JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REPUBLIC OF THE PHILIPPINES

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

FINAL REPORT

CABANATUAN BYPASS - CONTRACT PACKAGE II

(INITIAL STAGE)
STA. 109+920.000 TO STA. 119+000.000

December 2002

KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD

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GENERAL

INDEX OF DRAWINGS

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

CABANATUAN BYPASS - PACKAGE II

(INITIAL STAGE)

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/4/02	A. ACACIO
CHECKED	10/16/02	S. OSE
SUBMITTED	10/18/02	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	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) CABANATUAN BYPASS - CONTRACT PACKAGE II	FULL SIZE A1	INDEX OF DRAWINGS (INITIAL STAGE) Sheet 1 of 3	GC-01

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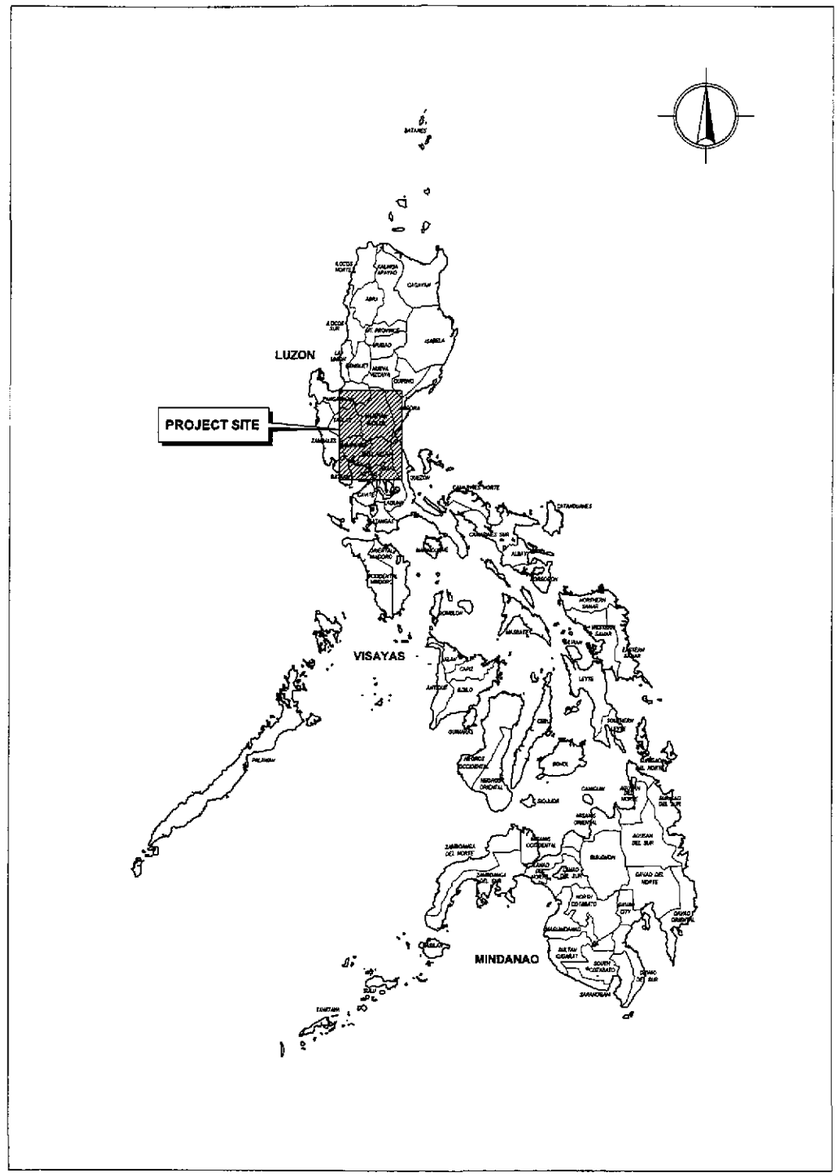
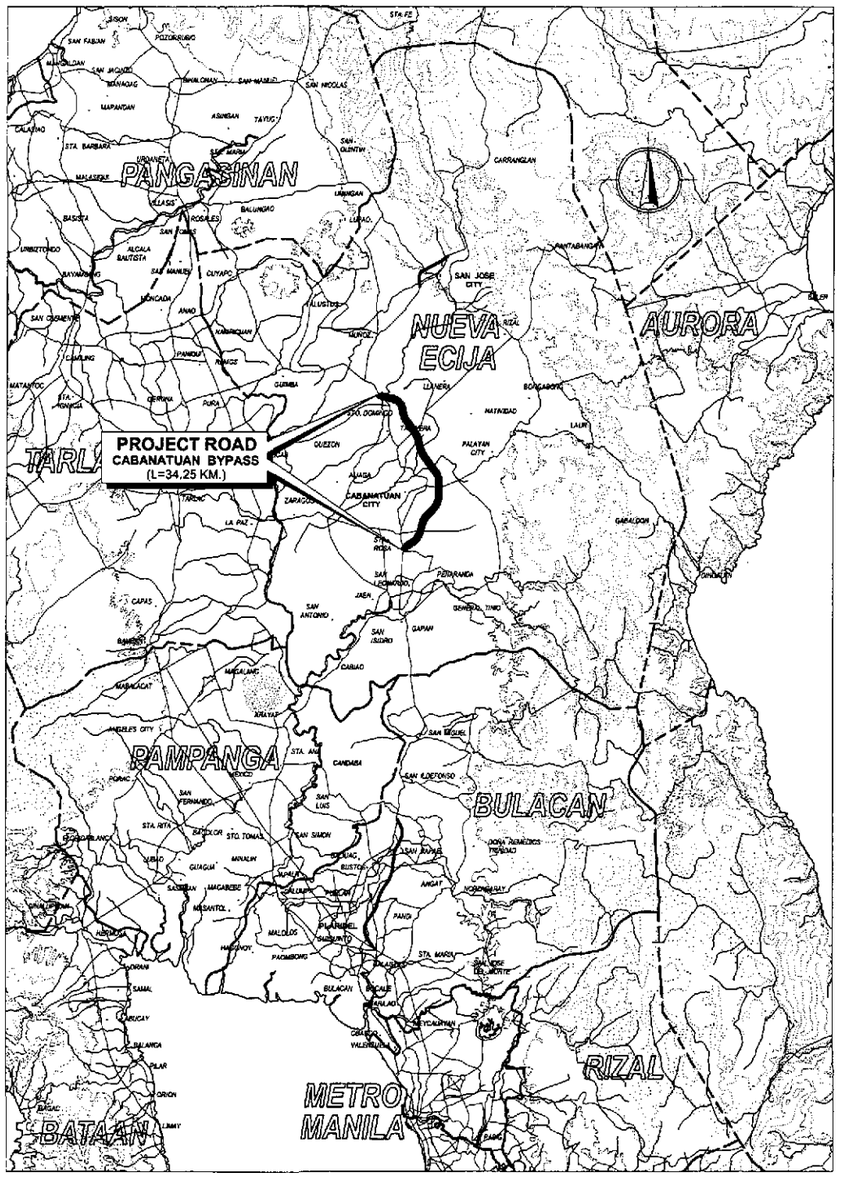


2 GC-04 KEY MAP
NOT TO SCALE



1 GC-04 VICINITY MAP
NOT TO SCALE

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CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : FULL SIZE A1

SHEET CONTENTS : KEY AND VICINITY MAP

SHEET NO. : GC-04

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	E486,805 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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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
∟	ANGLE SHAPE

