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NO. 11

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REPUBLIC OF THE PHILIPPINES

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

FINAL REPORT

PLARIDEL BYPASS - CONTRACT PACKAGE III

(INITIAL STAGE)
STA. 47+400.000 TO STA. 49+625.000

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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REPUBLIC OF THE PHILIPPINES

THE DETAILED DESIGN STUDY
ON
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ALONG THE PAN-PHILIPPINE HIGHWAY
(PLARIDEL, CABANATUAN AND SAN JOSE BYPASSES)

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GENERAL

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

PLARIDEL BYPASS - PACKAGE III

(INITIAL STAGE)

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REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
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(INITIAL STAGE)

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YEC YACHIYO ENGINEERING CO., LTD.

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REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
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PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
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(INITIAL STAGE)

SHEET NO.	TITLE OF DRAWING
	ROADWAY LIGHTING LAYOUT FOR INTERSECTION
EI-01	LAYOUT PLAN AND LOAD SCHEDULE INTERSECTION A-17
EI-02	LIGHTING LAYOUT, LOAD SCHEDULE AND LIGHTING FIXTURE SCHEDULE BOX CULVERT B-9
	ROADWAY LAYOUT FOR ANGAT RIVER BRIDGE (BRIDGE NO. 8)
EB-01	ROADWAY LIGHTING LAYOUT PLAN
EB-02	LOAD SCHEDULE
	ENGINEER'S FIELD OFFICE & LIVING QUARTERS
	ARCHITECTURAL
FA-01	PERSPECTIVE AND TABLE OF CONTENTS
FA-02	ENGR'S FIELD OFFICE - FLOOR PLAN, ELEVATIONS, CROSS-SECTIONS AND REFLECTED CEILING PLAN
FA-03	ENGR'S LIVING QTRS - FLOOR PLAN, ELEVATIONS, CROSS-SECTIONS AND REFLECTED CEILING PLAN
FA-04	ENGR'S FIELD OFFICE / LABORATORY - ROOF PLAN, CROSS-SECTION AND SCHEDULE OF DOORS & WINDOWS
FA-05	ENGR'S LIVING QUARTERS - ROOF PLAN, CROSS-SECTION AND SCHEDULE OF DOORS & WINDOWS
FA-06	ENGR'S FIELD OFFICE & LIVING QUATERS - FOUNDATION PLAN, R.C. RAMP DETAIL, DETAIL OF F-1, P-1 & DESIGN
FA-07	ENGR'S FIELD OFFICE / LABORATORY - FRONT & RIGHT SIDE ELEVATION OF STEEL STUD FRAMES AND SCHEMATIC DIAGRAMS
FA-08	ENGR'S LIVING QTRS - REAR & LEFT SIDE ELEVATION OF STEEL STUD FRAMES AND SCHEMATIC DIAGRAMS
FA-09	ENGR'S FIELD OFFICE - FRONT & RIGHT SIDE ELEVATION OF STEEL STUD FRAMES AND SCHEMATIC DIAGRAMS
FA-10	ENGR'S LIVING QTRS - REAR & LEFT SIDE ELEVATION OF STEEL STUD FRAMES AND SCHEMATIC DIAGRAMS
FA-11	ENGR'S FIELD OFFICE & LIVING QUARTERS - DETAIL OF CONNECTIONS, DETAILS 1 TO 15
FA-12	ROOF FRAMING PLAN, SCHEMATIC DIAGRAM, PURLIN CONNECTION AND CROSS BRACING CONNECTION
	ELECTRICAL
FE-01	ENGR'S FIELD OFFICE / LABORATORY - LIGHTING LAYOUT, POWER LAYOUT & ELECTRICAL SYMBOLS AND GENERAL NOTES
FE-02	ENGR'S LIVING QTRS - LIGHTING LAYOUT, POWER LAYOUT & ELECTRICAL SYMBOLS AND GENERAL NOTES
FE-03	ENGR'S FIELD OFFICE & LIVING QUARTERS - SCHEDULE OF LOADS AND COMPUTATIONS & ELECTRICAL RISER DIAGRAM
	PLUMBING
FP-01	ENGR'S FIELD OFFICE & LIVING QUARTERS - SEWER AND WATER LINE LAYOUT AND ISOMETRIC DIAGRAM
FP-02	ENGR'S FIELD OFFICE & LIVING QUARTERS - SEPTIC TANK DETAILS

SHEET NO.	TITLE OF DRAWING
	EXTERNAL
FX-01	ENGR'S FIELD OFFICE & LIVING QUARTERS - PLOT PLAN, ELEVATION OF FENCE & GATE AND TYPICAL FOUNDATION DETAIL
	OTHERS
	ELECTRICAL
	UTILITY RELOCATION REFERENCE LAYOUT PLAN
OE-01	LAYOUT PLAN, STA. 47 + 400.000 TO STA. 48 + 000.000
OE-02	LAYOUT PLAN, STA. 48 + 000.000 TO STA. 49 + 400.000
OE-03	LAYOUT PLAN, STA. 49 + 400.000 TO STA. 49 + 625.000
	CONE PENETRATION TEST (CPT)
OC-01	PROFILE, STA. 47 + 513.50 - STA. 59+513.50

SHEET NO.	TITLE OF DRAWING

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

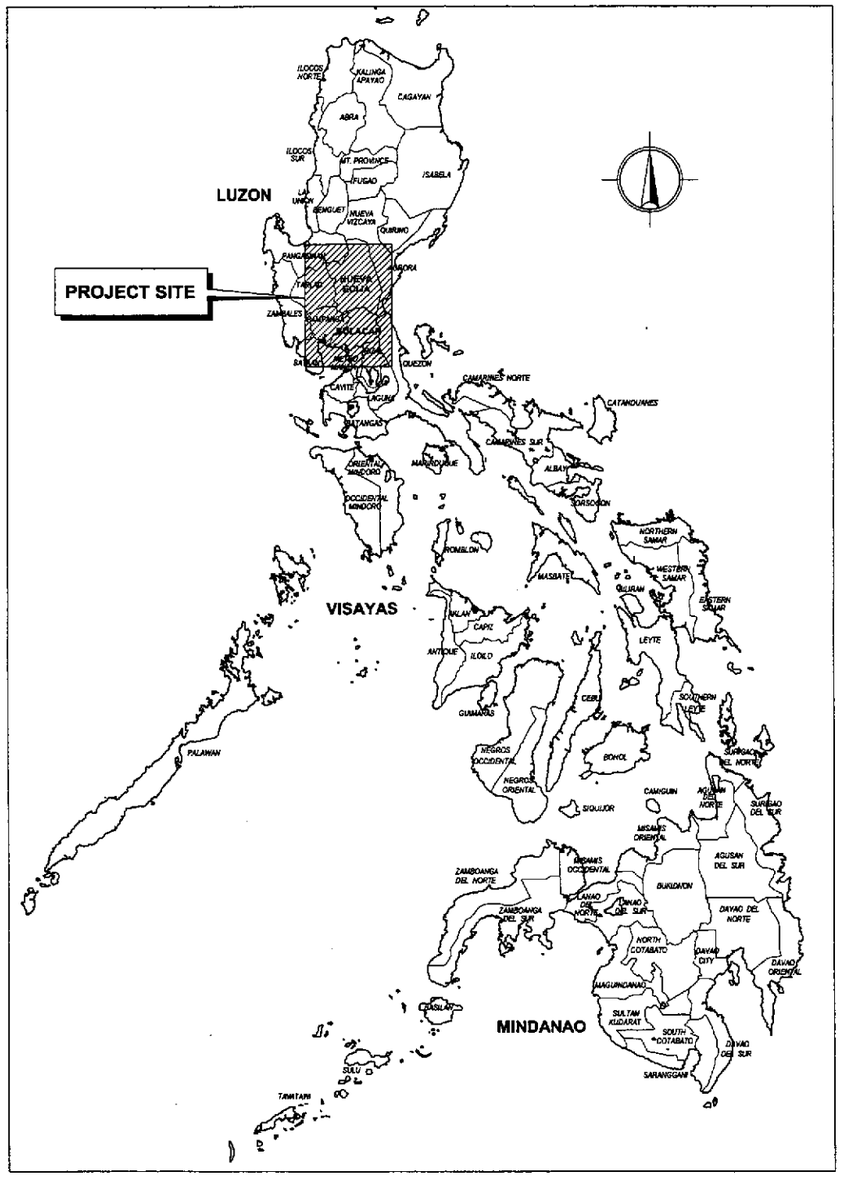
KEI KATAHIRA & ENGINEERS INTERNATIONAL
yec YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	7/21/02	A. APACIO
CHECKED	7/23/02	S. COSE
SUBMITTED	10/14/02	M. KUCHI (TEAM LEADER)

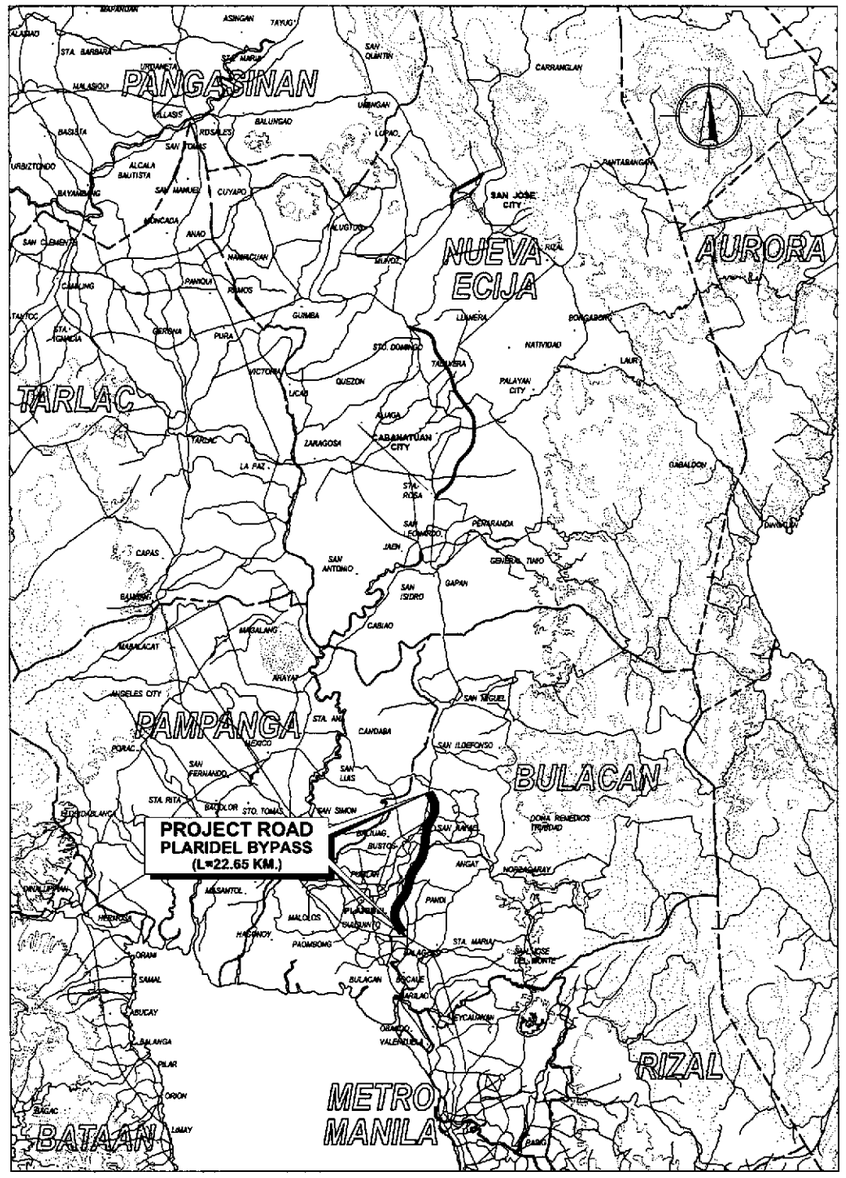
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONGAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE III	FULL SIZE A1	INDEX OF DRAWINGS (INITIAL STAGE) Sheet 3 of 3	GP-03



2 GP-04 KEY MAP
NOT TO SCALE



1 GP-04 VICINITY MAP
NOT TO SCALE

	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS					PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
JICA JAPAN INTERNATIONAL COOPERATION AGENCY	DESIGNED	9/21/02	A. ACACIO	PJHL – PMO	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)	NOT TO SCALE	KEY AND VICINITY MAP	GP-04
KEI KATAHIRA & ENGINEERS INTERNATIONAL / YEC YACHIYO ENGINEERING CO., LTD.	CHECKED	9/23/02	S. GOSE	Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature) / Approved By: (See cover sheet for Signature/Approval)	PLARIDEL BYPASS - CONTRACT PACKAGE III	FULL SIZE A1		
	SUBMITTED	9/24/02	M. KONDO TEAM LEADER	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONDAN Undersecretary / SIMEON A. DATUMANONG Secretary				

LEGEND AND SYMBOLS

EXISTING FEATURES

ROAD	BARANGAY ROAD
CONTOUR	
ORIGINAL GROUND	
CONCRETE FENCE	
BARBED WIRE FENCE	
HOUSE	
TREES	
BRIDGE	PLAN / PROFILE
SINGLE PIPE CULVERT	PLAN / PROFILE
DOUBLE PIPE CULVERT	PLAN / PROFILE
BOX CULVERT	PLAN / PROFILE
DITCH LINE/ IRRIGATION LINE	
IRRIGATION LINE	
RIVER/CREEK	
ELECTRIC POST	TP CEP WEP
KILOMETER POST	KM 156
TRAVERSE STATION POINT	
BENCHMARK	
FISH POND	FP
NATIONAL POWER CORP. TRANSMISSION LINE	NPC TOWER

NEW DESIGN FEATURES

PROJECT ROAD	
SERVICE OR FRONTAGE ROAD ALONG BYPASS	
CONTOUR	
RIGHT-OF-WAY LIMIT	
POINT OF INTERSECTION	
POINT OF INTERSECTION NO.	PI-00
℄ OF PROJECT ROAD	
FINISHED GRADE ON PROFILE	g=2.500%
BRIDGE	PLAN / PROFILE
SINGLE RC PIPE CULVERT	PLAN / PROFILE
DOUBLE RC PIPE CULVERT	PLAN / PROFILE
BOX CULVERT	PLAN / PROFILE
EARTH DITCH FLOW	
DIRECTION OF FLOW	
MANHOLE	
GUARDRAIL ON PLAN	
GUARDRAIL ON PROFILE	LEFT / RIGHT
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	E496,806 N1747600
AGGREGATE SOURCE	
LINE SYMMETRY	
SECTION TARGET	1B D-03
ELEVATION TARGET	1A D-04
TITLE TARGET	2 RS-02 — IDENTIFICATION SYMBOL / SHEET NO.
SUB-TITLE TARGET	2A RS-02
DETAIL REF TARGET	2b RI-05
BOREHOLE	
STREET LIGHTING POLE	
KILOMETER POST	Km
STATION GRID	162+000
LINED IRRIG. CANAL	
CHAIN LINK FENCE	
SODDING ON PLAN	
LOW TREES	
MIDDLE TREE	
HIGH TREE	

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KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

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DESIGNED	7/21/02	A. ACACIO
CHECKED	7/25/02	S. GOSE
SUBMITTED	6/14/01	M. KAWAGUCHI (TEAM LEADER)

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	NOT TO SCALE	LEGEND AND SYMBOLS	GP-05
PLARIDEL BYPASS - CONTRACT PACKAGE III	FULL SIZE A1		

ABBREVIATIONS

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

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SUBMITTED	10/14/02	TEAM LEADER

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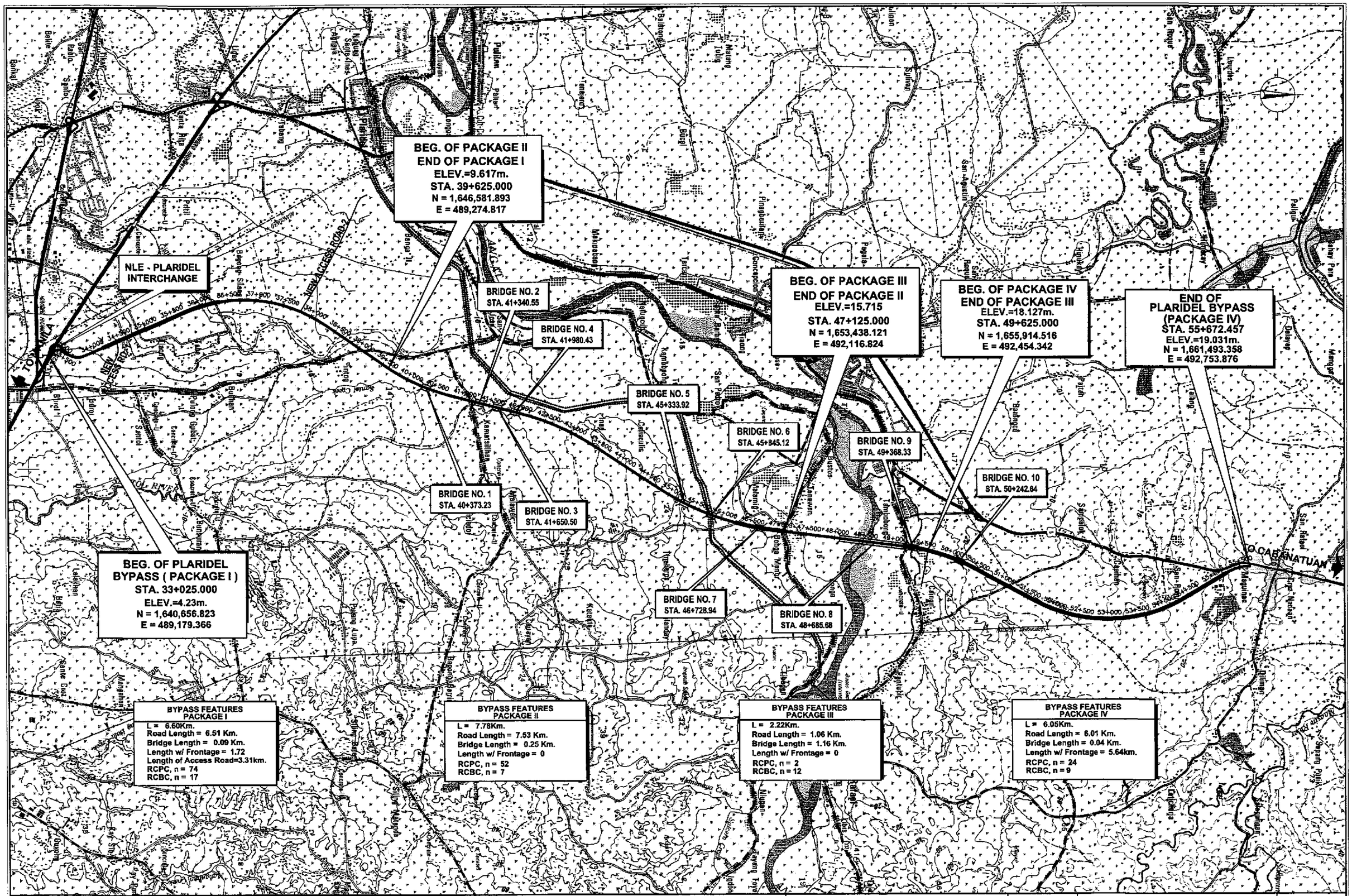
PLARIDEL BYPASS - CONTRACT PACKAGE III	FULL SIZE A1		



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DESIGNED	9/21/02	A. ACACIO
CHECKED	9/23/02	S. GOSE
SUBMITTED	10/8/02	M. KIKUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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

