+360	16.000	1,700,136.502	493,939.011
23L	101+080	-17.000	1,700,020.330	493,681.677	76L	103+320	-18.000	1,701,833.114	494,759.758	130L	105+660	-19.000	1,704,141.374	495,137.845	184L	108+320	-18.000	1,706,503.816	496,343.793	27R	101+380	17.000	1,700,146.854	493,956.365
24L	101+100	-18.000	1,700,031.284	493,698.441	77L	103+440	-18.000	1,701,952.209	494,774.469	131L	105+680	-20.000	1,704,160.570	495,143.926	185L	108+400	-18.000	1,706,580.304	496,365.784	28R	101+470.443	17.285	1,700,199.534	494,030.827
25L	101+120	-19.000	1,700,042.238	493,715.204	78L	103+460	-17.000	1,701,971.936	494,777.914	132L	105+700	-20.000	1,704,179.379	495,151.053	186L	108+420	-17.000	1,706,599.244	496,371.973	29R	101+486.789	16.751	1,700,209.899	494,043.776
26L	101+200	-19.000	1,700,082.602	493,784.237	79L	103+540.734	-17.000	1,702,052.061	494,787.811	133L	105+720	-19.000	1,704,197.785	495,159.220	187L	108+500	-17.000	1,706,676.351	496,391.775	30R	101+540	18.000	1,700,242.151	494,086.759
27L	101+260	-19.000	1,700,113.096	493,835.669	80L	103+563	-16.000	1,702,074.036	494,791.533	134L	105+740	-18.000	1,704,216.138	495,167.489	188L	108+579.108	-17.000	1,706,753.196	496,410.338	31R	101+640	18.000	1,700,307.943	494,163.374
28L	101+280	-18.000	1,700,122.541	493,853.205	81L	103+700	-16.000	1,702,210.003	494,808.329	135L	105+800	-18.000	1,704,272.030	495,190.142	189L	108+589.065	-18.000	1,706,763.109	496,411.702	32R	101+660	17.000	1,700,322.339	494,177.571
29L	101+300	-17.000	1,700,132.090	493,870.568	82L	103+720	-15.000	1,702,229.729	494,811.774	136L	105+820	-17.000	1,704,290.185	495,198.827	190L	108+700	-18.000	1,706,870.948	496,437.727	33R	101+740	17.000	1,700,378.589	494,235.505
30L	101+320	-16.000	1,700,141.764	493,888.049	83L	103+820	-15.000	1,702,328.975	494,824.033	137L	105+840	-17.000	1,704,308.678	495,205.694	191L	108+720	-19.000	1,706,890.625	496,441.447	34R	101+760	16.000	1,700,393.743	494,248.873
31L	101+448.212	-15.713	1,700,212.818	493,993.435	84L	103+840	-16.000	1,702,348.947	494,825.493	138L	105+860	-16.000	1,704,326.727	495,215.583	192L	108+740	-19.000	1,706,910.067	496,446.139	35R	101+840	16.000	1,700,453.090	494,303.564
32L	101+463.836	-17.080	1,700,223.103	494,005.086	85L	103+860	-18.000	1,702,369.041	494,825.960	139L	105+960	-16.000	1,704,418.242	495,257.007	193L	108+760	-18.000	1,706,929.274	496,451.803	36R	101+860	17.000	1,700,467.649	494,317.578
33L	101+540	-17.000	1,700,269.327	494,064.703	86L	103+900	-18.000	1,702,408.739	494,830.864	140L	105+980	-17.000	1,704,436.831	495,264.703	194L	108+780	-17.000	1,706,948.481	496,457.467	37R	101+880	17.000	1,700,483.016	494,330.672
34L	101+580	-17.000	1,700,294.636	494,095.188	87L	103+920	-17.000	1,702,428.466	494,834.308	141L	105+080	-17.000	1,704,526.898	495,309.253	195L	109+000	-17.000	1,707,162.341	496,509.080	38R	101+900	18.000	1,700,497.892	494,344.366
35L	101+680	-17.000	1,700,360.814	494,168.876	88L	103+960	-17.000	1,702,468.164	494,839.212	142L	106+157.014	-16.967	1,704,595.357	495,345.335	196L	109+020	-18.000	1,707,182.018	496,512.799	39R	101+980	18.000	1,700,561.379	494,394.336