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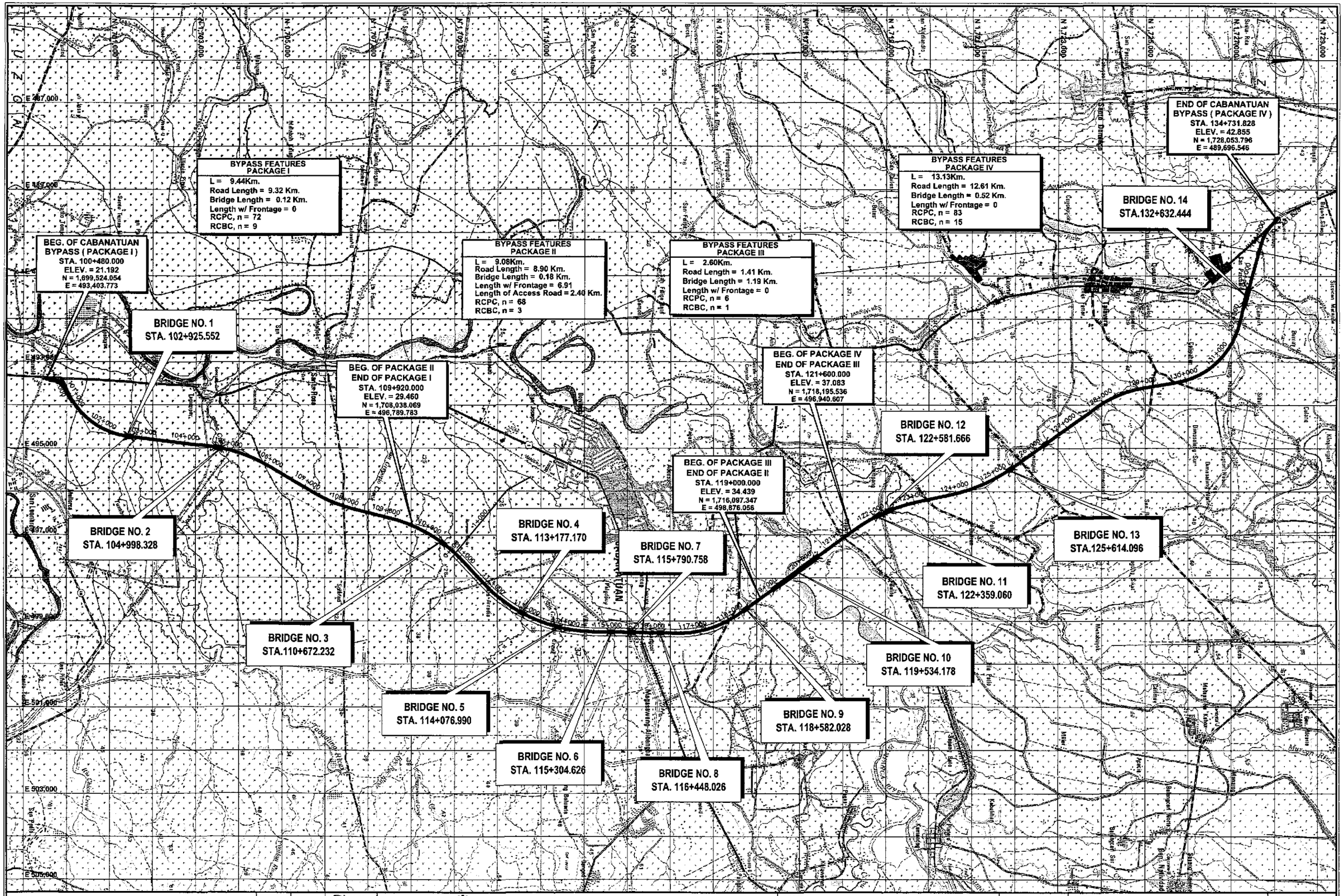
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : NOT TO SCALE / FULL SIZE A1

SHEET CONTENTS : ABBREVIATIONS

SHEET NO. : GC-06



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SCALE :
1:40,000
FULL SIZE A1