SCALE : 1:30,000 FULL SIZE A1

SHEET CONTENTS : PROJECT ROAD GENERAL ALIGNMENT & FEATURES

SHEET NO. : GP-07

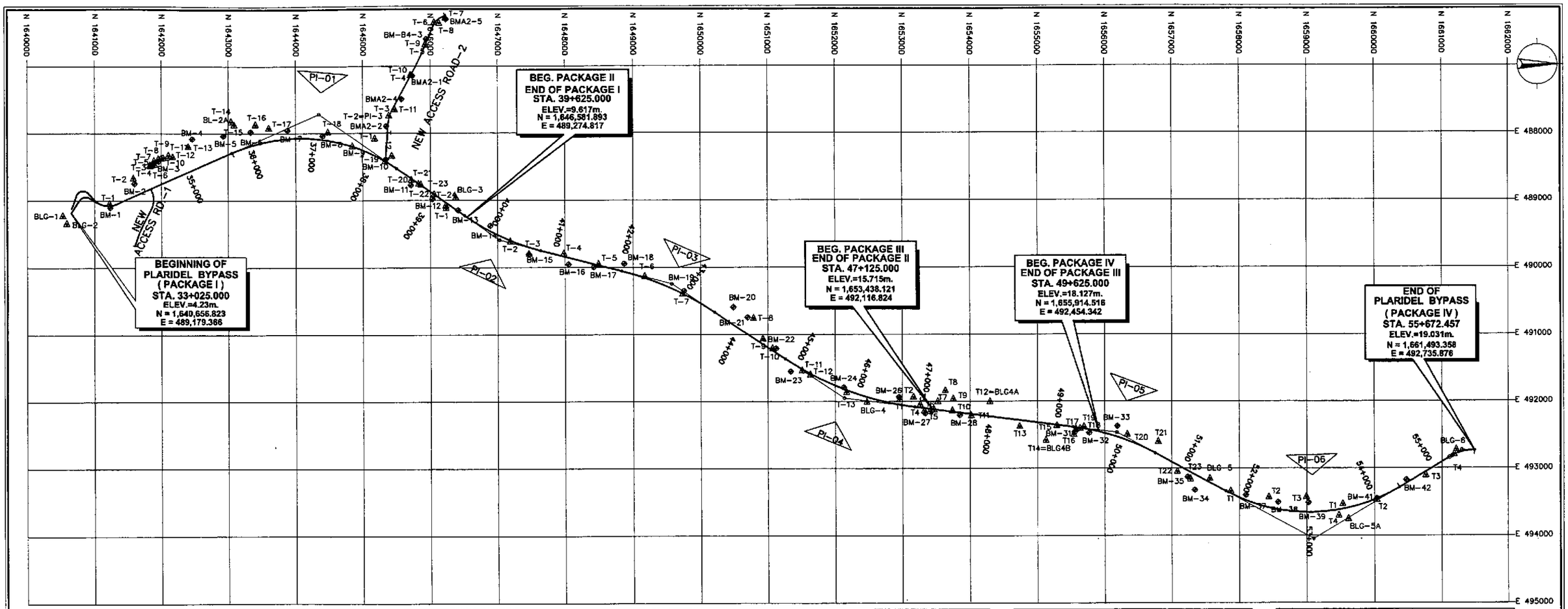


TABLE OF HORIZONTAL AND VERTICAL CONTROL

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.	REMARKS
BM-1	1,641,232.641	489,100.464	3.537	It is loc. on a rice paddy int. on left of the alignment in Bgy. Burol 2, Guiguinto, Bulacan. It is 20m. from end of dirt rd.
BM-2	1,641,598.386	488,743.032	3.655	It is loc. on a rice paddy intersection on the left of the alignment in Bgy. Pulong Gubat, Plaridel.
BM-3	1,641,958.977	488,414.108	5.523	It is loc. on top of intersection of a rice paddy dike on left side of the alignment in Bgy. Pulong Gubat, Plaridel.
BM-4	1,642,450.780	488,080.630	2.885	It is loc. on the intersection of a rice paddy dike on the left side of the alignment in Bgy. Pulong Gubat, Plaridel.
BM-5	1,642,929.376	488,037.023	3.066	It is loc. on the rice paddy dike on the left side of the alignment in Bgy. Cueteo, Plaridel.
BM-6	1,643,338.598	487,976.161	3.339	It is loc. on the side of a concrete road near an electric post in Bgy. Cueteo, Plaridel.
BM-7	1,643,883.348	487,952.887	3.883	It is loc. on top of the intersection of a rice paddy dike on the left side of the alignment in Bgy. Cueteo, Plaridel.
BM-8	1,644,402.499	488,039.520	5.178	It is loc. on a rice paddy dike on the left side of the alignment in Bgy. Bulihan, Plaridel.
BM-9	1,644,847.404	488,197.025	6.382	It is loc. on a rice paddy dike along the alignment in Bgy. Bulihan, Plaridel.
BM-10	1,645,345.307	488,388.233	6.802	It is loc. on the side of a dirt road near a fence concrete post on left side of the align. in Bgy. Bulihan, Plaridel.
BM-11	1,645,714.384	488,771.939	8.317	It is loc. on the dike of a fishpond on the right side of the alignment in Bgy. Bulihan, Plaridel.
BM-12	1,646,032.378	488,978.695	8.415	It is loc. on the side of the provl road on the right side of align. near the corner of a wall in Bgy. Bulihan, Plaridel.
BM-13	1,646,415.622	489,145.127	7.659	It is loc. on the back of a college on the left side of the alignment in Bgy. Bulihan, Plaridel.
BM-14	1,646,882.978	489,377.904	8.484	It is loc. on a rice paddy dike on the left side of the align. surrounded by banana in Bgy. Bulihan, Plaridel.
BM-15	1,647,467.925	489,802.574	8.801	It is loc. on the center of a dirt road on the right side of the alignment in Bgy. San Jose, Baliwag.
BM-16	1,648,064.174	489,953.321	10.801	It is loc. on the int. of the bgy. road & the provl road on the left side of the align. in Bgy. San Jose, Baliwag
BM-17	1,648,424.838	489,994.453	10.582	It is loc. on the side of the dirt road where an irr. canal is on the right side of the align. in Bgy. San Jose, Baliwag.
BM-18	1,648,870.652	489,943.559	10.265	It is loc. under a tree on the side of a creek on the left side of the alignment in Bgy. San Jose, Baliwag.
BM-19	1,649,757.184	490,350.187	11.391	It is loc. under a tree on the side of the road where an irr. canal is on the left side of align. in Bgy. Malamig, Bustos.
BM-20	1,650,499.080	490,591.189	11.615	It is loc. under a tree near an unfinished house on the left side of the alignment in Bgy. Malamig, Bustos.
BM-21	1,650,705.071	490,746.236	12.248	It is loc. on the side of the rd. near a culvert about a meter from the int. on the left side of the alignment in Bustos.
BM-22	1,651,121.786	491,211.136	12.593	It is loc. on the side of the road near an irrigation draft on the left side of the alignment in Bgy. Malamig, Bustos.
BM-23	1,651,339.258	491,553.269	18.706	It is loc. on the side of the road near an elect. post on the right side of the alignment in Bgy. Malamig, Bustos.
BM-24	1,652,126.611	491,790.544	14.480	It is loc.on the side on a wall on a fishpond dike about 40m. from the road on the lef side of the align. in Bustos.
BM-26	1,652,951.730	491,935.264	17.018	It is loc. on the side of the dirt road near a coconut tree on the left side of the align. in Bgy. Malamig, Bustos.
BM-27	1,653,336.791	492,180.066	16.372	It is loc. on the side of the rd. opposite the cor. of a wall nr. an elect. post on the left side of the alignment in Bustos.
BM-28	1,653,845.433	492,207.423	12.908	It is loc. on a rice paddy dike on the right side of the alignment in Bgy. Bonga Menor, Bustos.
BM-31	1,655,556.301	492,461.715	17.903	It is loc. on the side of the provl road under an acacia tree on the right side of the align. in Bgy. Tambobong.
BM-32	1,655,771.206	492,471.912	17.367	It is loc. on the side of a dirt road near an elect. post on the right side of the align. in Bgy. Tambobong, San Rafael.

TABLE OF HORIZONTAL AND VERTICAL CONTROL

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.	REMARKS
BM-33	1,656,188.911	492,373.317	16.036	It is loc. under an acacia tree on a private lot on the left side of the alignment in Bgy. Tambobong, San Rafael.
BM-34	1,657,343.337	493,325.087	16.228	It is loc. on top of a rice paddy dike on the left side of the alignment in San Rafael, Bulacan.
BM-35	1,657,239.065	493,124.978	19.936	It is loc. on a rice paddy dike near the intersection on the left side of the alignment in San Rafael, Bulacan.
BM-37	1,658,097.133	493,462.758	25.474	It is loc. on the intersection of the rice paddy dike on the left side of the alignment in San Rafael, Bulacan.
BM-38	1,658,577.840	493,506.635	25.298	It is loc. on a rice paddy int. near a fence concrete post on the right side of the align. in San Rafael, Bulacan.
BM-39	1,659,026.390	493,512.322	25.137	It is loc. on the side of a dirt road on the right side of the alignment in San Rafael, Bulacan.
BM-41	1,660,037.271	493,451.999	28.680	It is loc. on the rice paddy intersection on the right side of the alignment in San Rafael, Bulacan.
BM-42	1,660,472.819	493,175.599	18.805	It is loc. on a rice paddy dike on the right side of the alignment in San Rafael, Bulacan.
BM A2-1	1,646,237.686	486,306.250	6.524	It is loc. on the right side of road under acacia tree near a concrete elec. post 30m. from dirt road in Plaridel.
BM A2-2	1,645,946.661	486,583.542	6.120	It is located on side of concrete road bet. two guavas 70m. from end of conc. wall of Oratex Comp. Plaridel
BM A2-3	1,645,739.141	487,142.838	7.237	It is loc. under a coconut tree on backyard about 3m. from house. 70m. from conc. road in Plaridel.
BM A2-4	1,645,576.226	487,490.381	5.555	It is loc. near an abondoned elec. post at rice paddy int. outside the fence of property, Bulihan, Plaridel.
BM A2-5	1,645,351.778	487,893.272	4.749	It is loc. beside the foot of an elec. tower, about 10m. from CL of a dirt road in Brgy. Bulihan, Plaridel.

TABLE OF GPS STATION POINTS

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.	REMARKS
BLG-1	1,640,535.729	489,225.487	8.931	Loc. at the left guardrail going to Tabang Exit. Drilled on top of the guardrail is an iron steel 1/4x2" about 40 m. from the last approach of the bridge.
BLG-2	1,640,592.279	489,340.024	10.635	Loc. at the wall railing at the bridge's first approach. Drilled on top of the wall railing is an iron steel 1/4" x 2".
BLG-2A	1,643,045.047	487,830.179	3.777	Loc. in Bgy. Daungan, Guiguinto, Bulacan. It is embedded beside an irr. canal, about 160 m. from inter., about 15 m. from an elect. post, 50 m. from BBM 18 and about 15 m. from the fence of the house on the other side of the road.
BLG-3	1,646,381.832	488,957.118	8.646	Loc. in Bgy. Matalas, Sampaloc, Bulihan, Plaridel, Bulacan. It is on the head of an irrigation check valve, outside the Colegio de Immaculade Concepcion, about 10 m. from the shed and 4 m. from road centerline.
BLG-4	1,652,474.952	492,013.344	16.125	Loc. in Bgy. Malamig, Bustos, Bulacan. It is on the side of an irrigation canal, about 5 m. from the road centerline, 150 m. from a rd. fork, and about 5 m. from the new house.
BLG-4B	1,655,132.400	492,583.981	9.310	Loc. in Bgy. Tambobong, San Rafael, Bulacan. It is emb. on the grd. about 600 m. from inter., 20 m. from the house.
BLG-5	1,657,566.872	493,155.992	22.517	Loc. in Bgy. Samp., Sn. Rfl, Bulacan. It is emb. on rt. side of the rd. going to Royal Northwoods 30 m. from the inter.
BLG-5A	1,659,619.893	493,753.421	29.685	Loc. in Bgy. San Roque, Hulo, San Rafael, Bulacan. It is embedded on the paddy dike 20 m. from the dirt road centerline.

TABLE OF TRAVERSE STATION POINTS

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.
T-1	1,641,225.254	489,045.710	3.380
T-2	1,641,583.179	488,669.897	4.030
T-3	1,641,830.464	488,477.696	4.930
T-4	1,641,639.883	488,483.095	5.060
T-5	1,641,867.816	488,474.488	5.120
T-6	1,641,901.421	488,463.363	5.360
T-7	1,641,892.449	488,410.158	5.540
T-8	1,641,957.997	488,384.675	5.080
T-9	1,642,000.968	488,371.561	4.660
T-10	1,642,028.410	488,367.580	5.150
T-11	1,642,108.886	488,330.691	4.630
T-12	1,642,173.014	488,355.198	4.970
T-13	1,642,403.861	488,200.615	4.000
T-14	1,643,045.237	487,829.752	3.700
T-15	1,643,090.558	487,878.132	3.470
T-16	1,643,408.710	487,873.117	2.560
T-17	1,643,604.945	487,925.855	2.930
T-18	1,644,483.188	487,984.415	5.410
T-19	1,645,338.877	488,419.155	6.970
T-20	1,645,721.458	488,700.217	8.030
T-21	1,645,829.207	488,757.963	7.960
T-22	1,645,865.037	488,769.278	8.350
T-23	1,646,058.318	488,913.983	8.080
T-24	1,646,234.573	489,081.303	8.050
T-1	1,646,237.677	489,119.864	7.800
T-2	1,647,190.511	489,613.241	8.530
T-3	1,647,472.147	489,797.550	9.160
T-4	1,647,987.901	489,794.855	9.910
T-5	1,648,499.124	489,951.678	10.960

TABLE OF TRAVERSE STATION POINTS

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.
T-6	1,648,171.515	490,135.688	10.900
T-7	1,649,736.908	490,395.363	11.280
T-8	1,650,793.468	490,761.338	12.560
T-9	1,650,932.296	491,070.827	14.880
T-10	1,651,073.140	491,213.182	13.180
T-11	1,651,511.858	491,544.594	18.790
T-12	1,651,634.118	491,604.256	16.560
T-13	1,652,171.172	491,865.395	15.670
T1	1,652,963.172	491,975.061	17.150
T2	1,653,166.711	491,937.097	16.340
T3	1,653,264.574	492,049.197	16.440
T4	1,653,327.487	492,142.734	16.240
T5	1,653,411.651	492,150.335	16.680
T6	1,653,472.407	492,130.939	17.350
T7	1,653,525.530	492,004.044	17.430
T8	1,653,637.260	491,842.625	15.430
T9	1,653,754.181	491,964.061	12.460
T10	1,653,739.630	494,141.877	14.840
T11	1,654,020.437	492,214.607	14.240
T13	1,654,737.523	492,379.170	11.600
T15	1,655,293.248	492,368.349	9.550
T16	1,655,545.515	492,498.513	17.830
T17	1,655,576.842	492,417.335	18.020
T18	1,655,535.552	492,409.403	17.820
T19	1,655,697.300	492,385.162	17.490
T20	1,656,337.537	492,498.250	15.870
T21	1,656,798.655	492,608.090	20.950
T22	1,657,085.568	493,052.405	19.510
T23	1,657,280.628	493,163.137	19.630

TABLE OF TRAVERSE STATION POINTS

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.
T1	1,657,875.550	493,344.564	25.030
T2	1,658,442.470	493,433.175	25.310
T3	1,658,998.440	493,432.436	25.400
T4	1,659,476.800	493,706.043	26.820
T1	1,659,535.000	493,538.664	25.000
T2	1,660,040.390	493,471.255	28.680
T3	1,660,764.170	493,109.356	12.960
T4	1,661,191.210	492,798.889	13.460
T-1	1,645,182.514	488,080.020	6.740
T-2=PI-3	1,645,382.699	487,741.560	4.900
T-3	1,645,474.603	487,648.546	5.950
T-4	1,645,710.343	487,137.423	7.460
T-5	1,645,931.256	486,682.752	6.100
T-6	1,646,065.278	486,350.560	7.130
T-7	1,646,230.317	486,282.965	8.960
T-8	1,646,137.594	486,360.509	7.750
T-9	1,645,932.065	486,685.036	6.280
T-10	1,645,718.320	487,138.070	7.500
T-11	1,645,478.867	487,651.111	6.040
T-12	1,645,434.836	488,340.248	7.060

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	A. ALACACIO
CHECKED	9/23/02	S. GOOSE
SUBMITTED	10/14/02	M. KINDO TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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

SCALE : 1:30,000 FULL SIZE A1

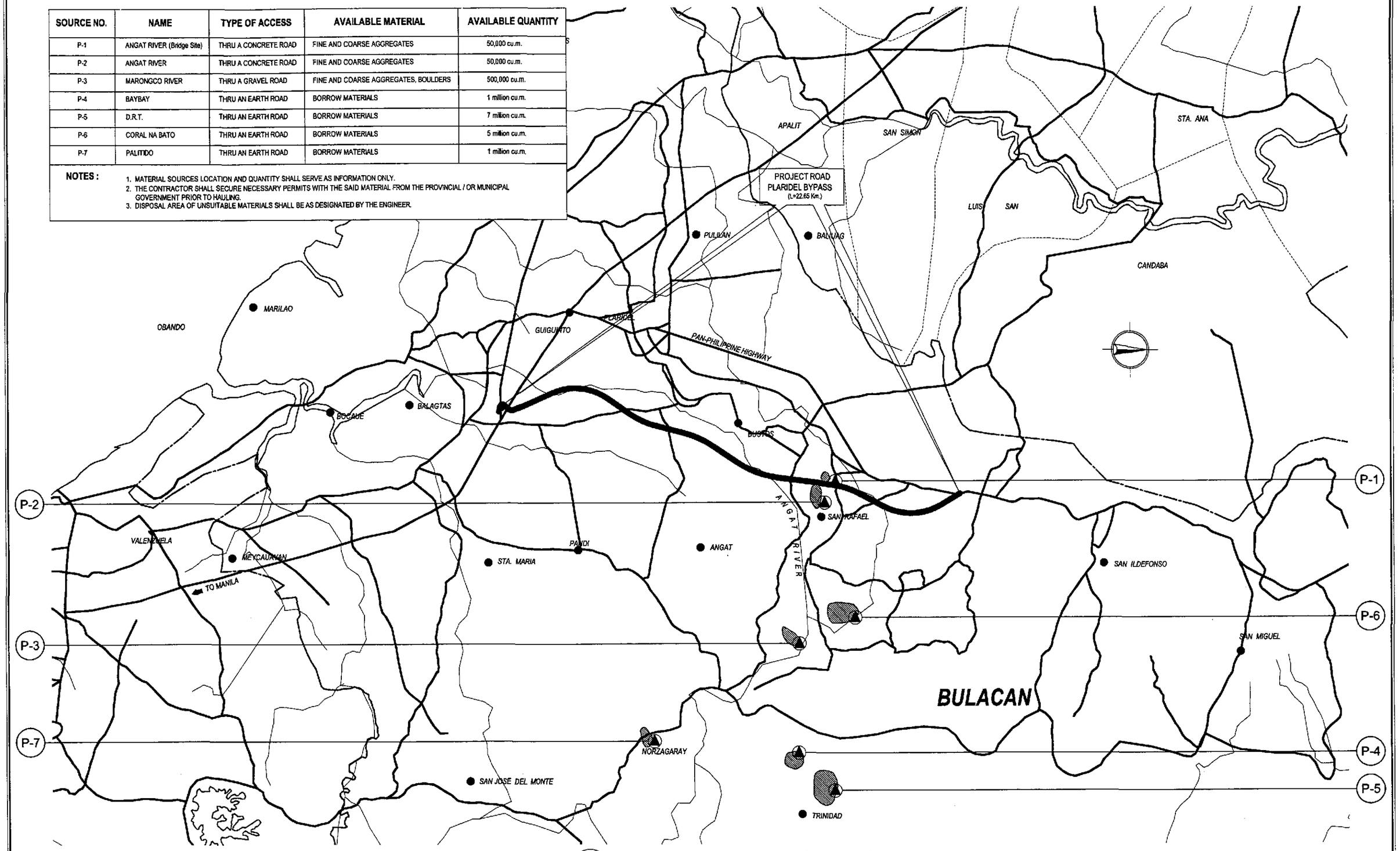
SHEET CONTENTS : HORIZONTAL AND VERTICAL CONTROL MONUMENT

SHEET NO. : GP-08

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

NOTES :

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



A / GP-09 LOCATION OF MATERIAL SOURCES

SCALE AS SHOWN

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	A. ACACIO
CHECKED	9/23/02	S. GOSE
SUBMITTED	9/24/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE III	1:80,000 FULL SIZE A1	LOCATION OF MATERIAL SOURCES	GP-09

SUMMARY OF QUANTITIES
(INITIAL STAGE)

ITEM NO	DESCRIPTION	UNIT	QUANTITY (HIGHWAY AND DRAINAGE)				QUANTITY (BRIDGE)		TOTAL QUANTITY	REMARKS
			BYPASS	RCBC	A-17	C-3	BRIDGE No. 8	BRIDGE No. 9		
PART C - EARTHWORKS										
100(1)	Clearing and Grubbing	ha	5.00	-	-	-	-	-	5.00	
100(3)	Individual removal of trees, small (150mm <Ø<900mm)	each	45.00		-	-	-	-	45.00	
100(4)	Individual removal of trees, large (Ø >900mm)	each	7.00	-	-	-	-	-	7.00	
101(1)	Removal of Existing Structures and Obstructions	L.S.	1.00	-			-	-	1.00	
101(3)a	Removal of Existing PCC Pavement	m2	-	-	762.50	-	-	-	763.00	
101(2)b	Removal of Existing Bridge (Plaridel at Bridge No.9)	each	-	-	-	-	-	1.00	1.00	
102(1)	Unsuitable Excavation	m3	7,683.65		-	-		-	7,684.00	
103(1)	Structure Excavation	m3	109.61	1,277.02	-	1.99	1,769.50	-	3,159.00	
103(2)a	Bridge Excavation above OWL (Common Soil)	m3	-	-	-	-	5,402.39	276.00	5,679.00	
103(2)c	Bridge Excavation below OWL (Common Soil)	m3	-	-	-	-	10,716.42	-	10,717.00	
103(3)a	Gravel Foundation Fill	m3	18.48	125.30	-	-	-	-	144.00	
103(6)	Pipe Culverts and Drain Excavation	m3	181.00	-	-	28.96	-	-	210.00	
103(7)	Granular Backfill for Pipe Culvert	m3	100.05	-	-	16.01	-	-	117.00	
104(1)	Embankment from Roadway Excavation	m3	27.97	-	241.02	20.25	-	-	290.00	
104(3)	Embankment from Borrow Pit	m3	60,011.51		1,110.86	565.13	8,496.45	322.00	70,506.00	
104(4)	Embankment from Borrow (Selected Granular Material) for Bridge	m3	-	-	-	-	1,263.85	320.00	1,584.00	
105(1)	Subgrade Preparation (Common Soil)	m2	-	-	750.73	-	-	-	751.00	
PART D - BASE AND SUBBASE COURSE										
200(1)	Aggregate Subbase Course	m3	5,427.87	-	565.35	-	26.72	28.00	6,048.00	
201(1)	Aggregate Base Course	m3	2,044.29	-	-	-	-	-	2,045.00	
PART E - SURFACE COURSES										
300(1)	Gravel Surface Course	m3	1,115.75	-	-	44.39	-	-	1,161.00	
310(2)	Asphalt Mixture Wearing Course (t=50mm) for bridge pavement, including tack coat	m2	-	-	-	-	9,334.65	-	9,335.00	
311(1)a	PCC Pavement (Plain), t=280mm	m2	9,328.71	-	-	-	-	-	9,329.00	
311(1)b	PCC Pavement (Plain), t=250mm	m2	3,343.06	-	-	-	-	-	3,344.00	
311(1)c	PCC Pavement (Plain), t=230mm	m2	-	-	961.08	-	-	-	962.00	
311(2)	PCC Pavement (Reinforced) t=300mm Approach Slab	m2	77.66	-	-	-	106.03	106.00	290.00	
PART F - BRIDGE CONSTRUCTION										
400(4)b	Precast Concrete Piles (450mmx450mm), furnished	m	-	-	-	-	-	748.00	748.00	
400(13)b	Precast Concrete Piles (450mmx450mm), driven	m	-	-	-	-	-	690.00	690.00	
400(15)b	Test Piles (Conc. Pile 450mmx450mm), furnished & driven	m	-	-	-	-	-	36.50	37.00	
400(16)a	Cast-in-place Concrete Bored Piles Ø 1000mm	m	-	-	-	-	470.00	-	470.00	
400(16)b	Cast-in-place Concrete Bored Piles Ø 1200mm	m	-	-	-	-	2,568.00	-	2,568.00	
400(16)c	Cast-in-place Concrete Bored Piles Ø 1500mm	m	-	-	-	-	1,188.00	-	1,188.00	
400(19)b	Pile shoes for 450mmx450mm Piles	each	-	-	-	-	-	48.00	48.00	
400(21)	Static Pile Load Test for Ø 1500mm Bored Piles	each	-	-	-	-	2.00	-	2.00	
SPL 400(23)a	High Strain Dynamic Pile Test for Ø 1000mm Bored Piles	each	-	-	-	-	1.00	-	1.00	
SPL 400(23)b	High Strain Dynamic Pile Test for Ø 1200mm Bored Piles	each	-	-	-	-	3.00	-	3.00	
SPL 400(24)	Pile Integrity Test for Bored Piles of various diameter	each	-	-	-	-	73.00	-	73.00	
401(1)a	Concrete Railing Type A (Concrete Posts and Precast Beams)	m	-	-	-	-	-	80.00	80.00	
401(2)a	Steel Railing Type A for (Angat and Talavera Bridge, and Approach of Pampanga Bridge)	m	-	-	-	-	2,240.15	-	2,241.00	
SPL 401(3)a	Bridge Name Plate, 1000 x 600mm for Angat Bridge	each	-	-	-	-	2.00	-	2.00	
404(1)	Reinforcing Steel (Grade 40)	kg	137.84	80,921.43	-	137.84	925,384.94	26,446.00	1,033,029.00	
404(2)	Reinforcing Steel (Grade 60)	kg	28,327.00		-	-	2,416,011.01	15,446.00	2,459,789.00	
405(1)a	Structural Concrete Class A (fc'=21MPa, max. aggregate 38mm) for heavily reinforced structures	m3	234.30	874.58	-	3.10	105.74	-	1,218.00	
405(1)b	Structural Concrete Class A (fc'=21MPa, max. aggregate 38mm) for small & medium bridges substructures	m3	-	-	-	-	-	224.00	224.00	
405(1)d	Structural Concrete Class A1 (fc'=21MPa, max. aggregate 20mm) for small & medium bridges PCDG superstructures	m3	-	-	-	-	-	131.00	131.00	
405(1)e	Structural Concrete Class AA1 (fc'=28MPa, max. aggregate 25) for long bridge substructures	m3	-	-	-	-	8,169.57	-	8,170.00	
405(1)f	Structural Concrete Class AA2 (fc'=28MPa, max. aggregate 20mm) for long bridge superstructures	m3	-	-	-	-	2,145.60	-	2,146.00	
405(2)	Structural Concrete Class B (fc'=17MPa, max. aggregate 50mm) for plain or lightly reinforced structures	m3	36.55	-	-	5.85	50.75	-	94.00	
405(3)	Structural Concrete Class C (fc'=21MPa, max. aggregate 12mm) for thin reinforced members	m3	-	-	-	-	984.89	37.00	1,022.00	
405(4)b	Structural Concrete Class PP (fc'=41MPa, max. aggregate 20mm) for prestressed box girders in Angat Bridge	m3	-	-	-	-	3,066.95	-	3,067.00	
405(6)	Lean Concrete (fc'=17MPa, max. aggregate 38mm)	m3	9.24	82.74	-	-	216.20	12.00	301.00	
406(1)g	Precast Prestressed Structural Concrete Member (AASHTO Girder Type V L=29.4m)	each	-	-	-	-	56.00	-	56.00	
406(1)h	Precast Prestressed Structural Concrete Member (AASHTO Girder Type V L=29.55m)	each	-	-	-	-	41.00	-	41.00	
406(1)n	Precast Prestressed Structural Concrete Member (AASHTO Girder Type VI modified L=40m)	each	-	-	-	-	-	5.00	5.00	