36L	101+700	-16.000	1,700,373.818	494,183.863	89L	103+980	-16.000	1,702,487.891	494,842.656	143L	106+176.387	-16.053	1,704,612.017	495,355.441	197L	109+080	-18.000	1,707,240.343	496,526.876	40R	102+060	18.000	1,700,627.023	494,441.435
37L	101+780	-																						

SCHEDULE OF ROAD RIGHT-OF-WAY MARKERS

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING	POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING	POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING	POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING	POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
59R	102+880	20.000	1,701,391.405	494,742.222	113R	105+820	18.000	1,704,276.576	495,231.073	167R	109+020	16.000	1,707,174.041	496,545.851	A4-6L	1+080	-6.000	1,702,096.821	494,862.747	AB-7R	1+080	4.890	1,704,651.166	495,444.538
60R	102+900	21.000	1,701,411.192	494,746.144	114R	105+840	17.000	1,704,295.280	495,237.942	168R	109+288	16.000	1,707,434.562	496,608.724	A4-7L	1+080	-4.836	1,702,098.365	494,882.361	AB-8R	1+100	5.000	1,704,660.340	495,462.043
61R	102+920	25.000	1,701,430.579	494,752.905	115R	105+860	16.000	1,704,313.949	495,244.921	169R	109+298.500	16.724	1,707,444.599	496,611.891	A4-8L	1+100	-5.000	1,702,103.845	494,901.381	INTERSECTION A-9				
62R	102+928.076	24.430	1,701,438.711	494,753.438	116R	105+880	16.000	1,704,332.178	495,252.923	170R	109+420	17.000	1,707,561.885	496,641.795	A4-1R	0+900	3.500	1,702,025.664	494,717.897	A9-1L	0+900	-3.500	1,704,944.129	495,474.246
63R	102+980	25.000	1,701,490.358	494,760.717	117R	105+900	15.000	1,704,350.772	495,260.117	171R	109+520	17.000	1,707,657.570	496,669.121	A4-2R	0+920	3.500	1,702,033.215	494,736.416	A9-2L	0+960	-4.000	1,704,956.139	495,533.266
64R	103+020	21.000	1,701,530.596	494,761.685	118R	105+960	15.000	1,704,405.056	495,285.063	172R	109+620	17.000	1,707,752.435	496,699.171	A4-3R	0+960	5.000	1,702,050.319	494,772.815	A9-3L	0+980	-4.750	1,704,959.037	495,553.239
65R	103+040	20.000	1,701,550.568	494,763.144	119R	105+980	16.000	1,704,422.624	495,294.488	173R	109+640	16.000	1,707,771.824	496,704.558	A4-4R	0+973	5.500	1,702,055.081	494,784.609	A9-4L	1+040	-4.250	1,704,968.433	495,610.812
66R	103+060	19.000	1,701,570.540	494,764.603	120R	106+080	16.000	1,704,511.846	495,338.620	174R	109+740	16.000	1,707,865.431	496,737.851	A4-5R	1+020	6.000	1,702,073.151	494,827.999	A9-5L	1+080	-3.500	1,704,975.507	495,629.622
67R	103+080	18.000	1,701,590.511	494,766.063	121R	106+193.298	15.786	1,704,611.465	495,391.489	175R	109+860	16.000	1,707,976.686	496,781.319	A4-6R	1+040	6.000	1,702,080.392	494,846.052	A9-6L	1+080	-3.500	1,704,981.145	495,649.400
68R	103+100	18.000	1,701,610.360	494,768.515	122R	106+219.090	16.473	1,704,633.539	495,404.615	176R	109+880	17.000	1,707,994.686	496,789.856	A4-7R	1+060	4.500	1,702,086.237	494,864.301	A9-7L	1+100	-3.500	1,704,985.210	495,668.982