SHEET CONTENTS :
PROJECT ROAD
GENERAL ALIGNMENT / FEATURES

SHEET NO. :
GC-07

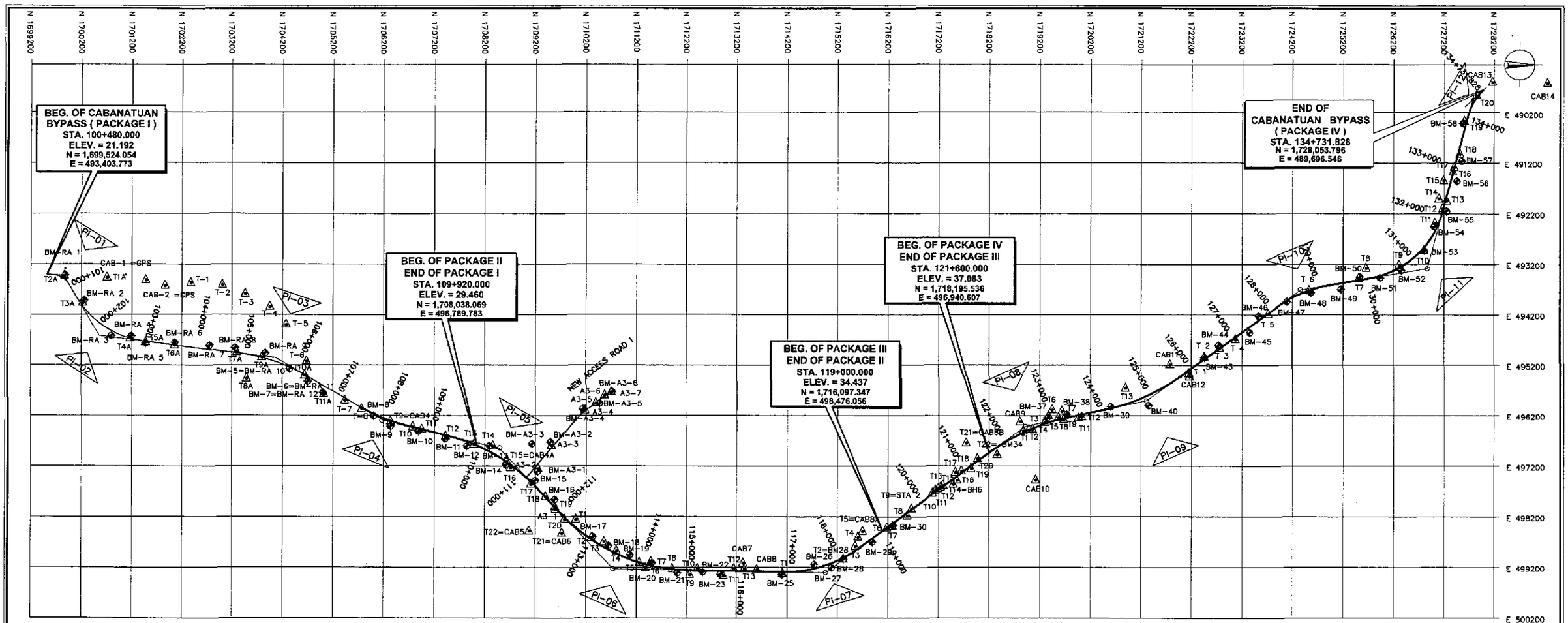


TABLE OF GPS STATION

POLYGON POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.	REMARKS
CAB-1= GPS	1,701,482.713	493,518.261	23.777	Located in Brgy. Tagumpay, San Leonardo, Nueva Ecija. It is drilled on the left side of the Tambo Bridge's first approach, about 0.05 cm. above the bridge's concrete sidewalk.
CAB-2= GPS	1,701,869.365	493,628.461	22.525	Located in Brgy. Tagumpay, San Leonardo, Nueva Ecija. It is embedded in an open space 80 m. from highway, 15 m. from dirt road going to an ostrich farm, about 40cm x 40cm & 0.05cm above the ground.
CAB-3= GPS	1,706,316.913	495,963.410	25.984	Located in Brgy. Soledad, Sta. Rosa, Nueva Ecija. It is embeded on a 40cm x 40cm conc mons. beside an irri. canal about 8m from rd. Cl. & 3 km. from the highway intersec. of Fort Magsaysay & Cabanatuan City.
T9=CAB4	1,706,340.784	496,322.453	26.299	Located in Brgy. Soledad, Sta. Rosa, Nueva Ecija. It is embedded on a 40 cm x 40 cm conc. mons. on the left side of the rd. going to Fort Magsaysay & about 370 m. from GPS Sta. CAB-3, about 4 m from rd. Cl.
T15= CAB4A	1,708,634.191	497,109.919	27.917	Located in Brgy. Tagpos, Sta. Rosa, Nueva Ecija on Diaz property. From the highway northbound take a right turn on Mabini extension, on Mercury Drugstore going to Brgy. Sta. Arcadia. 4.9 km. from the highway take a right turn on the intersection of the dirt road after the one-way bridge with a water pipe rail. It is 1.4 km. from the intersection beside an irrigation canal on the left side.
T21= CAB5	1,709,079.199	498,487.150	31.478	Located in Brgy. Sta. Arcadia, Cabanatuan, Nueva Ecija. From the highway northbound take a right turn on Mabini extension, Mercury Drugstore going to Brgy. Sta. Arcadia. 3.9 km. from the intersection highway, take a left turn to a dirt road it is embedded on the right side of the road 200 m. from the Mabini extension road centerline.
T22= CAB6	1,709,731.929	498,528.334	31.285	Located in Brgy. Sta. Arcadia, Cabanatuan, Nueva Ecija. From the highway northbound take a right turn on Mabini extension, Mercury Drugstore going to Brgy. Sta. Arcadia. 3.2 km. from the intersection highway, take a left turn to a dirt road it is embedded on the left side of the road near an irrigation dike 500 m. from the Mabini extension road centerline.
CAB7	1,713,329.137	499,115.491	33.346	Located in Brgy. San Isidro, Cabanatuan, Nueva Ecija. It is embedded on the sidewalk of the DPWH 3rd Engineering District driveway, about 20 m. from the centerline of the road.