ITEM NO	DESCRIPTION	UNIT	QUANTITY (HIGHWAY AND DRAINAGE)				QUANTITY (BRIDGE)		TOTAL QUANTITY	REMARKS
			BYPASS	RCBC	A-17	C-3		BRIDGE No. 9		
406(3)a	Prestressing Steel 12-T12.7 for PC Box Girders of Angat Bridge, Longitudinal	kg	-	-	-	-	147,712.41	-	147,713.00	
406(3)b	Prestressing Steel 5-T12.7 for PC Box Girders of Angat Bridge, Transversal in Top Slab	kg	-	-	-	-	29,029.58	-	29,030.00	
406(3)c	Prestressing Bar Ø 32mm for PC Box Girders of Angat Bridge, Transversal in Diaphragms	kg	-	-	-	-	4,874.44	-	4,875.00	
406(3)d	Prestressing Bar Ø 32mm for PC Box Girders of Angat Bridge, Vertical in Webs	kg	-	-	-	-	5,713.69	-	5,714.00	
407(1)b	Elastomeric Bearing Pad, Duro 60 (600x300x50mm)	each	-	-	-	-	194.00	-	194.00	
407(1)c	Elastomeric Bearing Pad, Duro 60 (600x350x50mm)	each	-	-	-	-		10.00	10.00	
407(1)d	Elastomeric Bearing Pad, Duro 60 (600x700x89mm)	each	-	-	-	-	4.00	-	4.00	
407(2)a	Expansion Joint, (± 40mm Movement)	m	-	-	-	-		20.00	20.00	
407(2)b	Expansion Joint, (± 50mm Movement)	m	-	-	-	-	23.40	-	24.00	
407(2)c	Expansion Joint, (± 70mm Movement)	m	-	-	-	-	30.60	-	31.00	
407(2)e	Expansion Joint, (± 100mm Movement)	m	-	-	-	-	20.40	-	21.00	
407(2)g	Expansion Joint, 30mm for bridge sidewalk	m	-	-	-	-		4.00	4.00	
SPL 407(3)a	Restraining Bar Ø 32 x 1495mm	each	-	-	-	-	14.00	-	14.00	
SPL 407(3)b	Restraining Bar Ø 32 x 1900mm	each	-	-	-	-	18.00	-	18.00	
407(4)	G.I. Drain Pipe Ø 150mm for Bridge Drainage	m	-	-	-	-	469.80	4.00	474.00	
SPL 407(5)a	Pier Protection Concrete Blocks for Angat Bridge	m2	-	-	-	-	1,344.00	-	1,344.00	
SPL 420(2)	Realignment of River/Stream	L.S.	-	-	-	-	1.00	-	1.00	
SPL 420(3)	False Works Required for Cantilever Construction for PC Box Girder (Angat Bridge)	L.S.	-	-	-	-	1.00	-	1.00	
SPL 420(4)a	Temporary Craneway for Angat Bridge Construction	m	-	-	-	-	416.00	-	416.00	
SPL 420(5)a	Temporary Access Road (Causeway) for Angat Bridge Construction	m	-	-	-	-	710.00	-	710.00	
SPL 420(6)a	Temporary Cofferdam for Pier Construction (Angat Bridge Type 1)	each	-	-	-	-	2.00	-	2.00	
SPL 420(6)b	Temporary Cofferdam for Pier Construction (Angat Bridge Type 2)	each	-	-	-	-	6.00	-	6.00	
SPL 900(3)	Provisional Sum for Geotechnical Investigation	L.S.	-	-	-	-	1.00	-	1.00	
PART G - DRAINAGE AND SLOPE PROTECTION STRUCTURES										
500(1)o6	RCPC Extra Strength (32MPa), Ø 910mm (36")	m	50.00	-	-	8.00	-	-	58.00	
502(6)b	V-shaped Lined Ditch H=500mm, 1:1.00	m	880.00	-	-	-	-	-	880.00	
504(5)	Grouted Riprap Class A	m3	111.40	-	-	-	26.19	108.00	246.00	
505(1)	Stone Masonry	m3	130.26	-	-	-	-	-	131.00	
506(1)	Hand Laid Rock Apron (Loose Boulder Apron)	m3	-	-	-	-	118.98	-	119.00	
507(2)b	Steel Sheet Piles (400x85x8mm), furnished & driven	m	-	-	-	-	2,632.00	-	2,632.00	
509(1)	Gabions	m3	670.00		-	-	1,094.63	-	1,765.00	
509(2)	Mattress, t=300mm	m3	840.00	-	-	-	-	-	840.00	
509(3)	Filter Cloth	m2	12,600.00	-	-	-	-	-	12,600.00	
510(1)	Rubble Concrete Slope Protection	m3	-	-	-	-	1,062.26	-	1,063.00	
PART H - MISCELLANEOUS STRUCTURES										
600(3)a	Combination Concrete Curb & Gutter/Side Strip, Type A (675x364mm)	m	71.96	-	-	-	-	-	72.00	
602(1)	Right-of-Way Concrete Monuments	each	68.00	-	11.00	7.00	-	-	86.00	
602(2)	Maintenance Marker Posts for Drainage Structure	each	10.00	-	-	2.00	-	-	12.00	
602(3)	Kilometer Posts	each	2.00	-	-	-	-	-	2.00	
603(3)a	Metal Guardrails (Metal Beam) Type A (Embedded in soil)	m	448.00	-	-	-	-	-	448.00	
605(1)a	Warning Signs (Triangular 900mm)	each	2.00	-	-	-	-	-	2.00	
605(2)b	Regulatory Signs (Octagonal 600mm)	each	-	-	2.00	-	-	-	2.00	
605(2)c	Regulatory Signs (Circular Ø 600mm)	each	4.00	-	-	4.00	-	-	8.00	
605(3)c	Informatory Signs (Type B, double post)	each	1.00	-	-	-	-	-	1.00	
607(2)b	Reflectorized Pavement Studs (Raised Profile Type, two faces reflective)	each	-	-	14.00	-	-	-	14.00	
607(3)	Chatter Bars (one face reflective)	each	-	-	44.00	-	-	-	44.00	
608(1)	Furnishing and Placing Top Soil	m3	4,022.59	-	64.11	70.33	-	-	4,158.00	
610(1)	Sodding	m2	20,112.97	-	320.57	351.66	-	-	20,786.00	
611(1)c	Trees (Furnishing and Transplanting) High Tree (Young Tree) 1.5m < H < 3.0m	each	95.00	-	-	-	-	-	95.00	
612(1)a	Reflectorized Thermoplastic Pavement Markings (White)	m2	564.58	-	102.62	-	-	-	668.00	
612(1)b	Reflectorized Thermoplastic Pavement Markings (Yellow)	m2	61.95	-	-	-	-	-	62.00	
SPL 620(1)a	Traffic Signal Pole Type A (Mast Arm Post H=5.7m)	each	1.00	-	-	-	-	-	1.00	
SPL 620(1)c	Traffic Signal Pole Type B (Ø 114.3mm x 4.2m)	each	5.00	-	-	-	-	-	5.00	
SPL 620(2)b	Traffic Signal Lamps Type B (3 vehicle lamps)	each	12.00	-	-	-	-	-	12.00	
SPL 620(2)c	Traffic Signal Lamps Type C (2 pedestrian lamps)	each	6.00	-	-	-	-	-	6.00	
SPL 620(4)a	Street Lighting Poles (Single Lamp)	each	3.00	-	6.00	-	-	-	9.00	
SPL 620(4)c	Bridge Lighting Poles (Single Lamp)	each	-	-	-	-	38.00	-	38.00	
SPL 620(4)d	Street Lighting Service Pole with Panel	each	-	-	1.00	-	2.00	-	3.00	
SPL 620(4)e	Fluorescent Lighting for Underpass Culverts	each	2.00	-	-	-	-	-	2.00	

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	J. TAPIA
CHECKED	9/23/02	S. GOSE
SUBMITTED	10/14/02	M. KIUCHI, TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	JOSEFINA M. ALAGAR, Chief, Highways Division	GILBERTO S. REYES, OIC, Director IV	MANUEL M. BONOAN, Undersecretary	SIMEON A. DATUMANONG, Secretary

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

SCALE : NOT TO SCALE — FULL SIZE A1

SHEET CONTENTS : SUMMARY OF QUANTITIES (INITIAL STAGE)

SHEET NO. : GP-10

ROADWAY

GENERAL NOTES

HIGHWAY / CIVIL AND DRAINAGE NOTES

1.0 DESIGN STANDARDS / SPECIFICATIONS

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

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

2.0 SURVEY CONTROLS AND REFERENCES

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

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

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

3.0 ALIGNMENT CONTROLS AND REFERENCES

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

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

3.2.3 ALONG PLARIDEL BYPASS

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

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

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

3.5 EXISTING PAVEMENT GRADES OF PAN-PHILIPPINE HIGHWAY.

4.0 DIMENSIONS

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

5.0 STATIONINGS

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

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

6.0 ELEVATION AND GRADES

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

7.0 HORIZONTAL TRANSITIONS

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

8.0 UTILIZATION OF GRAVEL MATERIALS

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

9.0 REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS

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

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

10.0 ROAD CONNECTIONS AND PRIVATE ENTRANCES

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

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

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

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

11.0 DRAINAGE STRUCTURES

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

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

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

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

12.0 ACCESSIBILITY LAW:

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

13.0 TREE PLANTING ALONG NATIONAL ROADS

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

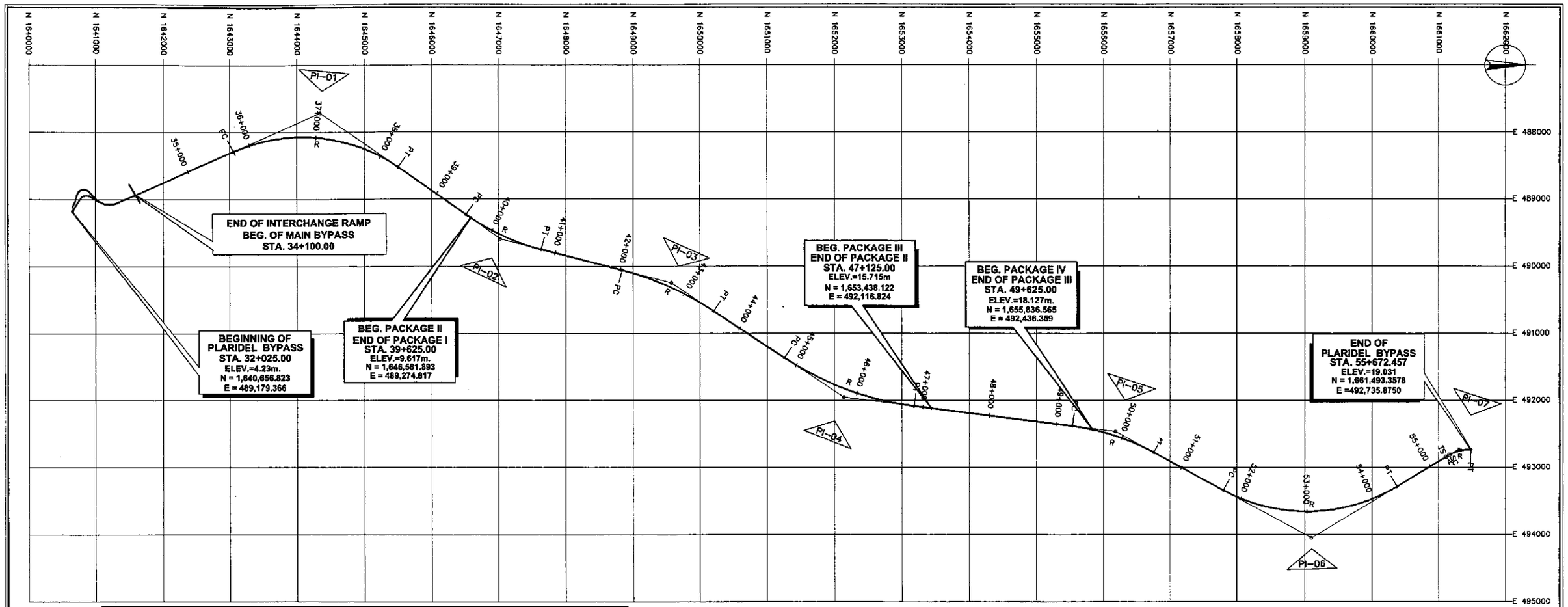
14.0 DESIGN DATA / REFERENCES

14.1 REPORTS

- FEASIBILITY STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHIL. HIGHWAY (PLARIDEL, CABANATUAN AND SAN JOSE BYPASSES), FINAL REPORT, NOVEMBER 1999.
- DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY, BASIC DESIGN REPORT, SEPTEMBER 2001.

14.2 DRAWINGS

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



ELEMENTS OF CURVES

P.I. No.	STATION	DISTANCE	AZIMUTH	TANGENT Θ_s	DEFLECTION ANGLE	A / R	Ls / Lc	STATION
BEG.	34+100.00							
01	37+150.085	3,050.085	156°12'23"	1,405.622	58°41'37"	2,500.000	2,560.993	PC=35+744.463 PT=38+305.456
		3,270.517	214°54'01"					
02	40+170.351			631.471	20°27'17"	3,500.000	1,249.501	PC=39+538.880 PT=40+788.381
		2,627.362	194°26'44"					
03	42+784.272			762.261	19°13'42"	4,500.000	1,510.187	PC=42+022.011 PT=43+532.197
		3,079.935	213°40'26"					
04	45+849.871			1,055.870	26°24'35"	4,500.000	2,074.218	PC=44+794.002 PT=46+868.219
		4,076.071	187°15'51"					
05	49+888.421			653.242	21°08'39"	3,500.000	1,291.623	PC=49+235.179 PT=50+526.802
		3,324.430	208°24'30"					
06	53+197.990			1,481.484	59°20'57"	2,600.000	2,693.177	PC=51+716.506 PT=54+409.683
		2,563.432	149°03'33"					
07	55+491.631			217.897	32°44'53"	188.072	54.417	TS=55+273.735 SC=55+328.152
		191.336	02°23'54"	02°23'54"		650.000	344.305	PT=55+672.457
END	55+672.457							

TABLE OF COORDINATES

P.I. No.	NORTHING	EASTING		NORTHING	EASTING
BEG.	1,641,555.403	488,947.023			
01	1,644,346.248	487,716.493	PC	1,643,060.096	488,283.579
			PT	1,645,499.069	488,520.712
02	1,647,028.564	489,587.713	PC	1,646,510.862	489,226.418
			PT	1,647,640.071	489,745.240
03	1,649,572.862	490,243.134	PC	1,648,834.700	490,052.981
			PT	1,650,207.221	490,565.781
04	1,652,135.007	491,950.849	PC	1,651,257.304	491,365.407
			PT	1,653,183.402	492,084.356
05	1,656,179.303	492,466.239	PC	1,655,531.364	492,383.641
			PT	1,656,753.942	492,777.019

TABLE OF COORDINATES

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

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YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	A. ACACIO
CHECKED	9/22/02	S. SOSE
SUBMITTED	10/11/02	R. KUNO TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

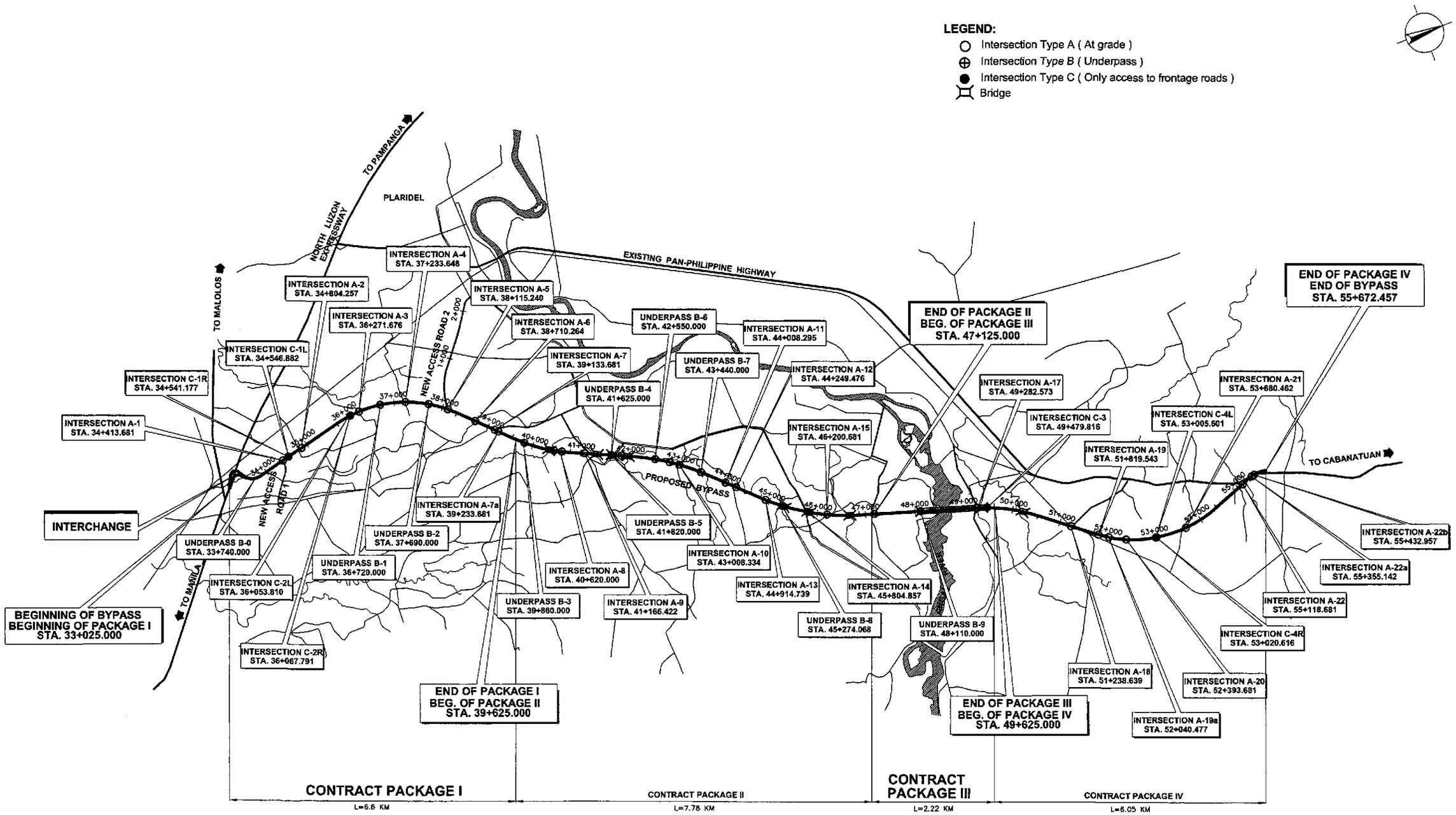
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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

SCALE : 1:30,000 FULL SIZE A1

SHEET CONTENTS : ALIGNMENT TECHNICAL DESCRIPTION

SHEET NO. : RG-02



A / RG-03 LOCATION OF PROPOSED INTERSECTIONS ALONG BYPASS

SCALE 1:40,000

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEO YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	R. ACACIO
CHECKED	9/22/02	S. LOSE
SUBMITTED	10/14/02	M. KAWAMURA (TEAM LEADER)

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	JOSEFINA M. ALAGAR, Chief, Highways Division	GILBERTO S. REYES, OIC, Director IV	MANUEL M. BONOAN, Undersecretary	SIMEON A. DATUMANONG, Secretary

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

SCALE : 1:40,000 FULL SIZE A1

SHEET CONTENTS : LOCATION OF INTERSECTIONS ALONG BYPASS

SHEET NO. : RG-03

SCHEDULE OF PAVEMENT MARKINGS

CONTRACT PACKAGE III (INITIAL STAGE)

ITEM 612(1) - REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS

1.0 CENTER LINE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
47+400.00	47+599.53	199.53	150mm x 3.0m @ 4.50m GAP
47+599.53	49+006.05	1406.52	150mm x 3.0m @ 9.0m GAP
49+006.05	49+216.05	210.00	150mm x 3.0m @ 4.50m GAP
49+216.05	49+271.07	55.02	200mm UNBROKEN LINE
49+296.23	49+321.23	25.00	200mm UNBROKEN LINE
49+321.23	49+531.23	210.00	150mm x 3.0m @ 4.50m GAP
49+531.23	49+625.00	93.77	150mm x 3.0m @ 9.0m GAP
00+890.00	00+907.21	17.21	A-17: 100mm x 3.0m @ 4.5m GAP
00+962.68	00+987.68	25.00	A-17: 100mm UNBROKEN LINE
01+022.26	01+042.26	20.00	A-17: 100mm UNBROKEN LINE
01+082.26	01+105.00	22.74	A-17: 100mm x 3.0m @ 4.5m GAP