69R	103+120	17.000	1,701,630.332	494,769.974	123R	106+340	15.000	1,704,738.668	495,463.851	177R	109+900	17.000	1,708,013.042	496,797.574	A4-8R	1+080	3.676	1,702,090.054	494,884.197	A9-1R	0+900	5.000	1,704,935.796	495,475.921
70R	103+140	16.000	1,701,650.304	494,771.434	124R	106+580	15.000	1,704,945.896	495,584.917	178R	109+920	18.000	1,708,030.948	496,806.314	A4-9R	1+100	3.500	1,702,095.454	494,903.654	A9-2R	0+960	4.660	1,704,947.563	495,534.468
71R	103+360	16.000	1,701,888.844	494,798.405	125R	106+603	16.000	1,704,965.251	495,597.382	INTERSECTION A-1					INTERSECTION A-5					A9-3R	1+020	6.000	1,704,952.436	495,594.461
72R	103+380	17.000	1,701,888.371	494,801.849	126R	106+820	16.000	1,705,152.618	495,706.846	A1-1L	0+034	-18.000	1,699,883.088	493,470.818	A5-1L	0+910	-5.000	1,702,514.527	494,785.630	A9-4R	1+080	5.250	1,704,967.366	495,632.828
73R	103+560	17.000	1,702,067.013	494,823.917	127R	106+840	15.000	1,705,170.392	495,716.071	A1-2L	0+060	-18.039	1,699,900.449	493,450.847	A5-2L	0+940	-4.921	1,702,528.842	494,811.809	A9-5R	1+100	4.000	1,704,977.867	495,670.507
74R	103+583	16.000	1,702,089.962	494,825.744	128R	107+000	15.000	1,705,308.543	495,796.782	A1-3L	0+100	-15.000	1,699,939.624	493,425.994	A5-3L	0+960	-5.000	1,702,539.688	494,828.565	INTERSECTION A-10				
75R	103+720	16.000	1,702,225.929	494,842.540	129R	107+020	16.000	1,705,325.308	495,807.734	A1-4L	0+120	-13.414	1,699,961.711	493,420.107	A5-4L	0+980	-6.500	1,702,550.510	494,846.030	A10-1L	0+860	-7.500	1,706,339.340	496,166.818
76R	103+740	15.000	1,702,245.901	494,843.999	130R	107+040	15.000	1,705,343.081	495,816.959	A1-5L	0+140	-12.823	1,699,984.184	493,417.772	A5-5L	1+027	-5.727	1,702,570.275	494,888.679	A10-2L	0+880	-7.500	1,706,339.531	496,186.817
77R	103+840	16.000	1,702,345.024	494,857.251	131R	107+060	17.000	1,705,359.341	495,828.775	A1-6L	0+227.573	-10.000	1,700,072.510	493,424.355	A5-6L	1+090	-5.000	1,702,585.168	494,946.626	A10-3L	0+920	-12.500	1,706,344.911	496,226.767
78R	104+050.500	16.000	1,702,553.936	494,883.058	132R	107+080	18.000	1,705,376.106	495,839.727	A1-1R	0+034	15.000	1,699,907.993	493,492.468	A5-1R	0+910	3.000	1,702,507.508	494,789.468	A10-4L	0+970	-12.500	1,706,345.386	496,276.765
79R	104+068	16.000	1,702,571.304	494,885.203	133R	107+240	18.000	1,705,514.257	495,920.438	A1-2R	0+060	14.972	1,699,924.799	493,473.135	A5-2R	0+960	4.500	1,702,531.546	494,833.459	A10-5L	1+035	-12.500	1,706,346.005	496,341.762
80R	104+240	16.000	1,702,742.006	494,906.290	134R	107+260	17.000	1,705,532.031	495,929.663	A1-3R	0+100	14.000	1,699,951.702	493,452.359	A5-3R	1+020	5.000	1,702,557.571	494,887.047	A10-6L	1+080	-7.500	1,706,341.433	496,386.808
81R	104+420	16.000	1,702,920.648	494,928.357	135R	107+280	17.000	1,705,549.300	495,939.752	A1-4R	0+140	9.741	1,699,984.851	493,440.327	A5-4R	1+060	3.000	1,702,576.007	494,922.395	A10-7L	1+100	-7.500	1,706,341.623	496,406.807
82R	104+440	17.000	1,702,940.375	494,931.802	136R	107+300	16.000	1,705,567.073	495,948.977	A1-5R	0+227.573	10.000	1,700,071.587	493,444.334	A5-5R	1+090	3.000	1,702,587.814	494,949.974	A10-1R	0+860	7.500	1,706,324.341	496,166.960