CAB8	1,713,603.208	499,247.649	33.467	Located in Urban Poor Housing Project, San Isidro, Cabanatuan, Nueva Ecija. Going to Palayan City take a left turn to the dirt road beside the DPWH compound leading to the site of the housing project, then turn right. It is embedded on the right side of the dirt road near the electric post 400 m. from the centerline of the highway.
T6=CAB8A	1,715,705.803	498,487.077	34.234	Located in Brgy. Roja, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway to a road before the Valdefuente bridge. 3 km. from the highway, turn left to a bridge.
T21= CAB8B	1,717,749.823	496,746.648	34.436	Location in Brgy. Sapang, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a rt. turn on Maharlika highway after the Valdefuente br. to road going to Brgy. Sapang. It is emb. on the left side of the road.
CAB9	1,718,805.446	496,330.000	37.709	Located in Brgy. Buliran, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway after the Valdefuerte bridge to a road going to Brgy. Dalampang. 2.5 km. from the highway taking the left fork turn right at the intersection to a dirt road leading to Brgy. Balite. It is embedded near an irrigation dike 800 m. from the bridge.
CAB10	1,719,118.959	497,481.612	37.713	Located in Brgy. Dalampang, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway after the Valdefuerte bridge to a road going to Brgy. Dalampang. 2.5 km. from the highway taking the left fork turn right at the intersection to a dirt road leading to Brgy. Balite. It is embedded near an irrigation dike on the right side, 1.9 km. from the bridge.
CAB11	1,721,765.245	495,194.632	39.469	Located in Homestead I, Talavera, Nueva Ecija. Taking the Maharlika highway to Muñoz, turn right on Pinagpanaan intersection to the highway going to Pantabangan. 4.3 km. from the intersection turn right to a dirt road. It is embedded on the right beside an irrigation canal 70 m. from the centerline of the highway.
CAB12	1,722,164.049	495,433.809	37.949	Located in Homestead I, Talavera, Nueva Ecija. Taking the Maharlika highway to Muñoz, turn right on Pinagpanaan intersection to the highway going to Pantabangan. 4.8 km. from the intersection on the right side 50 m. from the centerline of the highway.
CAB13	1,718,173.536	489,601.897	44.230	Located in Brgy. San Pascual, Talavera, Nueva Ecija. It is embedded on the right side of the bridge 2.3 km. from San Pascual market going to San Jose.
CAB14	1,729,259.352	489,626.465	43.627	Located in Brgy. Bagong Silang, Talavera, Nueva Ecija. Take a right turn 3.4 km. from San Pascual market going to San Jose to a dirt road. It is embedded on a rice puddy dike on the right side of the road 500 m. from the highway.