2.0 EDGE LINES

2.1 LEFT SIDE, OUTER EDGE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
47+400.00	49+265.17	1865.17	MAIN BYPASS
49+265.17	00+990.48	18.15	MAIN BYPASS TO RT OF A-17
00+890.00	00+990.48	100.48	RIGHT OF A-17
00+890.00	00+986.84	96.84	LEFT OF A-17
00+986.84	49+298.77	19.59	LEFT OF A-17 TO MAIN BYPASS
49+298.77	49+625.00	326.23	MAIN BYPASS

2.2 RIGHT SIDE, INNER EDGE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
47+400.00	49+262.50	1862.50	MAIN BYPASS
49+262.50	01+024.70	19.79	MAIN BYPASS TO RT OF A-17
01+024.70	01+105.00	80.30	RIGHT OF A-17
01+020.92	01+105.00	84.08	LEFT OF A-17
01+020.92	49+296.44	18.26	LEFT OF A-17 TO MAIN BYPASS
49+296.44	49+625.00	328.56	MAIN BYPASS

3.0 LANE LINES

STATION FROM	STATION TO	LENGTH (m)	REMARKS
49+246.07	49+271.07	25.00	(RS) LANE LINE 150mm UNBROKEN
49+296.23	49+321.23	25.00	(LS) LANE LINE 150mm UNBROKEN
00+962.68	00+987.68	25.00	(RS) LANE LINE 100mm UNBROKEN(A-17)
01+022.26	01+042.26	20.00	(LS) LANE LINE 100mm UNBROKEN(A-17)

4.0 CONTINUITY LINE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
49+216.05	49+246.07	30.02	(RS) 150mm x 1.0m @ 3.0m GAP)

5.0 CHEVRON

STATION FROM	STATION TO	LENGTH (m)	REMARKS
00+907.21	00+962.68	55.47	CENTER OF A-17
01+042.26	01+082.26	40.00	CENTER OF A-17

6.0 BARRIER LINES

STATION FROM	STATION TO	LENGTH (m)	REMARKS
47+400.00	47+599.53	199.53	LEFT SIDE
49+006.05	49+216.05	210.00	RIGHT SIDE
49+321.23	49+531.23	210.00	LEFT SIDE

7.0 ARROWS

ARROW TYPE	NUMBER OF ARROWS	LOCATION
A	4	APPROACHING INTERSECTION A-17
B	4	APPROACHING INTERSECTION A-17

NOTE:

A - LEFT/RIGHT ARROW

COMBINATION OF STRAIGHT AND LEFT ARROWS OR

B - STRAIGHT AND RIGHT ARROWS

8.0 PEDESTRIAN AND STOP LINES

LOCATION		AREA (m^2) PEDESTRIAN	AREA (m^2) STOP LINE	REMARKS
INT. A-17	MAIN BYPASS	7.56	7.54	SIGNALIZED
	A-17	13.79	3.61	

SCHEDULE OF TRAFFIC SIGNS, GUARDRAIL, ROADSIDE PLANTING, SLOPE PROTECTION AND UNSUITABLE EXCAVATION

CONTRACT PACKAGE III (INITIAL STAGE)

ITEM 605 (1) WARNING SIGNS (TRIAGULAR 900mm)

STATION	REF. NO.	REMARKS
47+465	W1-4R	LEFT SIDE MAIN BYPASS
49+395	W2-8	LEFT SIDE MAIN BYPASS

TOTAL NO. OF WARNING SIGNS 2.0 PCS.

ITEM 605 (2)b REGULATORY SIGNS (OCTAGONAL 600mm)

STATION	REF. NO.	REMARKS
00+988	R1-1A	RIGHT SIDE INTERSECTION A-17
01+020	R1-1A	LEFT SIDE INTERSECTION A-17

ITEM 605 (2)d REGULATORY SIGNS (CIRCULAR 6000mm DIA.)

STATION	REF. NO.	REMARKS
48+120	R6-4	RIGHTSIDE MAIN BYPASS
49+251	R6-4	LEFT SIDE MAIN BYPASS
49+340	R6-4	RIGHTSIDE MAIN BYPASS
49+395	R6-4	LEFT SIDE MAIN BYPASS

ITEM 605 (3) INFORMATORY SIGNS

STATION	REF. NO.	REMARKS
e. 1727 x 1630mm		
47+445	GS-8	LEFT SIDE MAIN BYPASS

GROUTED RIPRAP, CLASS 'A'

STATION FROM	STATION TO	LENGTH (m)	VOLUME (m^3)
LEFT SIDE			
49+388.45	49+440.00	51.55	17.01
RIGHT SIDE			
49+285.00	49+337.60	52.60	80.47
49+388.45	49+440.00	51.55	13.92
-	-	-	
	SUBTOTAL		94.39
	GRAND TOTAL		111.40

SCHEDULE OF GUARDRAILS

STATION FROM	STATION TO	LENGTH (m)	REMARKS
47+957.68	48+121.68	164.00	LEFT SIDE OF BYPASS
47+957.68	48+121.68	164.00	RIGHT SIDE OF BYPASS
BRIDGE NO. 8			
49+250.12	49+270.12	20.00	LEFT SIDE OF BYPASS
49+250.12	49+270.12	20.00	RIGHT SIDE OF BYPASS
49+321.35	49+341.35	20.00	LEFT SIDE OF BYPASS
49+318.20	49+338.20	20.00	RIGHT SIDE OF BYPASS
BRIDGE NO. 9			
49+394.50	49+414.50	20.00	LEFT SIDE OF BYPASS
49+391.80	49+411.80	20.00	RIGHT SIDE OF BYPASS
TOTAL		448.00	

A. ROADSIDE PLANTING (HIGH TREE)

STATION FROM	STATION TO	LENGTH (L.M.) LEFT	LENGTH (L.M.) RIGHT
47 + 400	48 + 000	600	600
48 + 000	48 + 700	100	100
48 + 700	49 + 400	0	0
49 + 400	49 + 625	185	125
TOTAL		885	825

SCHEDULE UNSUITABLE EXCAVATION

STATION	DEPTH (m)
46+400.00	0.20
47+513.68	0.20
49+513.68	0.20
49+625.00	0.20

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KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	J. TAPIA
CHECKED	9/23/02	S. GOSE
SUBMITTED	10/4/02	
	TEAM LEADER	

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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PLARIDEL BYPASS - CONTRACT PACKAGE III

SCALE : FULL SIZE A1

SHEET CONTENTS :
SCHEDULE OF PAVEMENT MARKINGS, TRAFFIC SIGNS, GUARDRAIL, SLOPE PROTECTION, ROADSIDE PLANTING AND UNSUITABLE EXCAVATION

SHEET NO. : RG-04

SCHEDULE OF ROAD RIGHT-OF-WAY MARKERS

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
BYPASS - LEFT				
328L	47+420	−18.000	1,653,733.030	492,136.269
329L	47+440	−20.000	1,653,753.122	492,136.814
330L	47+460	−24.000	1,653,773.468	492,135.375
331L	47+500	−24.000	1,653,813.147	492,140.433
332L	47+520	−23.000	1,653,832.860	492,143.954
333L	47+540	−22.000	1,653,852.573	492,147.475
334L	47+600	−22.000	1,653,912.091	492,155.061
335L	47+620	−21.000	1,653,931.804	492,158.582
336L	47+800	−21.000	1,654,110.359	492,181.342
337L	47+820	−20.000	1,654,130.073	492,184.863
338L	47+880	−20.000	1,654,189.591	492,192.449
339L	47+900	−21.000	1,654,209.557	492,193.986
340L	47+920	−21.000	1,654,229.396	492,196.515
341L	47+940	−22.000	1,654,249.362	492,198.052
342L	47+960	−22.000	1,654,269.202	492,200.581
343L	47+980	−23.000	1,654,289.168	492,202.117
344L	48+000	−24.000	1,654,309.134	492,203.654
345L	48+020	−24.000	1,654,328.973	492,206.183
346L	48+040	−22.000	1,654,348.560	492,210.696
347L	48+060	−23.000	1,654,368.526	492,212.233
348L	48+120.681	−23.000	1,654,428.720	492,219.906
349L	49+250.681	−23.000	1,655,549.747	492,362.833
350L	49+260	−22.000	1,655,558.911	492,365.064
351L	49+270.201	−21.480	1,655,569.011	492,366.968
352L	49+300	−24.000	1,655,599.060	492,368.685
353L	49+320	−24.000	1,655,618.977	492,371.658
354L	49+337.595	−24.000	1,655,636.484	492,374.367
355L	49+388.455	−32.000	1,655,688.369	492,374.809
356L	49+400	−25.000	1,655,698.636	492,383.700
357L	49+420	−25.000	1,655,718.465	492,387.241
358L	49+440	−26.000	1,655,738.458	492,389.913
359L	49+460	−27.000	1,655,758.441	492,392.700
360L	49+560	−27.000	1,655,857.093	492,413.243
361L	49+620	−27.000	1,655,915.988	492,426.919

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
BYPASS - RIGHT				
364R	47+420	17.000	1,653,728.605	492,170.988
365R	47+440	17.000	1,653,748.444	492,173.517
366R	47+460	20.000	1,653,767.904	492,179.022
367R	47+480	22.000	1,653,787.491	492,183.535
368R	47+500	22.000	1,653,807.330	492,186.064
369R	47+520	21.000	1,653,827.296	492,187.601
370R	47+660	21.000	1,653,966.173	492,205.303
371R	47+680	20.000	1,653,986.138	492,206.840
372R	47+880	20.000	1,654,184.533	492,232.128
373R	47+900	21.000	1,654,204.246	492,235.649
374R	47+940	21.000	1,654,243.925	492,240.707
375R	47+960	22.000	1,654,263.638	492,244.227
376R	47+980	23.000	1,654,283.351	492,247.748
377R	48+000	24.000	1,654,303.064	492,251.269
378R	48+020	25.000	1,654,322.777	492,254.790
379R	48+040	26.000	1,654,342.490	492,258.311
380R	48+060	27.000	1,654,362.203	492,261.832
381R	48+080	28.000	1,654,381.916	492,265.352
382R	48+100	28.000	1,654,401.756	492,267.881
383R	48+120	23.000	1,654,422.228	492,265.450
384R	48+120.681	23.000	1,654,422.903	492,265.536
385R	49+250.681	23.000	1,655,543.728	492,408.438
386R	49+260	22.000	1,655,553.038	492,408.670
387R	49+265.863	21.720	1,655,558.850	492,409.174
388R	49+300	19.000	1,655,592.834	492,411.232
389R	49+337.595	19.000	1,655,629.802	492,416.845
390R	49+388.455	19.000	1,655,679.712	492,425.069
391R	49+400	21.000	1,655,690.678	492,429.006
392R	49+420	23.000	1,655,709.891	492,434.469
393R	49+440	25.000	1,655,729.062	492,440.040
394R	49+473.908	28.320	1,655,761.477	492,449.662
395R	49+488.822	26.570	1,655,776.330	492,450.845
396R	49+500	26.000	1,655,787.315	492,452.496
397R	49+620	26.000	1,655,903.558	492,478.440

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
INTERSECTION A-17				
A17−1L	0+890	−7.500	1,655,584.726	492,279.924
A17−2L	0+932.336	−7.951	1,655,592.877	492,322.088
A17−3L	0+960	−7.500	1,655,592.837	492,351.235
A17−4L	1+025.855	−8.056	1,655,581.061	492,416.977
A17−5L	1+105	−7.500	1,655,559.290	492,493.606
A17−1R	0+890	7.500	1,655,569.999	492,282.771
A17−2R	0+920	7.500	1,655,575.693	492,312.225
A17−3R	0+960	10.794	1,655,574.609	492,349.686
A17−4R	1+040.119	12.250	1,655,557.986	492,425.897
A17−5R	1+060.083	9.693	1,655,555.027	492,445.701
A17−6R	1+105	7.559	1,655,544.791	492,489.551
INTERSECTION C-3				
C3−1L	0+010.293	−6.888	1,655,773.594	492,453.062
C3−2L	0+019.771	−5.904	1,655,772.312	492,460.627
C3−3L	0+040	−5.000	1,655,777.386	492,478.463
C3−4L	0+080	−5.000	1,655,792.182	492,515.625
C3−1R	0+019.911	5.958	1,655,760.517	492,461.896
C3−2R	0+040	5.000	1,655,768.096	492,482.161
C3−3R	0+080	5.000	1,655,782.891	492,519.324

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YEO YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	J. TAPIA
CHECKED	9/23/02	S. GOBE
SUBMITTED	10/14/02	M. KINOSHITA TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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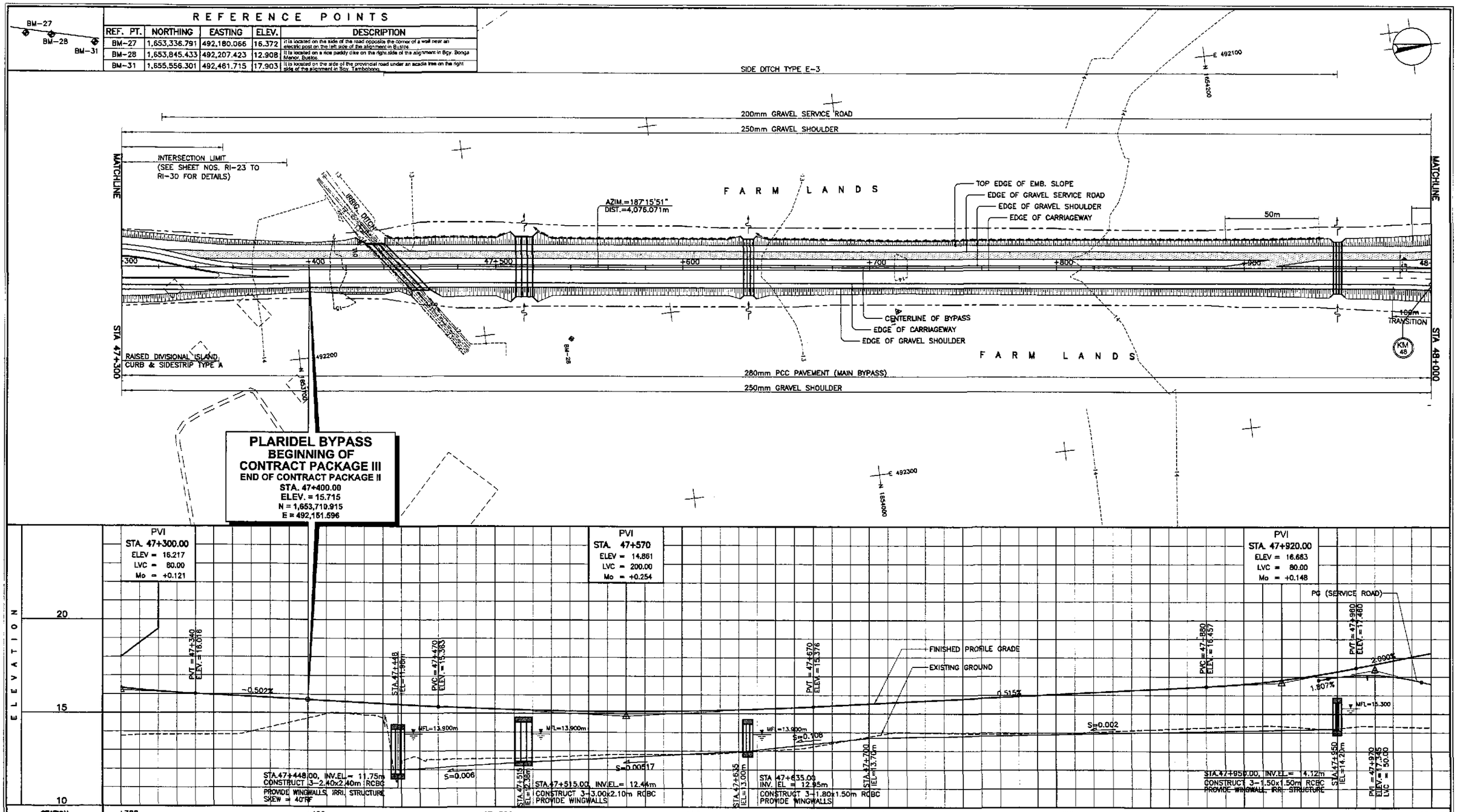
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE III	FULL SIZE A1	SCHEDULE OF ROAD RIGHT-OF-WAY MARKERS	RG-05

REFERENCE POINTS

REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-27	1,653,336.791	492,180.066	16.372	It is located on the side of the road opposite the corner of a wall near an electric post on the left side of the alignment in Bustos
BM-28	1,653,845.433	492,207.423	12.908	It is located on a rice paddy dike on the right side of the alignment in Bgy. Bonga Menor, Bustos.
BM-31	1,655,556.301	492,461.715	17.903	It is located on the side of the provincial road under an acacia tree on the right side of the alignment in Bgy. Tambobong.



STATION	+300		+400		47+500		+600		+700		+800		+900		48+000
FINISHED PROFILE GRADE BYPASS \ SERVICE ROAD	16.338	16.147	16.016	15.916	15.815	15.715	15.614	15.514	15.413	15.315	15.235	15.175	15.136	15.117	15.118
EXISTING GROUND BYPASS	13.766	13.840	13.840	13.840	14.235	14.719	14.979	14.747	12.582	12.560	12.584	12.828	12.716	12.804	12.823

STATION	+600		+700		+800		+900		48+000
FINISHED PROFILE GRADE BYPASS \ SERVICE ROAD	15.140	15.182	15.244	15.327	15.427	15.530	15.633	15.736	15.839
EXISTING GROUND BYPASS	12.827	12.888	12.988	13.108	13.417	13.769	14.000	13.988	13.936

STATION	+900		48+000
FINISHED PROFILE GRADE BYPASS \ SERVICE ROAD	15.942	16.045	16.148	16.251	16.354	16.457	16.597	16.811	17.098	17.460	17.658	18.256
EXISTING GROUND BYPASS	13.953	13.981	14.027	14.111	14.195	14.268	14.334	14.344	14.218	14.328	14.322	14.275

HORIZONTAL CURVATURE: R=∞

VERTICAL CURVATURE: L=80, Mo=+0.121; g=-0.502%; L=200, Mo=+0.254; g=0.515%; L=80, Mo=+0.148; g=2.000%

SUPERELEVATION: NC

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	DATE	SIGNATURE
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SUBMITTED	10/14/02	TEAM LEADER

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PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
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Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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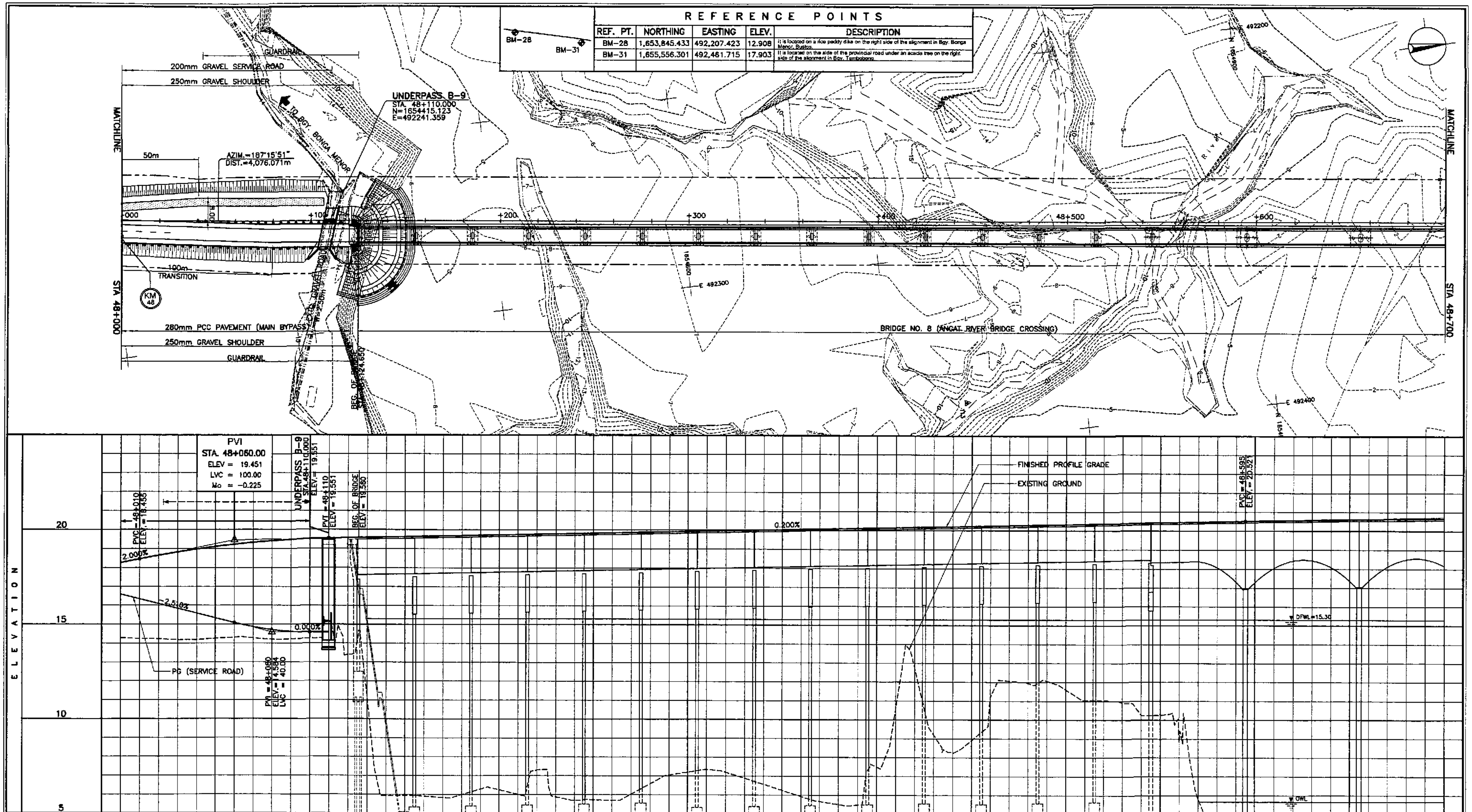
PLARIDEL BYPASS - CONTRACT PACKAGE III

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

SHEET CONTENTS :
PLAN AND PROFILE
ALONG BYPASS (INITIAL STAGE)
STA. 47+400 - STA. 48+000

SHEET NO. :
RP-01



REFERENCE POINTS

REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-28	1,653,845.433	492,207.423	12.908	It is located on a rice paddy dike on the right side of the alignment in Bgy. Bonga Menor, Bustos.
BM-31	1,655,556.301	492,461.715	17.903	It is located on the side of the provincial road under an acacia tree on the right side of the alignment in Bgy. Tambobong.