83R	104+640	17.000	1,703,138.866	494,956.321	137R	107+320	15.000	1,705,584.846	495,958.202	INTERSECTION A-2					INTERSECTION A-6					A10-2R	0+880	7.500	1,706,324.531	496,186.959
84R	104+660	18.000	1,703,158.593	494,959.765	138R	107+480	15.000	1,705,705.729	496,028.824	A2-1L	0+900	-5.000	1,700,252.066	493,926.710	A6-1L	0+910	-6.000	1,703,283.009	494,871.139	A10-3R	0+920	12.500	1,706,319.912	496,227.005
85R	104+795.213	18.000	1,703,292.786	494,976.342	139R	107+480	16.000	1,705,722.493	496,039.776	A2-2L	0+940	-5.000	1,700,236.189	493,963.040	A6-2L	0+965	-6.000	1,703,298.093	494,924.030	A10-4R	0+962	12.500	1,706,320.311	496,269.003
86R	104+821.998	17.045	1,703,319.486	494,978.678	140R	107+520	16.000	1,705,757.221	496,059.907	A2-3L	1+080	-5.000	1,700,191.005	494,094.866	A6-3L	1+026	-7.000	1,703,315.784	494,982.417	A10-5R	1+027	12.500	1,706,320.930	496,334.000
87R	104+880	17.000	1,703,376.910	494,985.835	141R	107+540	17.000	1,705,774.194	496,070.710	A2-4L	1+100	-5.000	1,700,186.235	494,114.289	A6-4L	1+090	-6.000	1,703,332.375	495,044.237	A10-6R	1+040	12.500	1,706,321.053	496,347.000
88R	104+900	18.000	1,703,396.499	494,989.477	142R	107+620	17.000	1,705,844.631	496,109.447	A2-1R	0+900	3.000	1,700,244.783	493,923.400	A6-1R	0+910	7.000	1,703,270.508	494,874.704	A10-7R	1+080	7.500	1,706,326.434	496,386.950
89R	104+920	20.000	1,703,415.920	494,994.220	143R	107+700	17.000	1,705,915.936	496,146.564	A2-2R	0+940	4.000	1,700,227.759	493,959.887	A6-2R	0+970	7.000	1,703,286.963	494,932.404	A10-8R	1+100	7.500	1,706,326.624	496,406.950
90R	104+960	20.000	1,703,455.257	495,000.082	144R	107+720	16.000	1,705,934.340	496,154.693	A2-3R	1+040	6.000	1,700,192.112	494,053.399	A6-3R	1+026	7.000	1,703,302.321	494,986.257	INTERSECTION A-11				
91R	104+980	21.000	1,703,474.741	495,004.168	145R	107+800	16.000	1,706,006.655	496,189.748	A2-4R	1+100	4.000	1,700,177.494	494,112.142	A6-4R	1+090	7.000	1,703,319.873	495,047.803	A11-1L	0+910	-5.000	1,706,770.332	496,339.686
92R	105+006.172	22.937	1,703,500.088	495,010.303	146R	107+900	16.000	1,706,098.145	496,231.228	INTERSECTION A-3					INTERSECTION A-7					A11-2L	1+040	-4.000	1,706,759.600	496,468.933
93R	105+055.846	22.254	1,703,548.816	495,018.170	147R	107+920	17.000	1,706,116.189	496,240.128	A3-1L	0+900	-5.000	1,701,206.826	494,581.527	A7-1L	0+920	-7.500	1,703,858.050	494,991.954	A11-3L	1+079.747	-4.017	1,706,760.890	496,508.147
94R	105+080	21.000	1,703,572.643	495,021.340	148R	107+960	17.000	1,706,153.211	496,255.778	A3-2L	0+940	-4.401	1,701,197.254	494,619.935	A7-2L	0+974	-7.500	1,703,826.127	495,035.509	A11-4L	1+090	-4.000	1,706,761.676	496,518.371
95R	105+100	20.000	1,703,592.355	495,024.128	149R	107+980	18.000	1,706,171.409	496,264.370	A3-3L	0+960	-5.000	1,701,195.262	494,639.730	A7-3L	1+023	-7.500	1,703,797.161	495,075.030	A11-1R	0+910	5.000	1,706,760.382	496,338.688
96R	105+120	20.000	1,703,611.858	495,028.011	150R	108+000	19.000	1,706,189.662	496,272.860	A3-4L	0+980	-5.000	1,701,191.416	494,659.903	A7-4L	1+080	-7.500	1,703,763.465	495,121.00					