TABLE OF TRAVERSE STATION POINTS

POLYGON POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.
T-1	1,702,384.687	493,573.021	24.120
T-2	1,703,019.008	493,611.093	25.138
T-3	1,703,468.521	493,784.646	25.158
T-4	1,703,956.942	494,041.357	23.064
T-5	1,704,279.487	494,398.825	24.467
T-6	1,704,678.169	495,126.982	24.858
T-7	1,705,433.273	495,901.932	28.581
T-8	1,705,767.749	496,069.357	25.809
T10	1,706,773.219	496,434.404	26.138
T11	1,706,952.708	496,479.420	26.405
T12	1,707,426.044	496,615.719	27.154
T13	1,707,989.215	496,773.054	25.251
T14	1,708,364.430	496,806.236	26.328
T16	1,708,712.024	497,235.901	26.873
T17	1,709,113.730	497,562.109	28.882
T18	1,709,405.803	497,811.664	28.874
T19	1,709,594.615	498,010.441	29.779
T20	1,709,784.151	498,252.284	30.803
T1	1,710,005.112	498,263.122	30.560
T2	1,710,312.116	498,822.485	31.125
T3	1,710,565.610	498,702.707	30.008
T4	1,710,812.097	498,879.255	31.231
T5	1,711,258.554	499,111.169	31.156
T6	1,711,382.787	499,215.210	30.671
T7	1,711,497.776	499,088.057	31.048
T8	1,711,921.739	499,233.113	32.252

TABLE OF TRAVERSE STATION POINTS

POLYGON POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.
T9	1,712,273.907	499,348.863	32.889
T10	1,712,426.453	499,228.114	31.587
T11	1,712,945.025	499,366.723	31.508
T12	1,713,152.194	499,229.016	32.291
T13	1,713,350.716	499,234.593	32.273
T1	1,714,114.133	499,323.114	34.149
T2=BM28	1,715,321.664	499,037.069	34.467
T3	1,715,556.979	498,787.732	33.774
T4	1,715,613.303	498,602.331	33.848
T5	1,716,185.924	498,423.235	32.543
T7	1,716,296.557	498,393.392	32.834
T8	1,716,587.270	498,183.256	31.879
T9=STA 2	1,716,668.328	498,048.549	31.202
T10	1,717,083.859	497,743.553	30.319
T11	1,717,142.345	497,687.576	29.731
T12	1,717,194.108	497,657.056	29.770
T13	1,717,249.207	497,618.454	29.818
T14=BH6	1,717,292.610	497,589.139	29.351
T15	1,717,492.542	497,567.432	31.652
T16	1,717,586.385	497,485.342	31.662
T17	1,717,532.758	497,327.722	31.782
T18	1,717,656.358	497,304.011	32.472
T19	1,717,849.166	497,254.912	32.957
T20	1,717,977.354	497,061.014	35.155
T22=BM34	1,718,360.331	496,980.373	35.518
T1	1,718,871.960	496,509.328	38.125