STATION: 48+000, +100, +200, +300, +400, 48+500, +600, +700

	PROFILE GRADE BYPASS \ SERVICE ROAD	EXISTING GROUND BYPASS
1	18.256 / 16.592	14.275
2	18.645 / 16.090	14.222
3	18.972 / 15.588	14.189
4	19.227 / 15.086	14.310
5	19.410 / 14.710	14.204
6	19.522 / 14.584	14.259
7	19.571	13.398
8	19.611	5.946
9	19.651	5.910
10	19.691	6.000
11	19.731	6.252
12	19.771	7.295
13	19.811	5.687
14	19.851	5.706
15	19.891	6.592
16	19.931	7.204
17	19.971	7.200
18	20.011	6.566
19	20.051	5.931
20	20.091	5.510
21	20.131	7.499
22	20.171	12.725
23	20.211	8.263
24	20.251	11.196
25	20.291	11.954
26	20.331	11.600
27	20.371	11.035
28	20.411	10.255
29	20.451	8.845
30	20.491	4.275
31	20.531	2.033
32	20.567	1.867
33	20.598	2.512
34	20.623	0.349
35	20.643	2.154
36	20.658	0.889

HORIZONTAL CURVATURE: R=∝

VERTICAL CURVATURE: g=2.000% L=100 Mo=-0.225 g=0.200%

SUPERELEVATION: NC

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	A. ACACIO
CHECKED	9/23/02	S. JOSE
SUBMITTED	10/1/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	JOSEFINA M. ALAGAR, Chief, Highways Division	GILBERTO S. REYES, OIC, Director IV	MANUEL M. BONOAN, Undersecretary	SIMEON A. DATUMANONG, Secretary

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

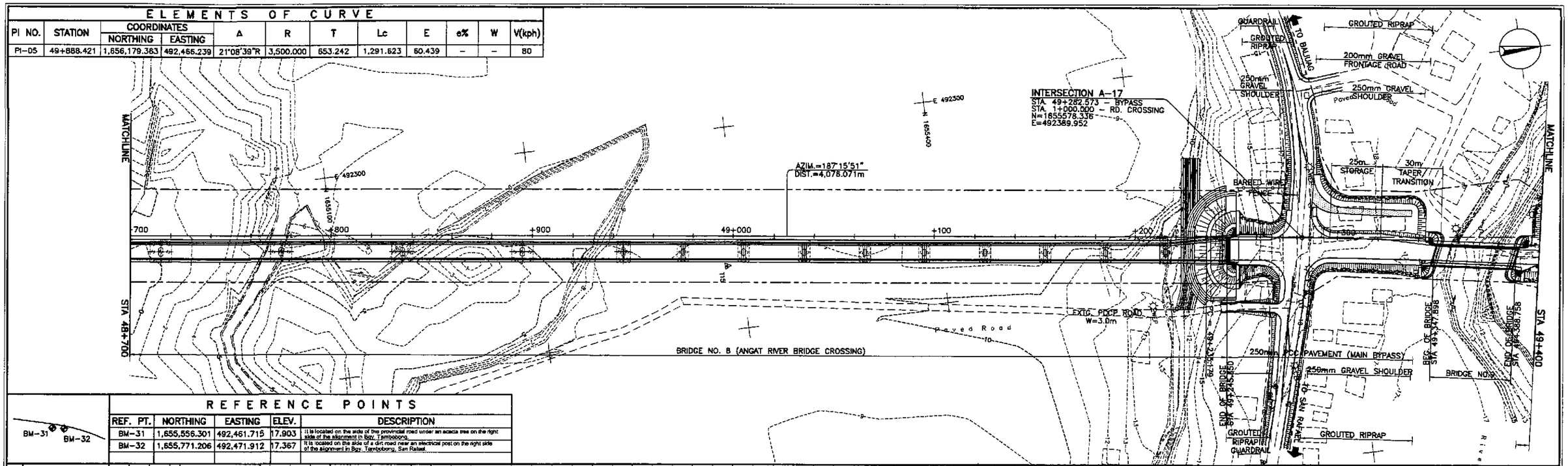
SCALE : HORIZONTAL 1:1000, VERTICAL 1:100, FULL SIZE A1

SHEET CONTENTS :
PLAN AND PROFILE
ALONG BYPASS (INITIAL STAGE)
STA. 48+000 - STA. 48+700

SHEET NO. : RP-02

ELEMENTS OF CURVE

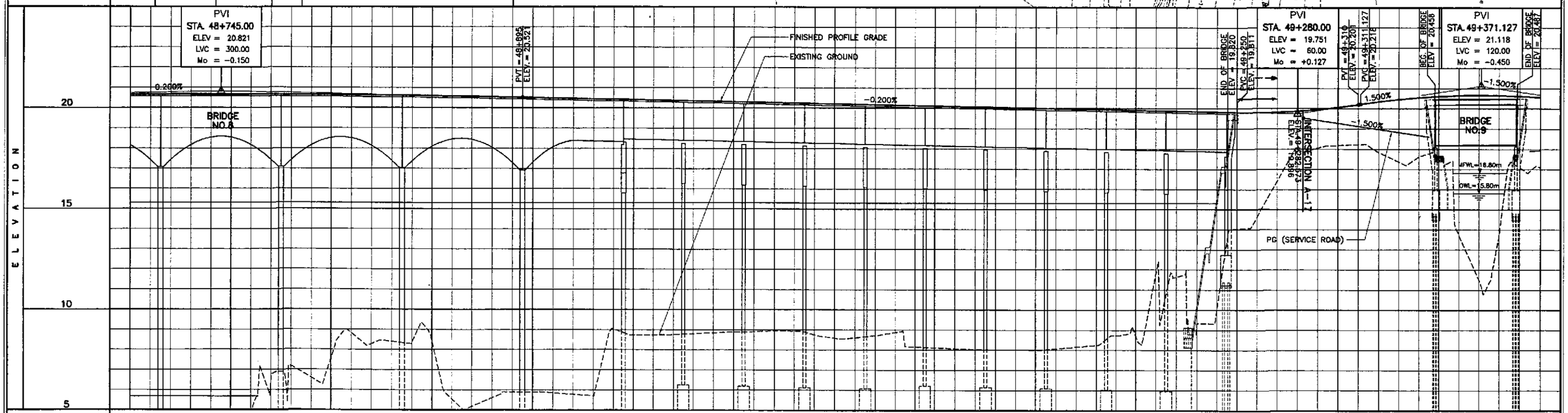
PI NO.	STATION	COORDINATES NORTHING	COORDINATES EASTING	Δ	R	T	Lc	E	e%	W	V(kph)
PI-05	49+888.421	1,656,179.363	492,466.239	21°08'39"R	3,500.000	653.242	1,291.623	60.439	–	–	80



REFERENCE POINTS

BM-31 BM-32

REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-31	1,655,556.301	492,461.715	17.903	It is located on the side of the provincial road under an acacia tree on the right side of the alignment in Bgy. Tambobong.
BM-32	1,655,771.206	492,471.912	17.367	It is located on the side of a dirt road near an electrical post on the right side of the alignment in Bgy. Tambobong, San Rafael.



STATION	+700		+800		+900		49+000		+100		+200		+300		+400
PROFILE GRADE BYPASS \ SERVICE ROAD	20.658	20.667	20.671	20.670	20.663	20.651	20.634	20.611	20.583	20.550	20.511	20.471	20.431	20.391	20.351
EXISTING GROUND BYPASS	0.889	0.726	1.308	4.888	7.169	7.541	8.280	8.331	5.541	5.609	5.887	5.782	9.041	8.741	8.803

STATION	49+311	49+331	49+351	49+371	49+391	49+411	49+431	49+451	49+471	49+491	49+511	49+531	49+551	49+571	49+591	49+611	49+631	49+651	49+671	49+691	49+711	49+731	49+751	49+771	49+791	49+811	49+831	49+851	49+871	49+891	49+911	49+931	49+951	49+971	49+991	50+011	50+031	50+051	50+071
PROFILE GRADE BYPASS \ SERVICE ROAD	20.311	20.271	20.231	20.191	20.151	20.111	20.071	20.031	19.991	19.951	19.911	19.871	19.831	19.805	19.878	20.065	20.341	20.547	20.652	20.658	20.564	20.471	20.378	20.285	20.192	20.099	20.006	19.913	19.820	19.727	19.634	19.541	19.448	19.355	19.262	19.169	19.076	18.983	18.890
EXISTING GROUND BYPASS	8.888	8.943	8.748	8.508	8.872	8.105	8.028	8.009	8.068	8.244	8.712	11.639	10.019	14.634	17.836	18.182	17.841	17.622	13.733	13.754	17.066	20.564	20.378	20.285	20.192	20.099	20.006	19.913	19.820	19.727	19.634	19.541	19.448	19.355	19.262	19.169	19.076	18.983	18.890

HORIZONTAL CURVATURE: R=∞ — R = 3500 (49 + 235.179)

VERTICAL CURVATURE: L=300, Mo=–0.150 — q=–0.200% — L=60, Mo=+0.127 — q=1.500% — L=120, Mo=–0.450

SUPERELEVATION: NC

JICA — JAPAN INTERNATIONAL COOPERATION AGENCY

KEI KATAHIRA & ENGINEERS INTERNATIONAL — YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	7/23/02	A. ACACIO
CHECKED	7/23/02	S. GOSE
SUBMITTED	10/21/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

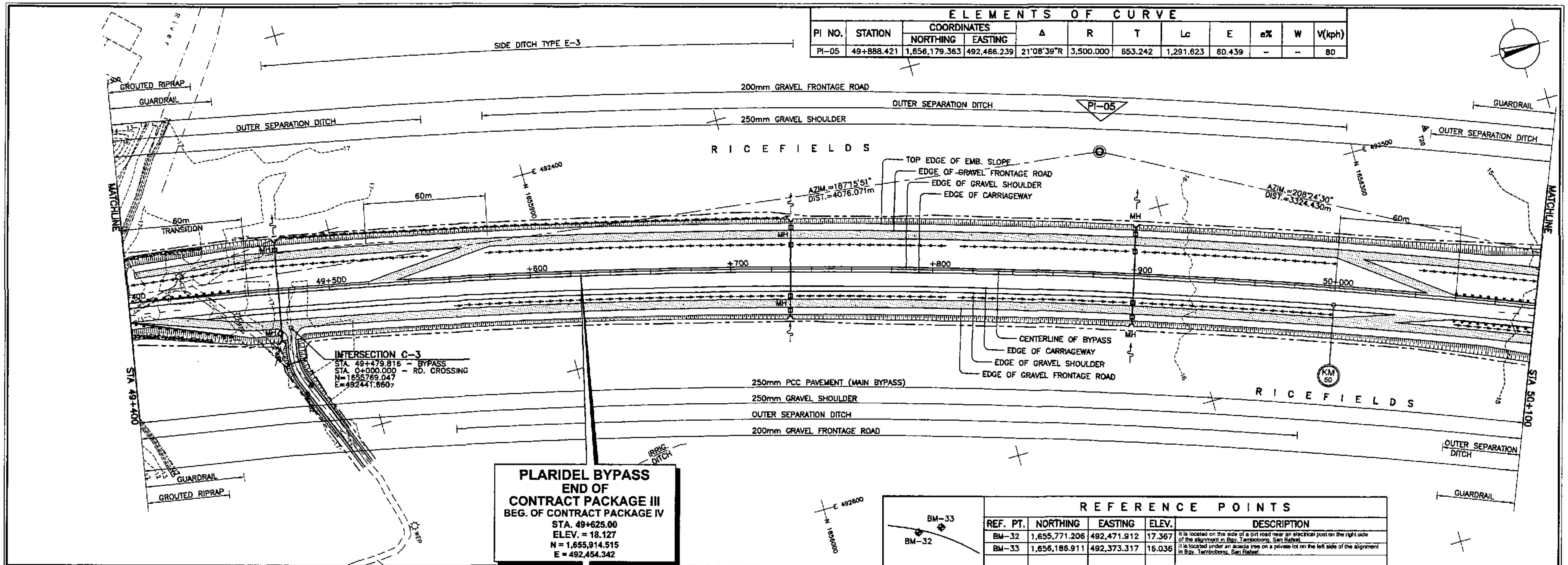
PROJECT AND LOCATION :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)
PLARIDEL BYPASS - CONTRACT PACKAGE III

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

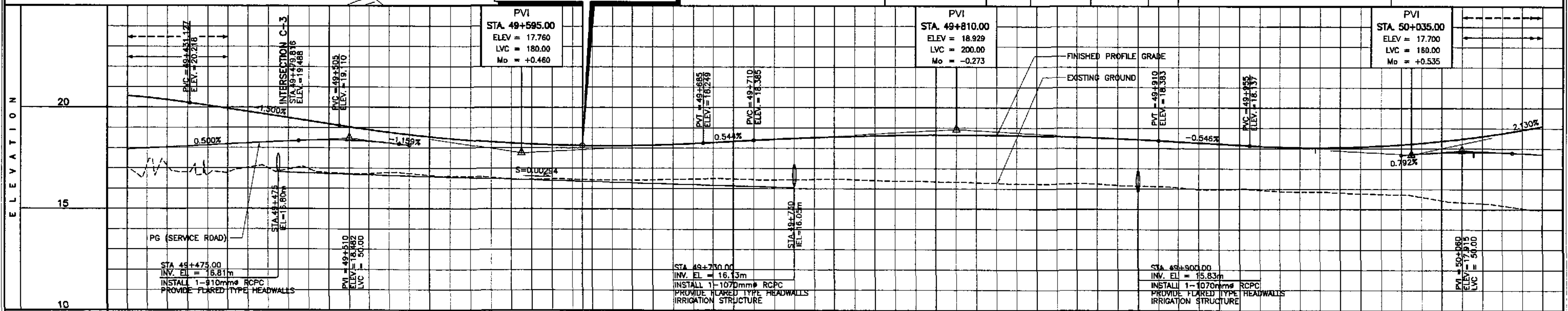
SHEET CONTENTS : PLAN AND PROFILE ALONG BYPASS (INITIAL STAGE) STA. 48+700 - STA. 49+400

SHEET NO. : RP-03

ELEMENTS OF CURVE											
PI NO.	STATION	COORDINATES NORTHING	COORDINATES EASTING	Δ	R	T	Lc	E	e%	W	V(kph)
PI-05	49+888.421	1,656,179.363	492,466.239	21°08'39"R	3,500.000	653.242	1,291.623	60.439	–	–	80



REFERENCE POINTS				
REF. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
BM-32	1,655,771.206	492,471.912	17.367	It is located on the side of a dirt road near an electrical post on the right side of the alignment in Bgy. Tambobong, San Rafael.
BM-33	1,656,186.911	492,373.317	16.036	It is located under an acacia tree on a private lot on the left side of the alignment in Bgy. Tambobong, San Rafael.



STATION: +400 · 49+500 · +600 · +700 · +800 · +900 · 50+000 · +100

FINISHED PROFILE GRADE BYPASS \ SERVICE ROAD	20.564 / 17.932	20.369 / 18.032	20.085 / 18.132	19.785 / 18.232	19.485 / 18.332	19.185 / 18.395	18.898 / 18.329	18.654 / 18.134	18.457	18.304	18.197	18.136 / 18.127	18.119	18.149	18.223	18.331	18.437	18.524	18.589	18.632	18.654	18.654	18.632	18.588	18.522	18.435	18.328	18.219	18.112	18.053	18.061	18.135	18.277 / 17.754	18.485 / 17.835	18.761 / 17.812	19.103
EXISTING GROUND BYPASS	17.066	17.120	16.663	17.023	16.939	16.779	16.737	16.732	16.597	16.544	16.453	16.461 / 16.446	16.422	16.433	16.473	16.477	16.432	16.450	16.445	16.381	16.347	16.301	16.250	16.241	16.239	16.139	16.080	15.966	15.956	15.857	15.821	15.747	15.612	15.349	15.192	14.982

HORIZONTAL CURVATURE: R = 3500

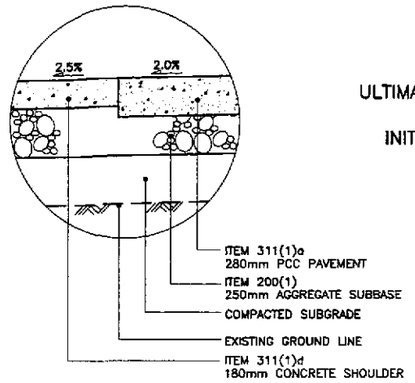
VERTICAL CURVATURE: g=-1.500% · L=180, Mo=+0.460 · g=0.544% · L=200, Mo=-0.273 · g=-0.546% · L=160, Mo=+0.535

SUPERELEVATION: NC

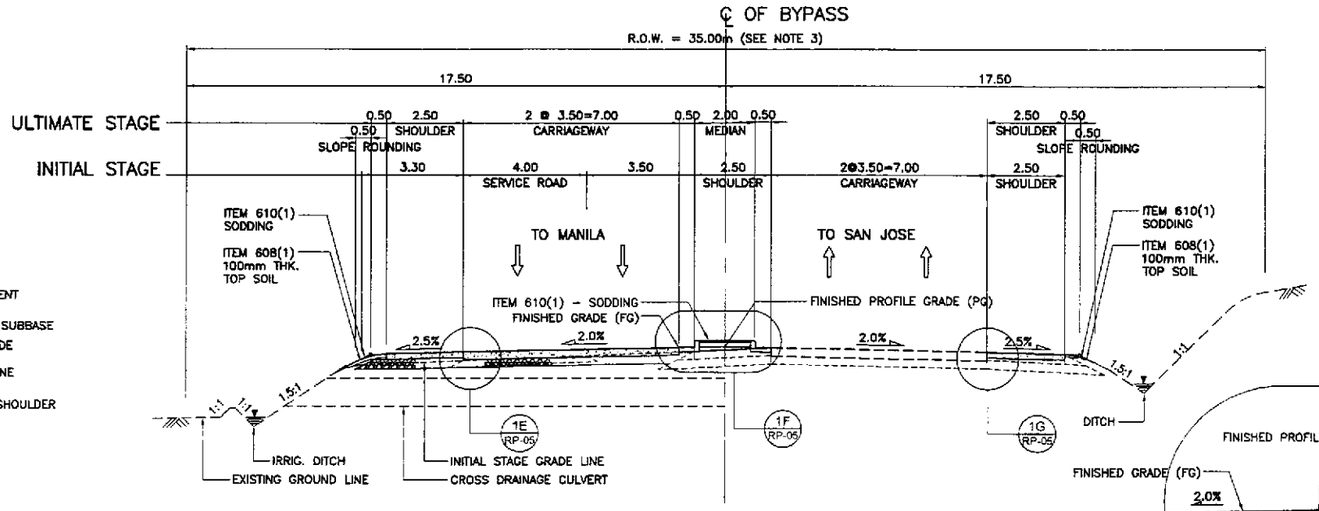
JICA JAPAN INTERNATIONAL COOPERATION AGENCY		DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
KATAHIRA & ENGINEERS INTERNATIONAL	DESIGNED	9/2/02	A. ACACIO	
YACHIYO ENGINEERING CO., LTD.	CHECKED	9/23/02	S. JOSE	
	SUBMITTED	10/14/02	M. KIUCHI TEAM LEADER	

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) — PLARIDEL BYPASS - CONTRACT PACKAGE III	HORIZONTAL 1:1000; VERTICAL 1:100; FULL SIZE A1	PLAN AND PROFILE ALONG BYPASS (INITIAL STAGE) STA. 49+400 - STA. 49+625	RP-04



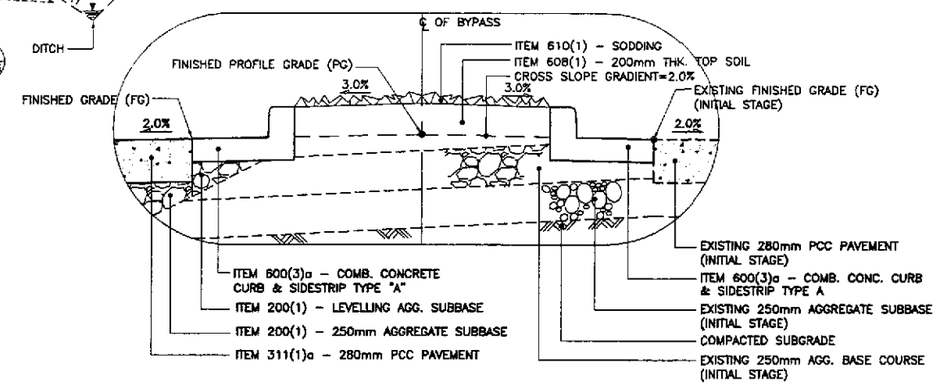
1E RP-05 DETAIL
SCALE 1:20



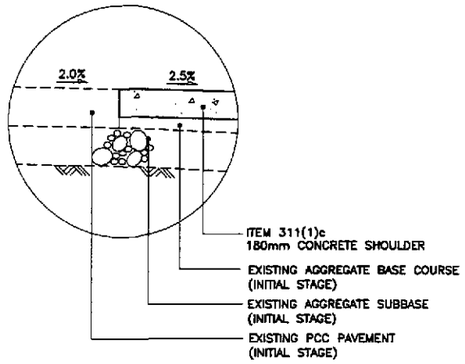
1B RP-05 NORMAL SECTION - ULTIMATE STAGE
SCALE 1:100

NOTES:

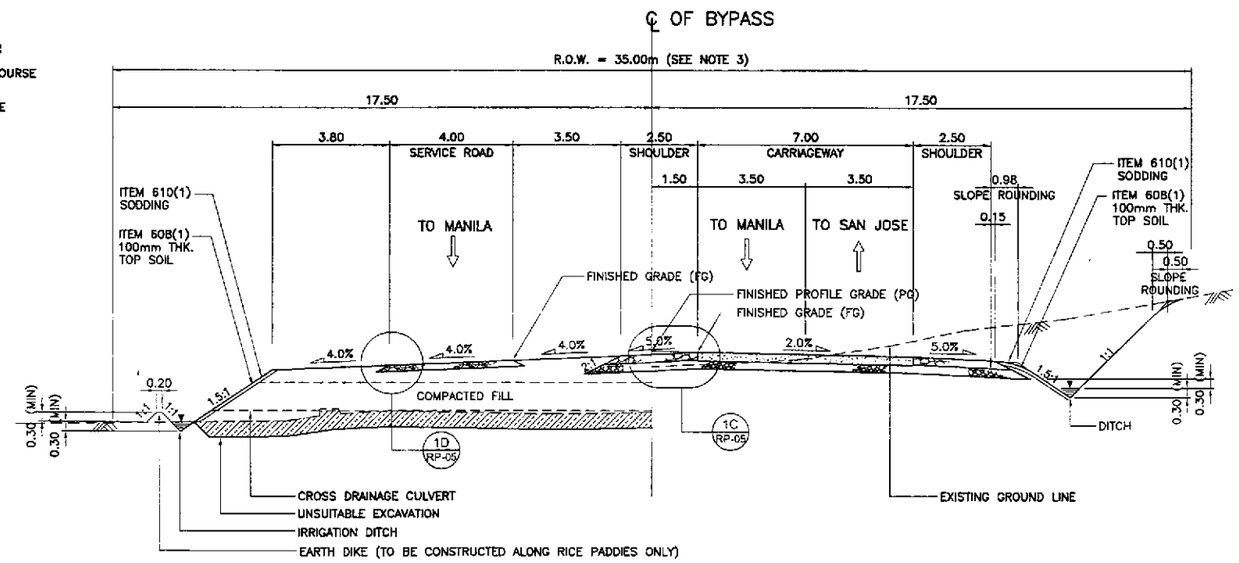
1. FINISHED PROFILE GRADE (PG) ALONG BYPASS IS TAKEN FROM THE CENTERLINE WHEREAS FINISHED GRADE (FG) IS RECKONED FROM THE PROFILE GRADE RELATIVE TO THE PAVEMENT CROSS SLOPE.
2. FOR SCHEDULE OF QUANTITIES, SEE SHEET NOS. RG-04 TO RG-05.
3. ROAD RIGHT-OF-WAY (R.O.W.) WIDTH SHALL BE VARIED DUE TO HORIZONTAL TRANSITION OF SERVICE ROAD, MEDIAN\DIVISIONAL ISLANDS, OUTER SEPERATIONS AND DUE TO HEIGHT OF EMBANKMENT. SEE SCHEDULE OF R.O.W. SHTS. NO. RG-05.
4. SIDESLOPES OF 1:5:1 OR FLATTER SHALL BE PROTECTED BY SODDING. SIDESLOPES ALONG AREAS PRONE TO FLOODING SHALL BE PROTECTED BY GROUTED RIPRAP AT 300mm MINIMUM THICKNESS. SIDESLOPES ALONG BUILT-UP AREAS SHALL BE PROTECTED BY STONE MASONRY AND/OR RETAINING WALLS OR AS DIRECTED BY THE ENGINEER.
5. SEE SHEET NO. RG-04 FOR UNSUITABLE EXCAVATION SCHEDULE.