TABLE OF TRAVERSE STATION POINTS

POLYGON POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.
T2	1,718,982.811	496,484.723	37.303
T3	1,719,054.242	496,476.454	38.039
T4	1,719,293.514	496,344.148	37.628
T5	1,719,371.611	496,212.892	36.581
T6	1,719,441.686	496,095.508	36.377
T7	1,719,634.286	496,119.715	36.135
T8	1,719,568.716	496,246.851	36.718
T9	1,719,673.577	496,284.730	36.732
T10	1,719,757.887	496,199.702	36.226
T11	1,719,963.319	496,252.503	36.847
T12	1,720,028.618	496,233.536	37.259
T13	1,720,886.498	495,657.578	35.285
T 1	1,722,152.496	495,368.651	40.547
T 2	1,722,462.939	495,042.525	38.470
T 3	1,722,757.770	494,860.054	37.788
T 4	1,723,072.308	494,693.817	39.520
T 5	1,723,722.544	494,191.279	39.407
T 6	1,724,530.996	493,726.864	41.610
T7	1,725,515.859	493,486.477	43.192
T8	1,725,664.133	493,279.741	41.739
T9	1,726,312.522	493,216.325	42.257
T10	1,726,804.440	492,931.296	42.526
T11	1,727,019.693	492,394.752	43.547
T12	1,727,173.457	492,109.850	44.051
T13	1,727,252.558	491,953.012	45.106
T14	1,727,099.751	491,908.990	44.528

TABLE OF TRAVERSE STATION POINTS

POLYGON POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.
T15	1,727,194.558	491,558.623	42.159
T16	1,727,379.509	491,385.263	41.621
T17	1,727,406.036	491,287.074	44.865
T18	1,727,520.276	491,028.906	44.649
T19	1,727,612.787	490,382.069	43.758
T20	1,717,856.316	489,865.741	42.999
T1A	1,700,708.564	493,470.328	21.763
T2A	1,699,872.437	493,429.951	21.248
T3A	1,700,225.955	493,971.425	21.778
T4A	1,701,172.767	494,669.142	22.334
T5A	1,701,480.491	494,751.688	21.417
T6A	1,702,058.314	494,809.178	23.619
T7A	1,703,307.889	494,952.040	23.664
T8A	1,703,499.259	495,470.561	23.820
T9A	1,703,804.341	495,051.975	24.100
T10A	1,704,643.472	495,403.742	25.612
T11A	1,705,012.234	495,771.069	26.653
A3-1	1,709,604.105	498,057.325	30.283
A3-2	1,709,258.422	497,255.095	27.497
A3-3	1,709,521.785	496,792.013	27.906
A3-4	1,710,182.293	496,102.911	26.914
A3-5	1,710,393.491	495,955.847	26.810
A3-6	1,710,571.283	495,803.951	27.141
A3-7	1,710,701.818	495,743.236	27.061

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/4/02	E. ANACACIO
CHECKED	10/16/02	S. JOSE
SUBMITTED	10/10/02	M. IKEUCHI 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	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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : 1:40,000 FULL SIZE A1