1F RP-05 DETAIL
SCALE 1:20

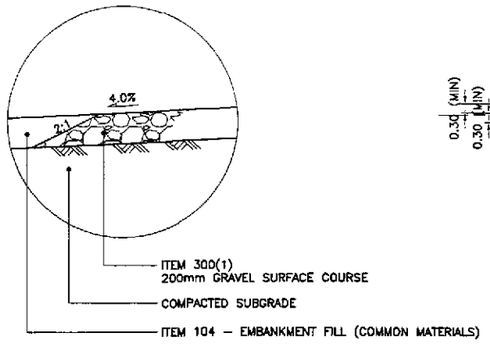


1G RP-05 DETAIL
SCALE 1:20



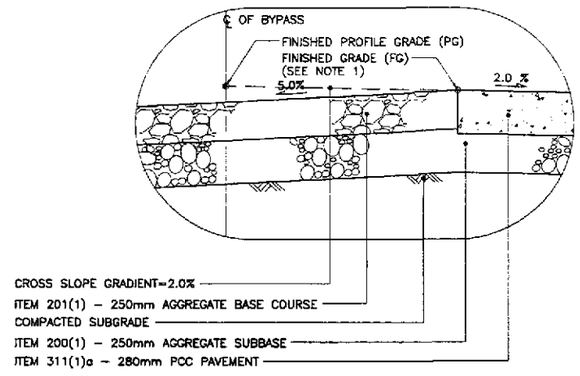
EMBANKMENT SECTION

CUT SECTION



1D RP-05 DETAIL
SCALE 1:20

1A RP-05 NORMAL SECTION - INITIAL STAGE
SCALE 1:100



1C RP-05 DETAIL
SCALE 1:20

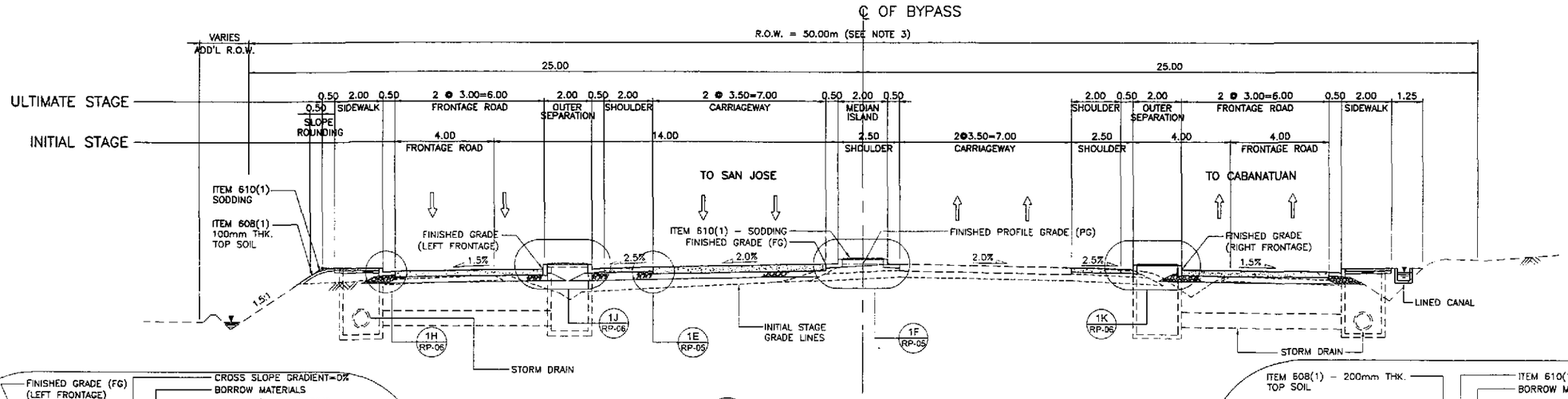
1 RP-05 TYPICAL ROADWAY SECTIONS - WITHOUT FRONTAGE ROAD
SCALE 1:100

JICA JAPAN INTERNATIONAL COOPERATION AGENCY			
KATAHIRA & ENGINEERS INTERNATIONAL / YACHIYO ENGINEERING CO., LTD.			
	DATE	SIGNATURE	
DESIGNED	9/21/02	A. ACACIO	
CHECKED	9/23/02	S. JOSE	
SUBMITTED	10/14/02	V. CUNANAN TEAM LEADER	

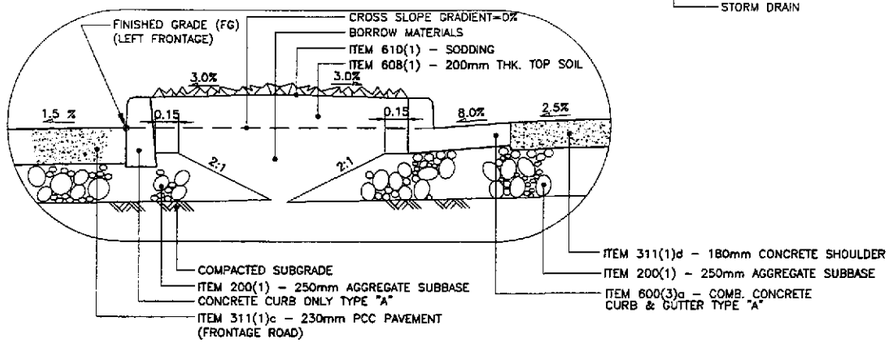
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

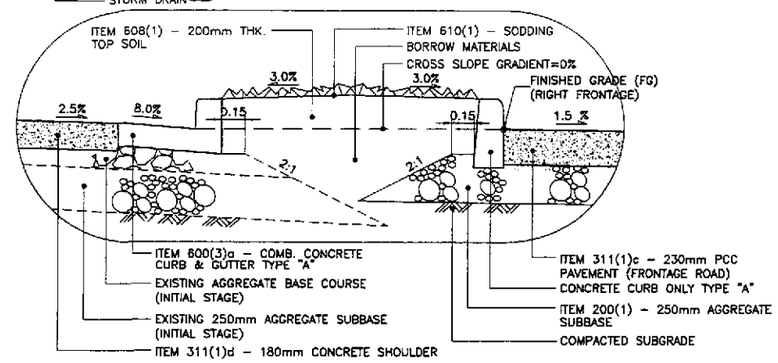
PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE III	AS SHOWN FULL SIZE A1	TYPICAL ROADWAY SECTIONS NORMAL SECTIONS WITHOUT FRONTAGE ROAD (INITIAL AND ULTIMATE STAGE) (1 of 4)	RP-05



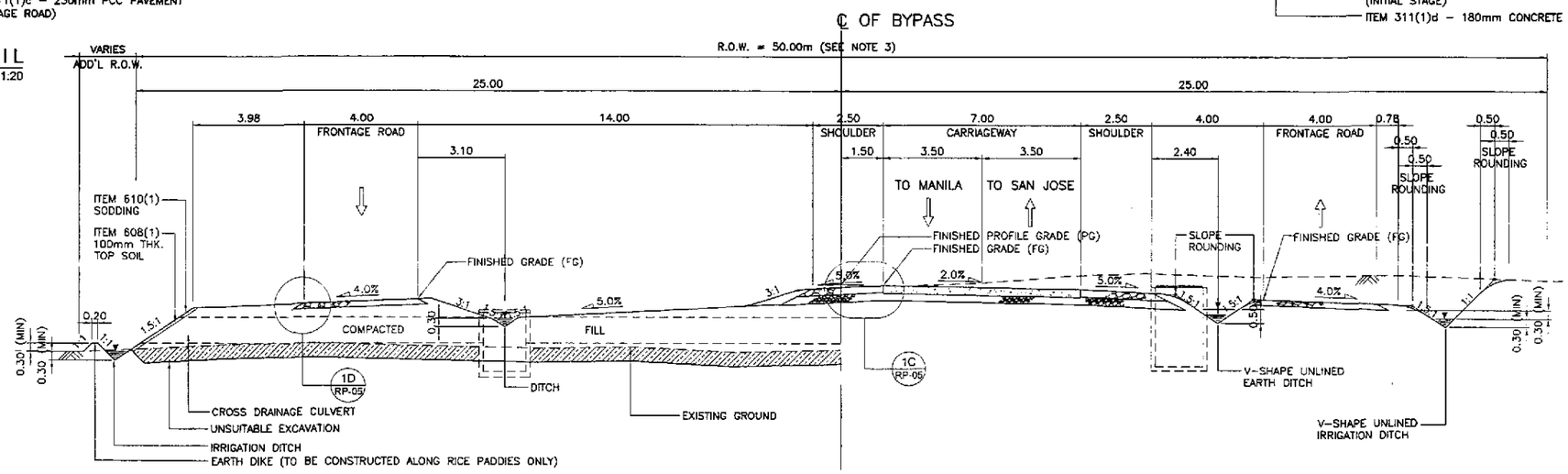
1B RP-06 NORMAL SECTION - ULTIMATE STAGE
SCALE 1:100



1J RP-06 DETAIL
SCALE 1:20



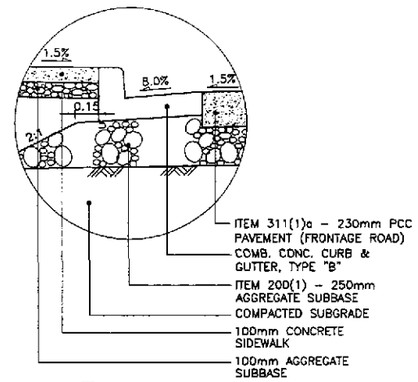
1K RP-06 DETAIL
SCALE 1:20



EMBANKMENT SECTION

CUT SECTION

1A RP-06 NORMAL SECTION - INITIAL STAGE
SCALE 1:100



1H RP-06 DETAIL
SCALE 1:20

NOTES:

1. FINISHED PROFILE GRADE (PG) ALONG BYPASS IS TAKEN FROM THE CENTERLINE WHEREAS FINISHED GRADE (FG) IS RECKONED FROM THE PROFILE GRADE RELATIVE TO THE PAVEMENT CROSS SLOPE.
2. FOR SCHEDULE OF QUANTITIES, SEE SHEET NOS. RG-04 TO RG-05.
3. ROAD RIGHT-OF-WAY (R.O.W.) WIDTH SHALL BE VARIED DUE TO HORIZONTAL TRANSITION OF SERVICE ROAD, MEDIAN\DIVISIONAL ISLANDS, OUTER SEPERATIONS AND DUE TO HEIGHT OF EMBANKMENT. SEE SCHEDULE OF R.O.W. SHTS. NO. RG-05
4. SIDESLOPES OF 1:5:1 OR FLATTER SHALL BE PROTECTED BY SODDING. SIDESLOPES ALONG AREAS PRONE TO FLOODING SHALL BE PROTECTED BY GROUTED RIPRAP AT 300mm MINIMUM THICKNESS. SIDESLOPES ALONG BUILT-UP AREAS SHALL BE PROTECTED BY STONE MASONRY AND/OR RETAINING WALLS OR AS DIRECTED BY THE ENGINEER.
5. SEE SHEET NO. RG-04 FOR UNSUITABLE EXCAVATION SCHEDULE.

1 RP-06 TYPICAL ROADWAY SECTIONS - WITH FRONTAGE ROAD
SCALE 1:100

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	A. ACACIO
CHECKED	9/23/02	S. JOSE
SUBMITTED	10/14/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

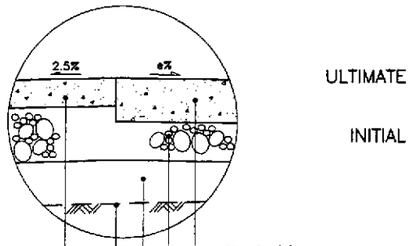
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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

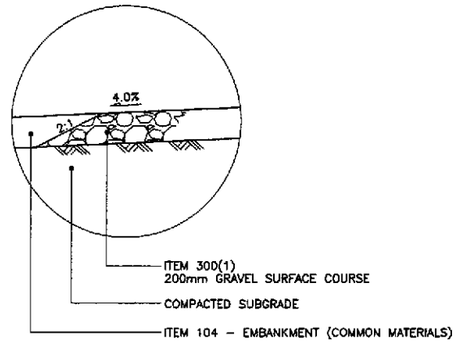
SCALE : AS SHOWN FULL SIZE A1

SHEET CONTENTS :
TYPICAL ROADWAY SECTIONS
NORMAL SECTIONS WITH FRONTAGE ROAD
(INITIAL AND ULTIMATE STAGE)
(2 of 4)

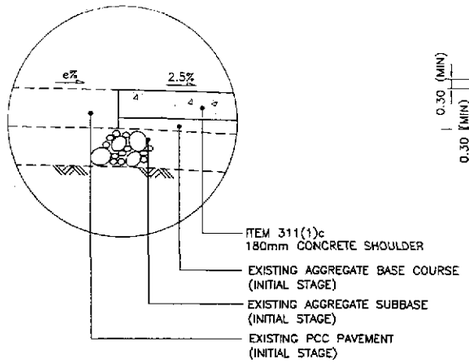
SHEET NO. : RP-06



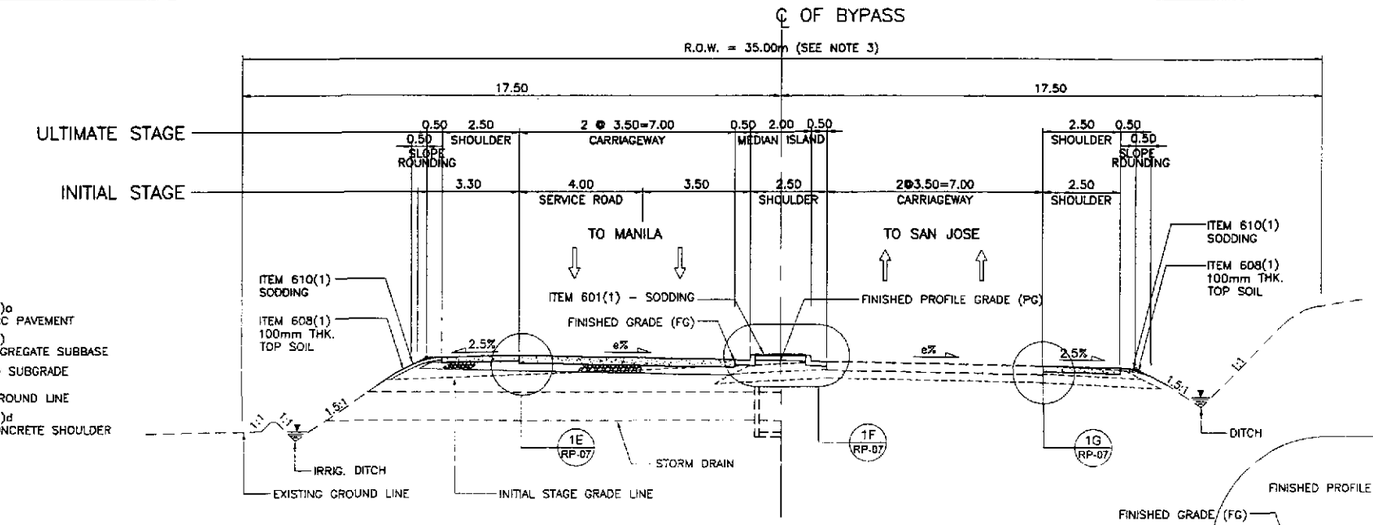
1E RP-07 DETAIL
SCALE 1:20



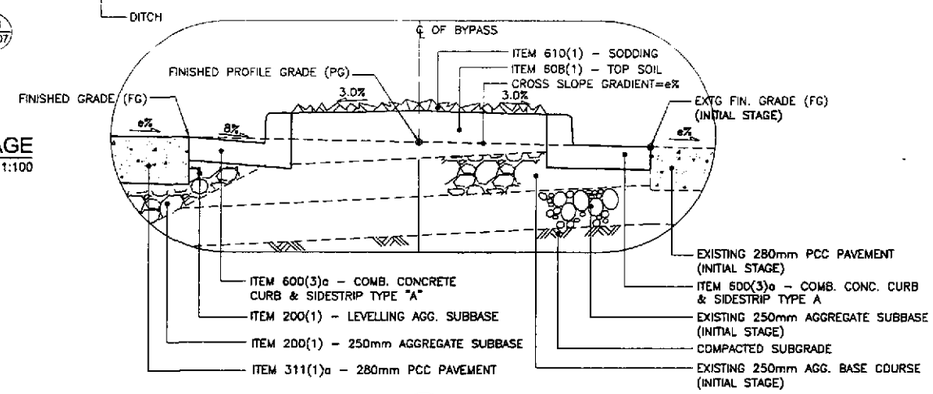
1D RP-07 DETAIL
SCALE 1:20



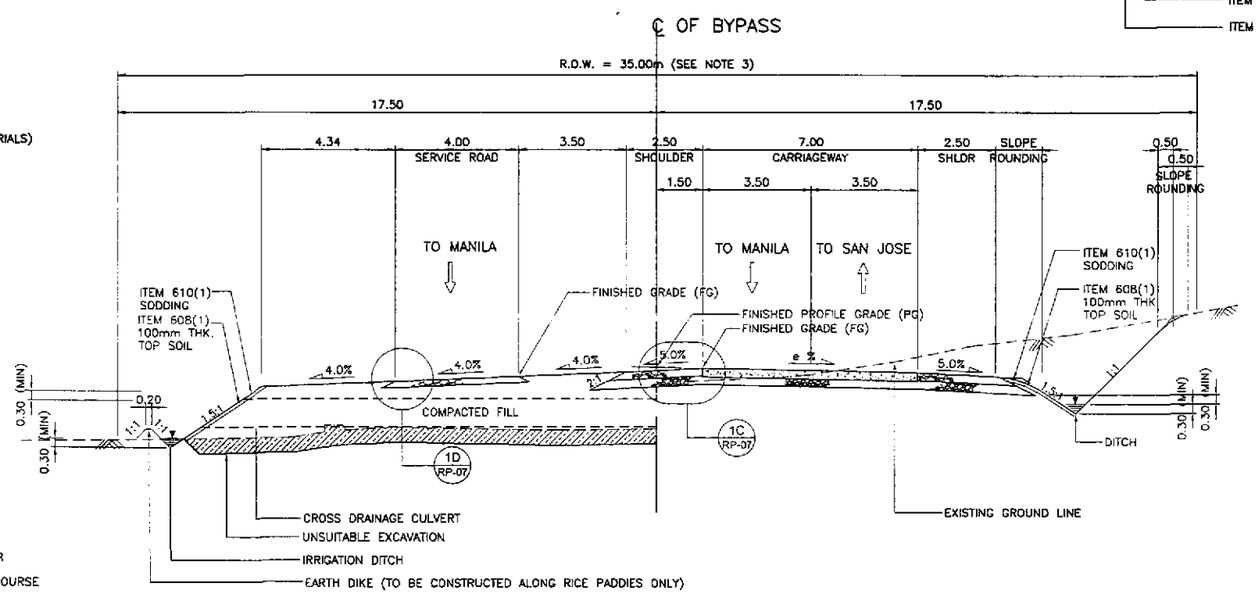
1G RP-07 DETAIL
SCALE 1:20



1B RP-07 SUPERELEVATED SECTION - ULTIMATE STAGE
SCALE 1:100

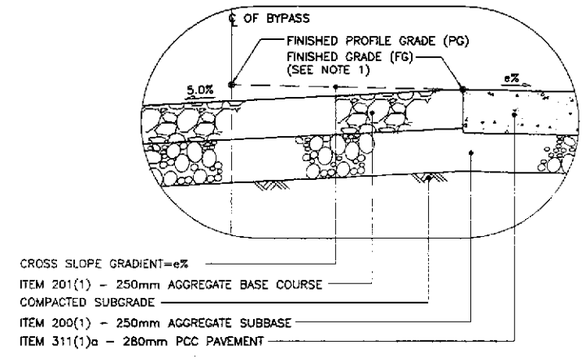


1F RP-07 DETAIL
SCALE 1:20



EMBANKMENT SECTION CUT SECTION

1A RP-07 SUPERELEVATED SECTION - INITIAL STAGE
SCALE 1:100



1C RP-07 DETAIL
SCALE 1:20

1 RP-07 TYPICAL ROADWAY SECTIONS - WITHOUT FRONTAGE ROAD
SCALE 1:100

NOTES:

1. FINISHED PROFILE GRADE (PG) ALONG BYPASS IS TAKEN FROM THE CENTERLINE WHEREAS FINISHED GRADE (FG) IS RECKONED FROM THE PROFILE GRADE RELATIVE TO THE PAVEMENT CROSS SLOPE.
2. FOR SCHEDULE OF QUANTITIES, SEE SHEET NOS. RG–04 TO RG–05.
3. ROAD RIGHT–OF–WAY (R.O.W.) WIDTH SHALL BE VARIED DUE TO HORIZONTAL TRANSITION OF SERVICE ROAD, MEDIAN\DIVISIONAL ISLANDS, OUTER SEPERATIONS AND DUE TO HEIGHT OF EMBANKMENT. SEE SCHEDULE OF R.O.W. SHTS. NO. RG–05.
4. SIDESLOPES OF 1:5:1 OR FLATTER SHALL BE PROTECTED BY SODDING. SIDESLOPES ALONG AREAS PRONE TO FLOODING SHALL BE PROTECTED BY GROUTED RIPRAP AT 300mm MINIMUM THICKNESS. SIDESLOPES ALONG BUILT–UP AREAS SHALL BE PROTECTED BY STONE MASONRY AND/OR RETAINING WALLS OR AS DIRECTED BY THE ENGINEER.
5. SEE SHEET NO. RG–04 FOR UNSUITABLE EXCAVATION SCHEDULE.

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	A. ACACIO
CHECKED	9/23/02	S. GOZO
SUBMITTED	10/14/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

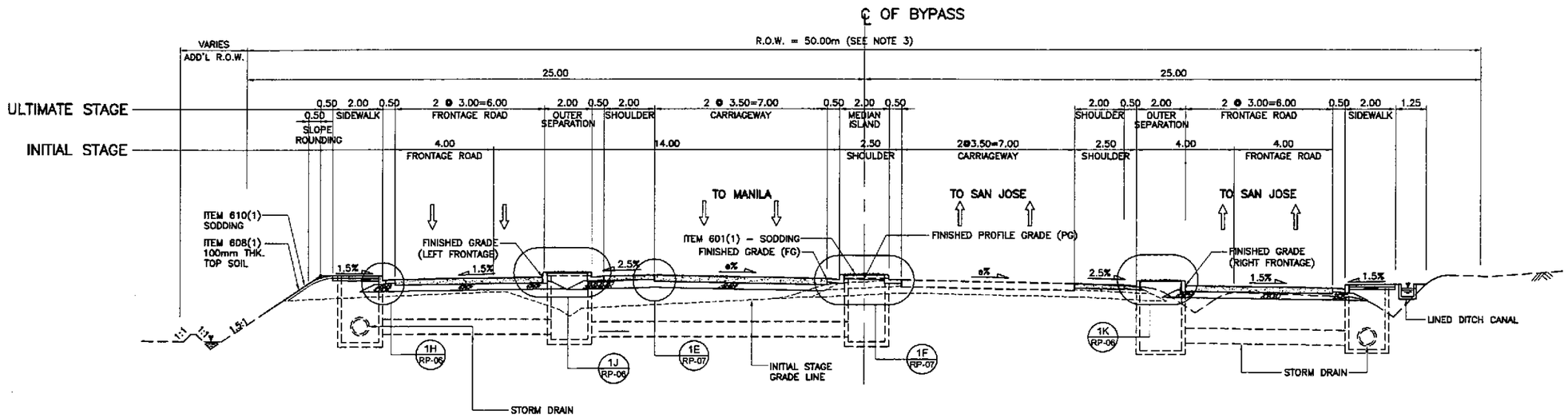
PPHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	DIC, Director IV	Undersecretary	Secretary

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

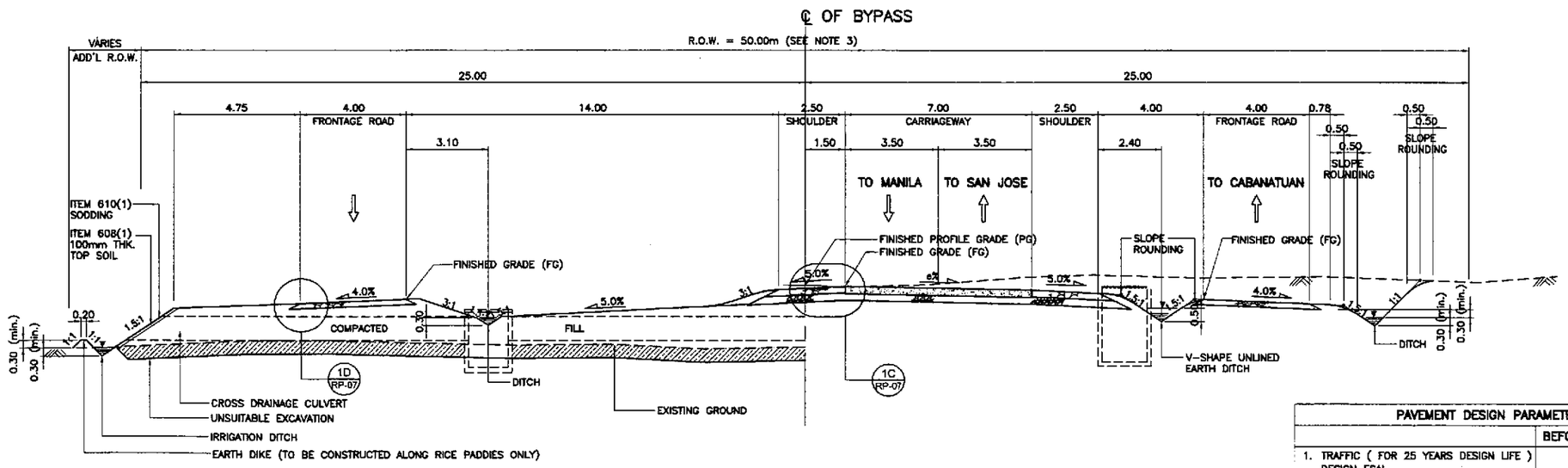
SCALE : AS SHOWN FULL SIZE A1

SHEET CONTENTS :
TYPICAL ROADWAY SECTIONS
SUPERELEVATED SECTIONS
WITHOUT FRONTAGE ROAD
(INITIAL AND ULTIMATE STAGE)
(3 of 4)

SHEET NO. : RP-07



1B / RP-08 SUPERELEVATED SECTION - ULTIMATE STAGE
SCALE 1:100



EMBANKMENT SECTION

CUT SECTION

1A / RP-08 SUPERELEVATED SECTION - INITIAL STAGE
SCALE 1:100

1 / RP-08 TYPICAL ROADWAY SECTIONS - WITH FRONTAGE ROAD
SCALE 1:100

NOTES:

1. FINISHED PROFILE GRADE (PG) ALONG BYPASS IS TAKEN FROM THE CENTERLINE WHEREAS FINISHED GRADE (FG) IS RECKONED FROM THE PROFILE GRADE RELATIVE TO THE PAVEMENT CROSS SLOPE.
2. FOR SCHEDULE OF QUANTITIES, SEE SHEET NOS. RG-04 TO RG-05.
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5. SEE SHEET NO. RG-04 FOR UNSUITABLE EXCAVATION SCHEDULE.

PAVEMENT DESIGN PARAMETERS	BEFORE ANGAT BRIDGE	AFTER ANGAT BRIDGE
1. TRAFFIC (FOR 25 YEARS DESIGN LIFE) DESIGN ESAL	4.40×10^6	3.50×10^6
2. DESIGN CBR SUBGRADE CBR	5.00 %	5.00 %
3. ROADBED RESILIENT MODULUS M_R E_{SB} E_{BS}	5,500 psi = 37.92 MPa 13,000 psi = 89.64 MPa 23,000 psi = 158.58 MPa	5,500 psi = 37.92 MPa 13,000 psi = 89.64 MPa 23,000 psi = 158.58 MPa
4. PERFORAMNCE CRITERIA Δ PSI	2	2
5. DESIGN RELIABILITY Z_R S_D	50 % 0.35	50 % 0.35
6. DRAINAGE COEFFICIENT RIGID	1	1
7. LAYER COEFFICIENT a_1 (FOR AC) a_2 (FOR BASE) a_3 (FOR SUBBASE)	0.39 0.105 0.095	0.39 0.105 0.095
8. PAVEMENT CONSTRUCTION THIKNESS PCCP SUBBASE	280mm THK 250mm THK	250mm THK 250mm THK

JICA
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KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	A. ACACIO
CHECKED	9/23/02	S. CEPOSE
SUBMITTED	10/14/02	M. ANCHETA TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONGAN Undersecretary	SIMEON A. DATUMANONG Secretary

PROJECT AND LOCATION :
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PLARIDEL BYPASS - CONTRACT PACKAGE III

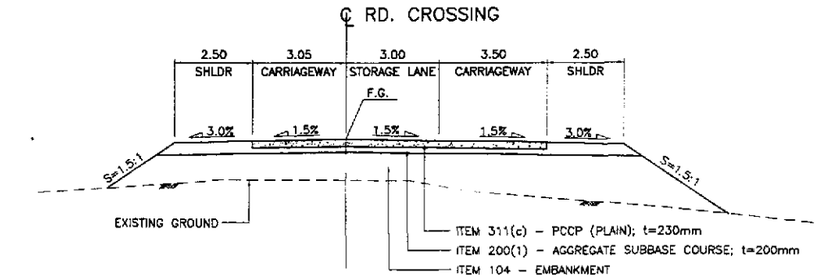
SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
TYPICAL ROADWAY SECTIONS
SUPERELEVATED SECTIONS WITH FRONTAGE ROAD (INITIAL AND ULTIMATE STAGE)
(4 of 4)

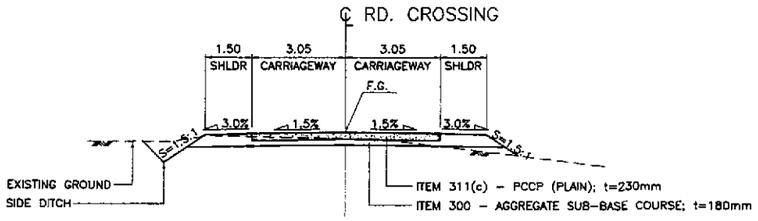
SHEET NO. : RP-08

ELEMENTS OF CURVE

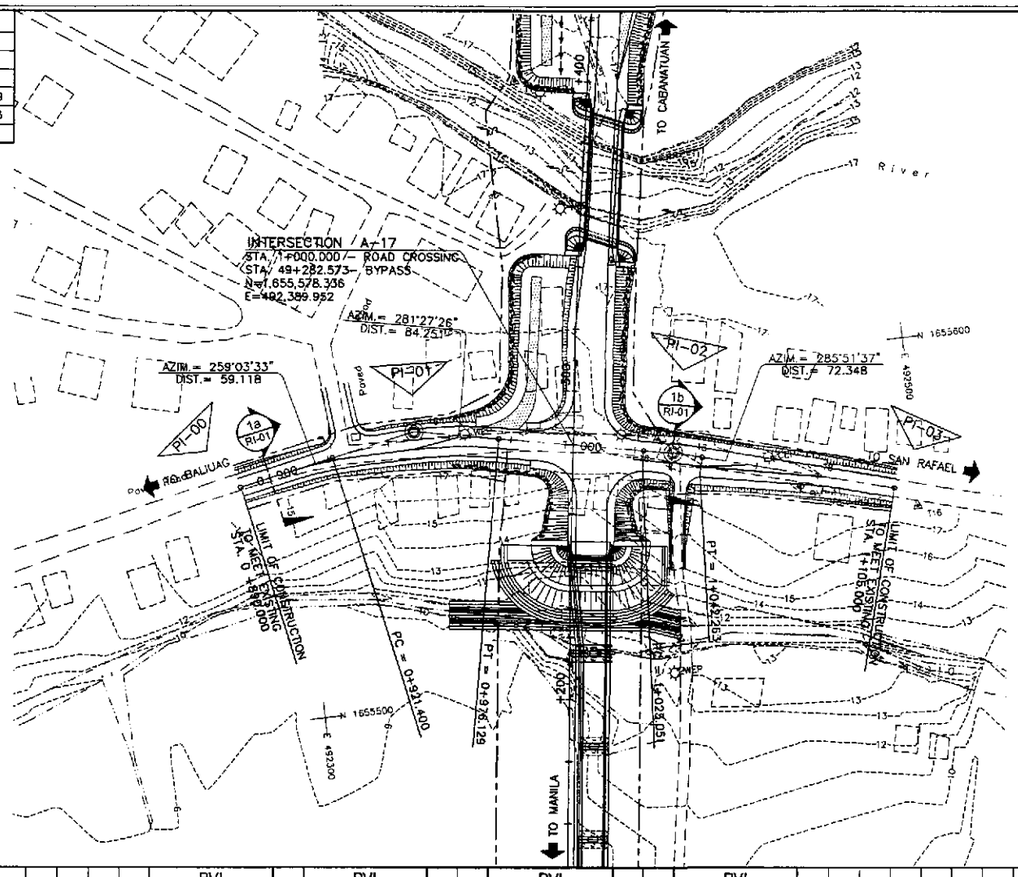
PI NO.	STATION	COORDINATES NORTHING	COORDINATES EASTING	Δ	R	T	Lc	E	e%	V(kph)	STATION PC	STATION PT
PI-00	0+890.000	1,655,577.363	492,281.347	BEG. OF INTERSECTION A-17								
PI-01	0+949.118	1,655,588.583	492,339.391	22°23'53"	140	27.718	54.729	2.718	–	–	0+921.400	0+976.129
PI-02	1+032.661	1,655,571.848	492,421.963	04°24'11"	250	9.611	19.212	0.185	–	–	1+023.051	1+042.263
PI-03	1+105.000	1,655,552.076	492,491.556	END OF INTERSECTION A-17								

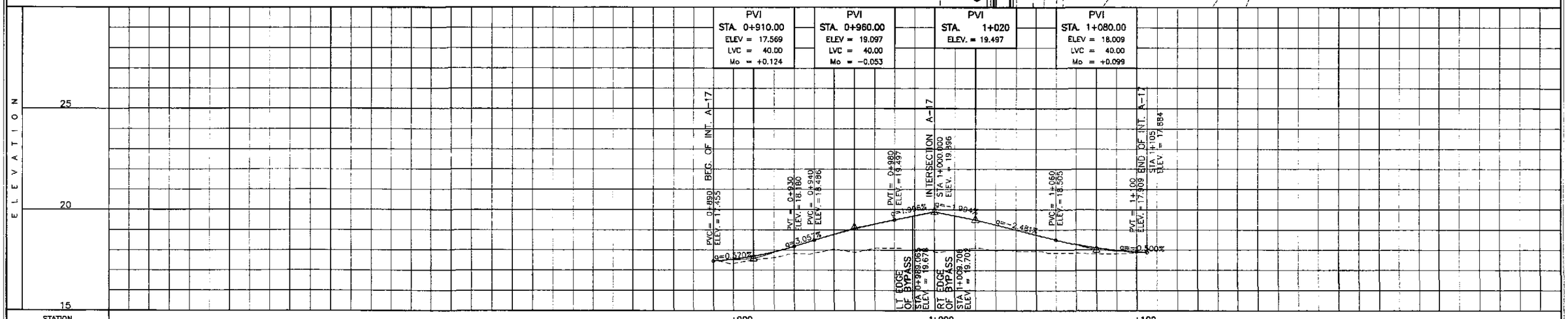


1b / RI-01 SECTION
SCALE 1:100



1a / RI-01 SECTION
SCALE 1:100





STATION	+900						1+000						+100
PROFILE GRADE BYPASS	17.455	17.543	17.906	18.486	19.044	19.497	19.896		19.497	19.001	18.505	18.108	17.909	17.884
EXISTING GROUND BYPASS	17.455	17.333	17.615	17.842	17.895	18.092	17.917	18.093	19.497	19.955	17.855	17.823	17.880	17.884

HORIZONTAL CURVATURE: R=∞ | PI-01 0+921.400 | R=140 | 0+976.129 | R=∞ | PI-02 1+023.051 1+042.263 | R=250 | R=∞

VERTICAL CURVATURE: L=40 g=+3.057% L=40 g=+1.996% g=-1.994% g=-2.481% L=40 g=-0.500%; Mo=+0.124 Mo=-0.053 Mo=+0.099

SUPERELEVATION: NC | BYPASS SECTION | NC

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JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	
CHECKED	9/23/02	S. GOSE
SUBMITTED	10/4/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	JOSEFINA M. ALAGAR, Chief, Highway Division	GILBERTO S. REYES, Director IV (DIC)	EDMUNDO V. MIR, Undersecretary	SIMEON A. DATUMANONG, Secretary

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

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

SHEET CONTENTS :
PLAN, CROSS-SECTION AND PROFILE INTERSECTION A-17
STA. 0+890 -STA. 1+105 (INITIAL STAGE)

SHEET NO. : RI-01

TABLE OF COORDINATES

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	REMARKS
1	1655511.030	492392.516	BEG. OF TRANSITION, PAVEMENT WIDTH 7.00m
2	1655529.926	1492394.925	EDGE OF PAVEMENT
3	1655556.927	492398.474	BEG. OF RADIUS 12
4	1655567.062	492412.827	END OF RADIUS 12
5	1655566.006	492417.625	BEG. OF RADIUS 4.50
6	1655560.774	492421.032	END OF RADIUS 4.50
7	1655534.073	492419.183	LIMIT OF CONSTRUCTION
8	1655570.728	492425.686	CENTERLINE INTERSECTION OF ROAD CROSSING
9	1655559.270	492424.817	BEG. OF RADIUS 4.50
10	1655562.842	492430.090	END OF RADIUS 4.50
11	1655555.356	492468.851	END OF TAPER, PAVEMENT 3.05m WIDE/LIMIT OF 2.50m WIDE SHOULDER
12	1655552.076	492491.556	LIMIT OF CONSTRUCTION
13	1655558.290	492469.685	CENTERLINE INTERSECTION OF PAVEMENT 6.10m WIDE
14	1655565.122	492445.637	BEG. OF TAPER, PAVEMENT 3.05m WIDE
15	1655566.335	492430.388	BEG. OF STORAGE, LANE WIDTH 3.00m
16	1655561.221	492470.528	LIMIT OF 2.50m WIDE SHOULDER
17	1655577.170	492411.058	BEG. OF RADIUS 12
18	1655590.656	492401.567	END OF RADIUS 12
19	1655615.111	492405.208	EDGE OF PAVEMENT
20	1655644.641	492410.450	EDGE OF PAVEMENT (7.75m WIDE) AT BRIDGE APPROACH
21	1655645.797	492402.830	BEG. OF TAPER
22	1655616.618	492395.323	EDGE OF 10.00m WIDE PAVEMENT 0.25m FROM THE CENTERLINE
23	1655594.407	492392.007	BEG OF RADIUS 12

TABLE OF COORDINATES

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	REMARKS
24	1655584.380	492377.750	END OF RADIUS 12
25	1655588.837	492326.424	BEG. RADIUS 6
26	1655594.174	492319.943	END OF RADIUS 6
27	1655606.456	492315.556	LIMIT OF CONSTRUCTION
28	1655584.311	492317.936	CENTERLINE INTERSECTION OF ACCESS ROAD
29	1655592.380	492314.001	BEG. OF RADIUS 6
30	1655585.848	492309.174	END OF RADIUS 6
31	1655577.363	492281.347	LIMIT OF CONSTRUCTION
32	1655580.629	492298.244	CENTERLINE INTERSECTION OF PAVEMENT 6.10m WIDE & BEG. OF RADIUS 120
33	1655582.810	492320.634	END OF RADIUS 120
34	1655582.852	492333.929	BEG. OF TAPER W/ RADIUS 60
35	1655583.516	492342.639	END OF RADIUS 60
36	1655585.112	492353.272	END OF TAPER/BEG. OF STORAGE LANE 3.00m WIDE
37	1655577.634	492298.823	BEG. OF RADIUS 116.95
38	1655579.760	492320.644	END OF RADIUS 116.95
39	1655579.816	492338.318	BEG. OF RADIUS 133.95
40	1655577.148	492365.355	END OF RADIUS 133.95
41	1655575.020	492375.853	LIMIT OF 2.50m WIDE SHOULDER
42	1655574.298	492379.417	BEG. OF RADIUS 12
43	1655560.918	492388.924	END OF RADIUS 12
44	1655542.046	492386.406	BEG. OF TAPER, PAVEMENT 10.00m WIDE
45	1555511.915	492385.572	END OF TAPER, PAVEMENT 7.00m WIDE
46	1655511.472	492389.044	CENTERLINE INTERSECTION OF TWO WAY TRAFFIC

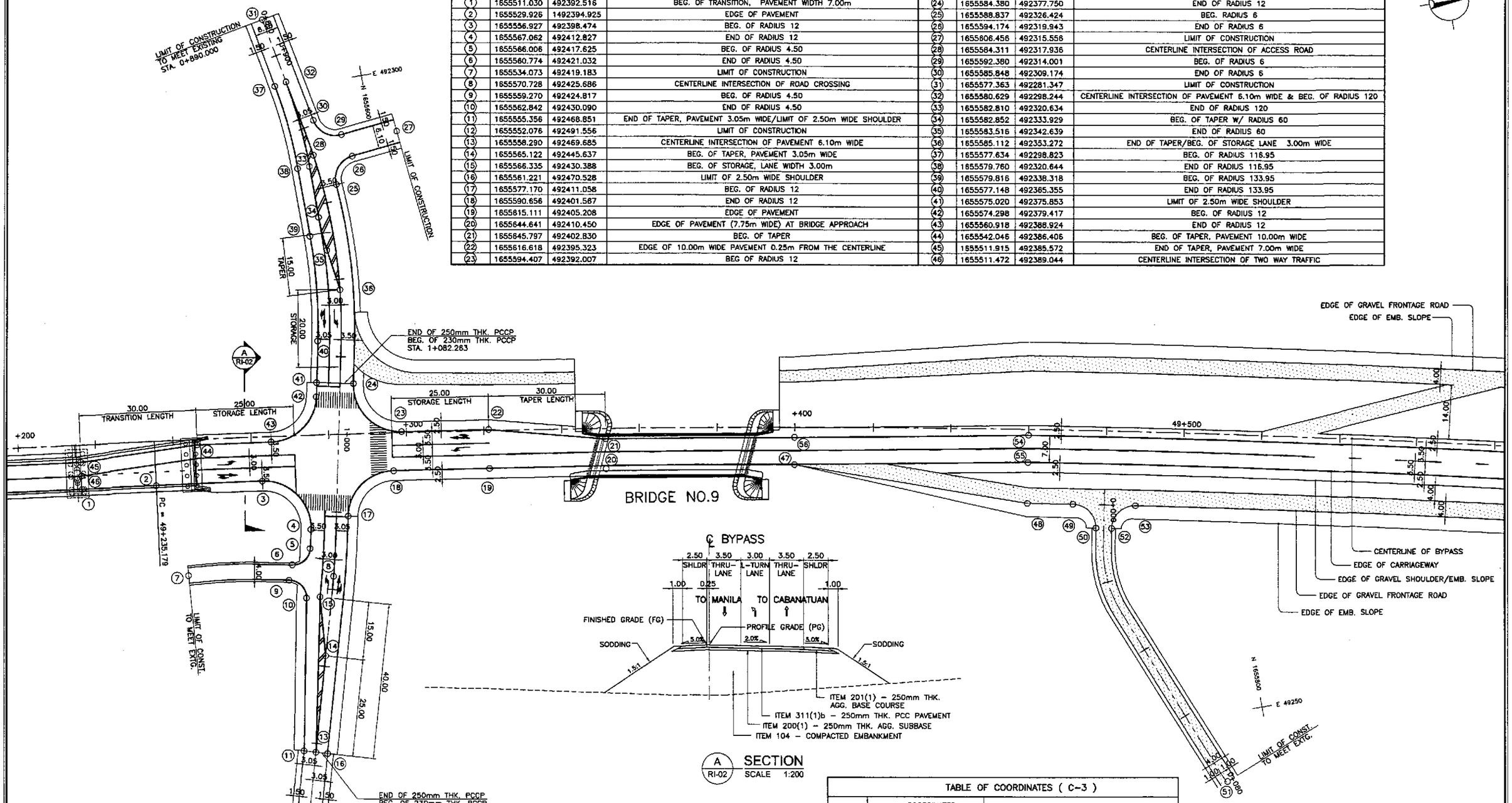


TABLE OF COORDINATES (C-3)

CONTROL POINT	COORDINATES NORTHING	COORDINATES EASTING	REMARKS
47	1655692.651	492417.778	EDGE OF 7.00m WIDE PAVEMENT
48	1655749.708	492437.863	EDGE OF 4.00m WIDE FRONTAGE ROAD
49	1655761.186	492440.103	BEG. OF RADIUS 6
50	1655765.912	492447.163	END OF RADIUS 6
51	1655787.877	492517.336	LIMIT OF CONSTRUCTION
52	1655759.834	492447.944	BEG. OF RADIUS 6
53	1655776.905	492443.235	END OF RADIUS 6
54	1655751.793	492427.572	EDGE OF PAVEMENT 1.50m FROM THE CENTERLINE
55	1655753.030	492420.682	EDGE OF 7.00m WIDE PAVEMENT
56	1655693.878	492410.887	EDGE OF PAVEMENT 2.60m FROM THE CENTERLINE

GEOMETRIC DESIGN LAYOUT
INTERSECTION A-17 (STA. 49+282.573) - INITIAL STAGE
INTERSECTION C-3 (STA. 49+479.816)

1 RI-02 SCALE 1:500

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	A. ORONCE
CHECKED	9/23/02	S. GOSE
SUBMITTED	10/14/02	M. KUROSAWA, TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

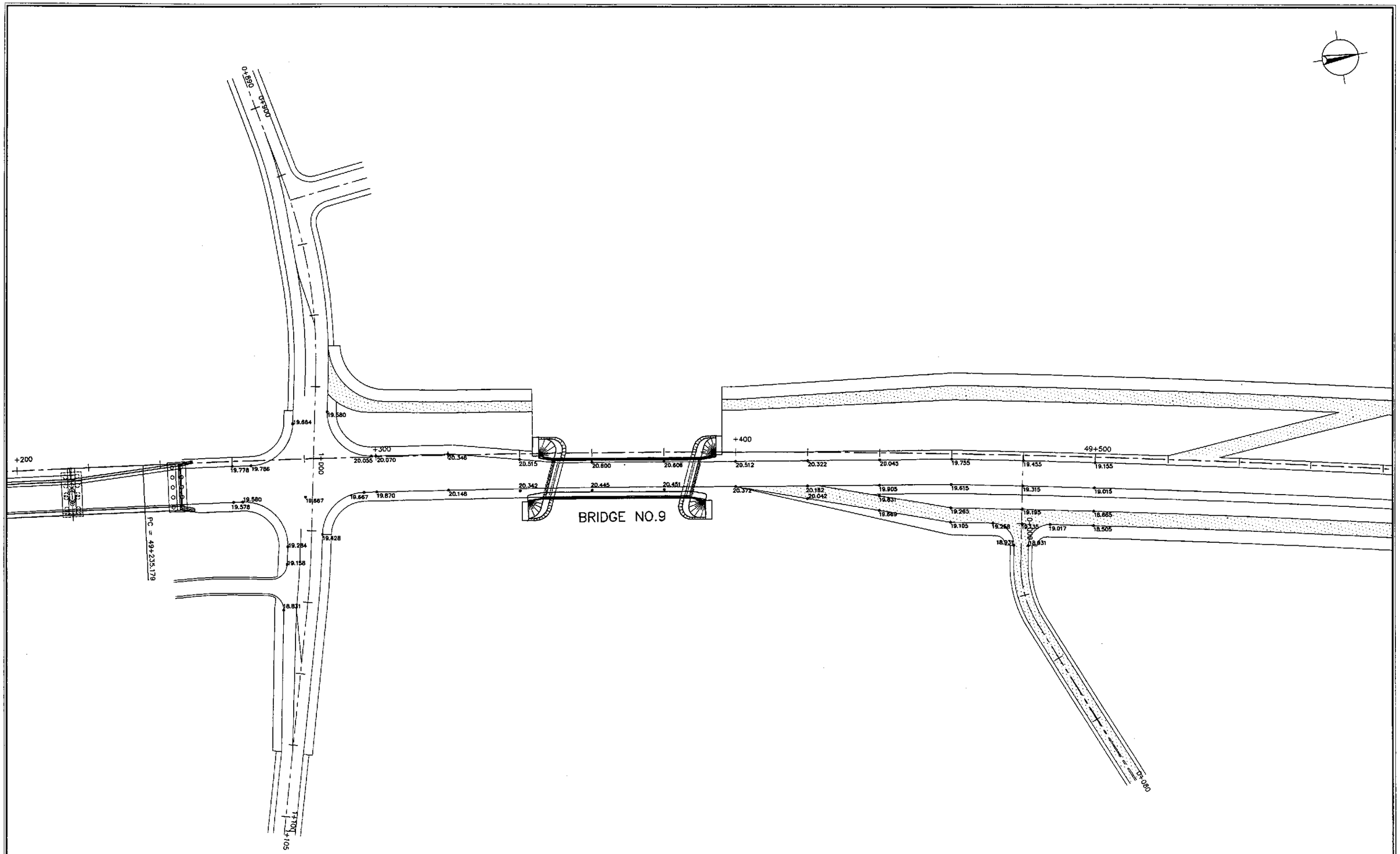
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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

SCALE : 1:500 FULL SIZE A1

SHEET CONTENTS :
INTERSECTION DETAIL
GEOMETRIC DESIGN LAYOUT
INTERSECTION A-17 & C-3
(INITIAL STAGE)

SHEET NO. : RI-02



PAVING AND GRADING PLAN

1 / RI-03 INTERSECTION A-17 (STA. 49+282.573) - INITIAL STAGE

SCALE 1:500

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	F. GO
CHECKED	9/23/02	S. GOSE
SUBMITTED	10/14/02	M. KUROI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
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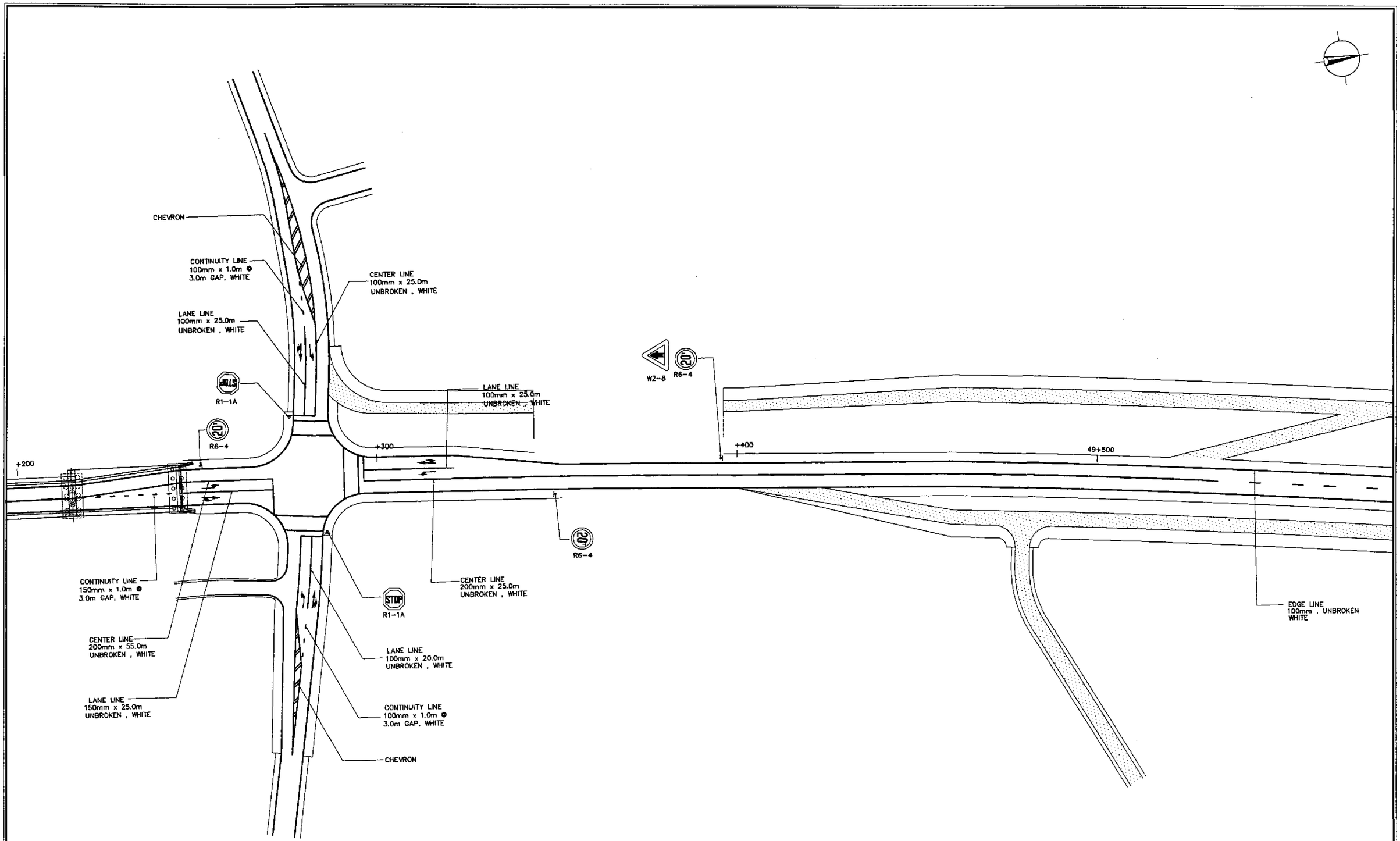
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	1:500	INTERSECTION DETAIL PAVING AND GRADING PLAN INTERSECTION A-17 (INITIAL STAGE)	RI-03
PLARIDEL BYPASS - CONTRACT PACKAGE III	FULL SIZE A1		



1
RI-04

TRAFFIC SIGNS AND PAVEMENT MARKINGS LAYOUT PLAN
INTERSECTION A-17 (STA. 49+282.573) - INITIAL STAGE

SCALE 1:500

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	S. LUNA
CHECKED	9/23/02	S. GOSE
SUBMITTED	10/14/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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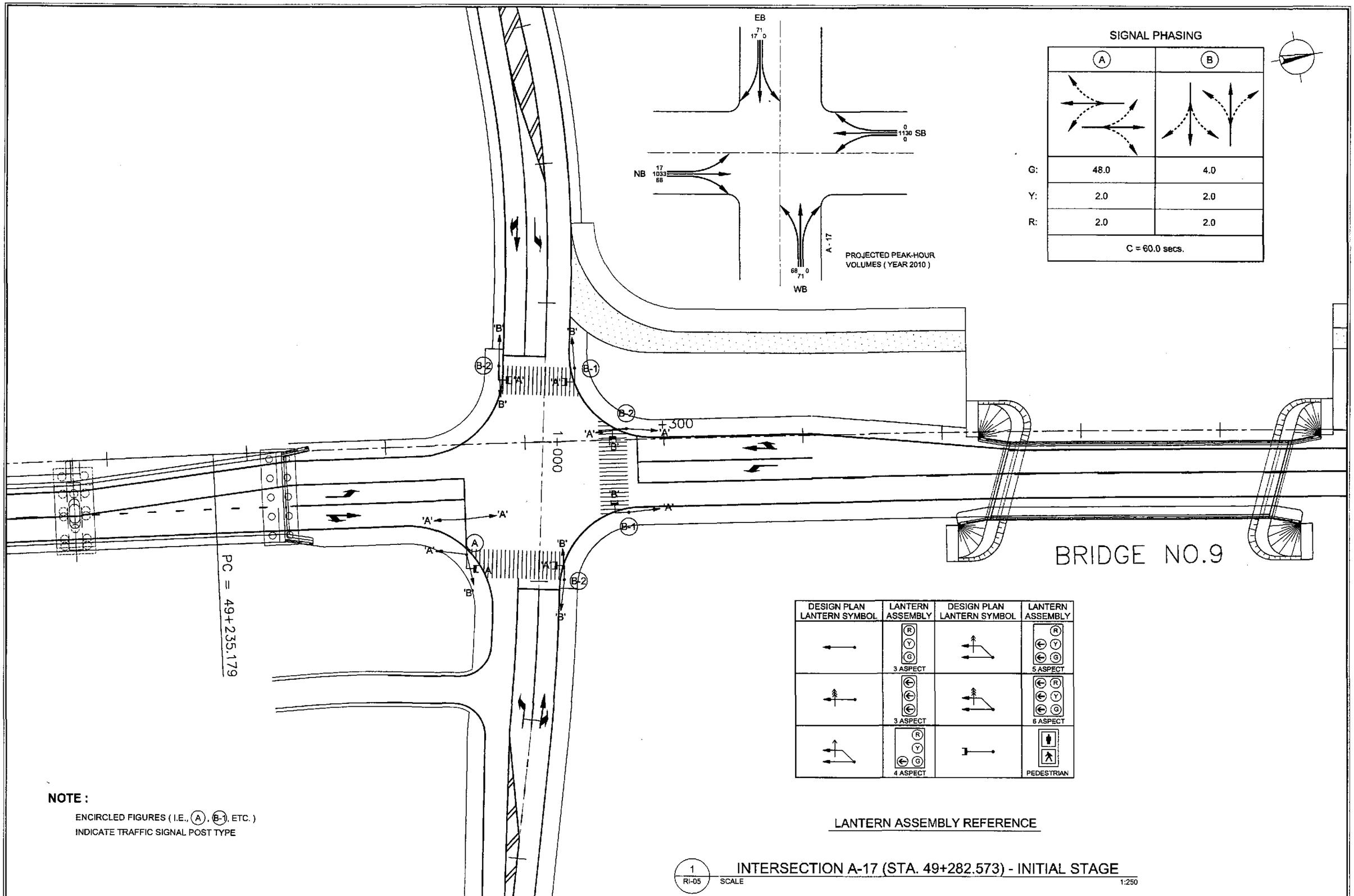
PLARIDEL BYPASS - CONTRACT PACKAGE III

SCALE : 1:500 FULL SIZE A1

SHEET CONTENTS :
TRAFFIC SIGNS AND PAVEMENT MARKINGS LAYOUT PLAN
INTERSECTION A-17 (INITIAL STAGE)

SHEET NO. : RI-04



JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	J. CATBAGAN
CHECKED	9/23/02	S. JOSE
SUBMITTED	10/14/02	M. KUSUDA TEAM LEADER

REPUBLIC OF THE PHILIPPINES
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Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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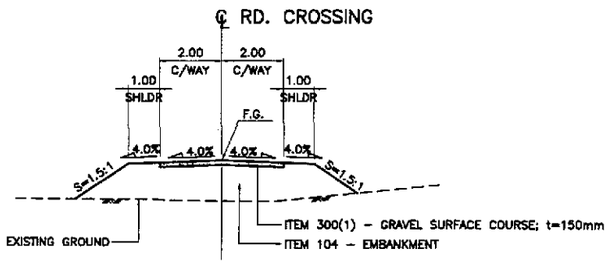
PLARIDEL BYPASS - CONTRACT PACKAGE III

SCALE : 1:250 FULL SIZE A1

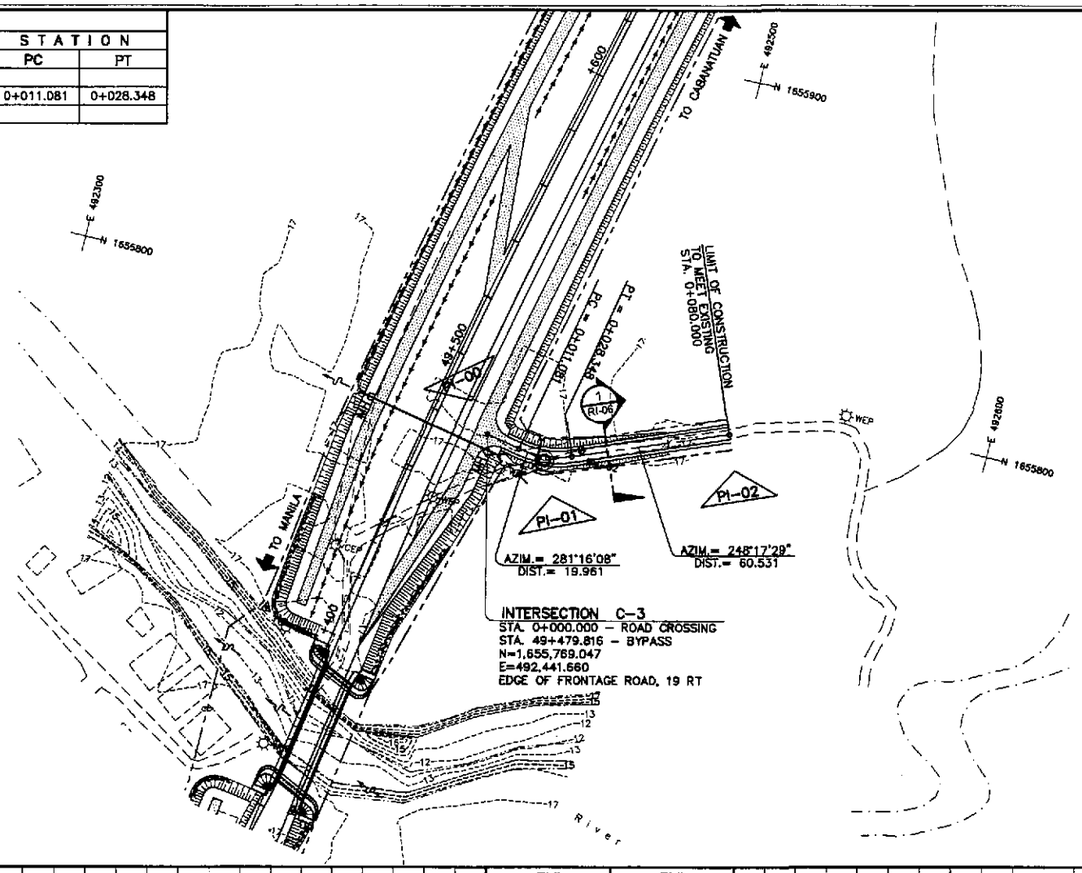
SHEET CONTENTS :
TRAFFIC SIGNAL LIGHT LAYOUT
INTERSECTION A-17 (INITIAL STAGE)

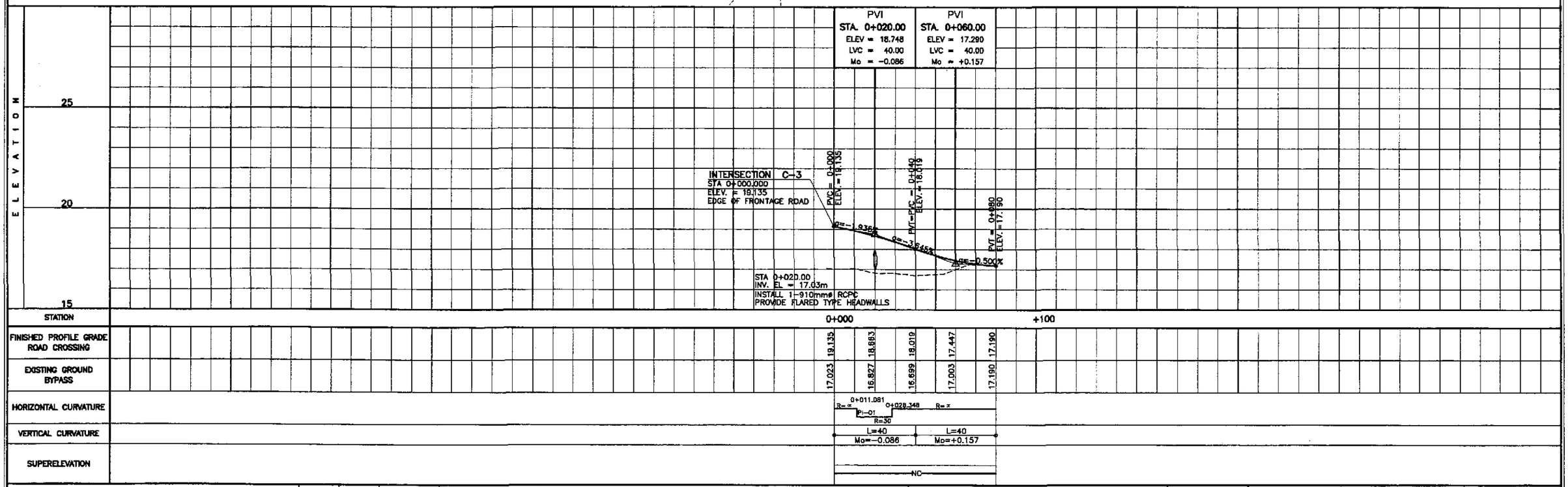
SHEET NO. : RI-05

ELEMENTS OF CURVE												
PI NO.	STATION	COORDINATES		Δ	R	T	Lc	E	e%	V(kph)	STATION	
		NORTHING	EASTING								PC	PT
PI-00	0+000.000	1,655,769.047	492,441.660	BEG. OF INTERSECTION C-3								
PI-01	0+019.961	1,655,765.147	492,461.237	32°58'39"	30	8.880	17.267	1.287	–	–	0+011.081	0+028.348
PI-02	0+080.000	1,655,787.536	492,517.475	END OF INTERSECTION C-3								



1 / RI-06 SECTION
SCALE 1:100





JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/21/02	R. GO
CHECKED	9/23/02	S. GOSE
SUBMITTED	10/14/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONGAN	SIMEON A. DATUMANONG
Project Director	Chief, Highways Division	OIC, Director IV	Undersecretary	Secretary

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

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

SHEET CONTENTS :
PLAN, CROSS-SECTION AND PROFILE
INTERSECTION C-3
STA. 0+000 - STA. 0+080 (INITIAL STAGE)

SHEET NO. :
RI-06