SHEET CONTENTS :
HORIZONTAL AND VERTICAL CONTROL MONUMENTS
Sheet 1 of 2

SHEET NO. :
GC-08

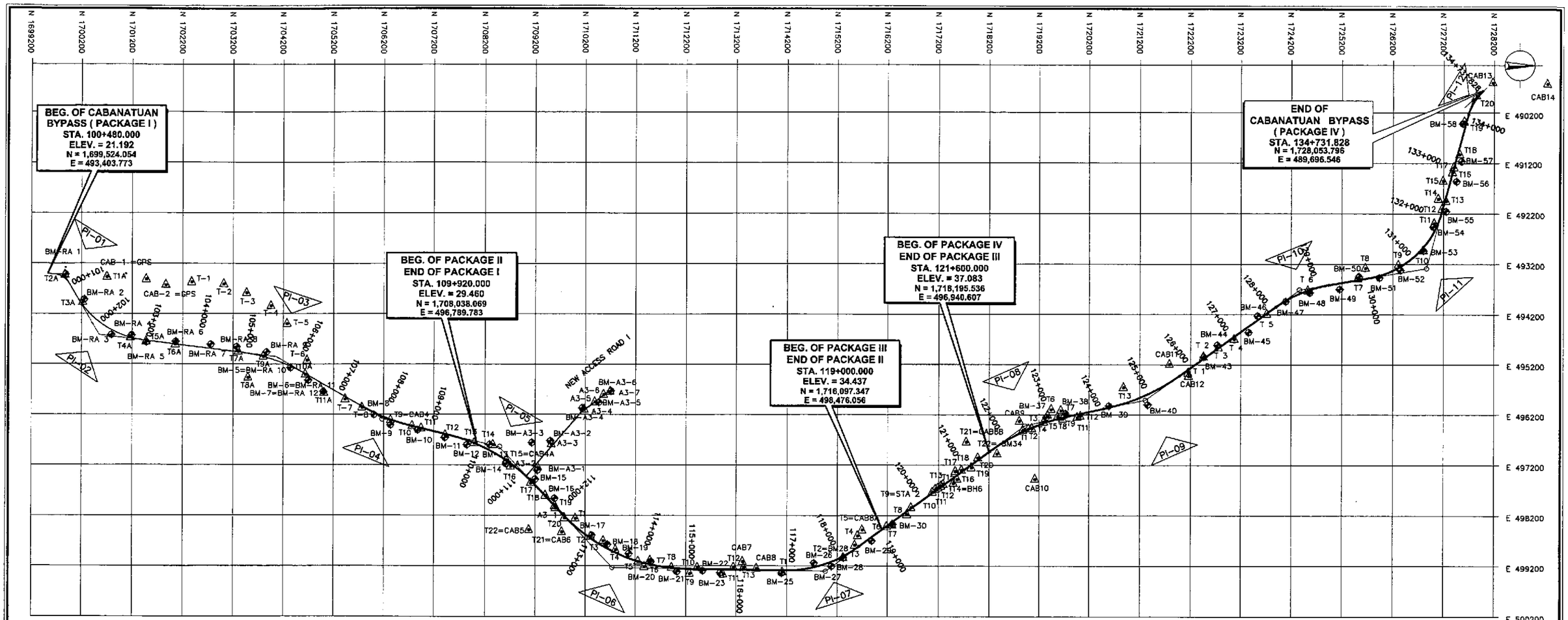


TABLE OF HORIZONTAL AND VERTICAL CONTROL

POLYGON POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.	REMARKS
BM-RA 1	1,699,880.470	493,418.310	21.773	It is located on the left side of the national highway going north at the beginning of the bypass re-alignment under an acacia tree near the steel fence corner of a building in San Leonardo.
BM-RA 2	1,700,254.842	493,913.436	21.932	It is located on the left side of the road alignment placed on the side of a road (dirt) 1.50 m. from its centerline and approximately 3 m. away from the top bank of an irrigation canal beside an acacia tree.
BM-RA 3	1,700,792.820	494,617.824	22.451	It is located on the right side of the bypass alignment placed on top of a rice puddy intersection in the middle of a ricefield.
BM-RA 4	1,701,192.044	494,624.849	22.645	It is located on the left side of the alignment placed on the top bank of a fishpond underneath two acacia tree in Brgy. Tagumpay, San Leonardo.
BM-RA 5	1,701,481.927	494,766.231	21.587	It is located on the left side of the alignment placed in the middle of a ricefield beside a nipa hut in Brgy. Tagumpay, San Leonardo.
BM-RA 6	1,702,062.462	494,751.855	22.910	It is located on the left side of the road alignment placed on the side of a road 2 m. from its centerline beside an electric post in Brgy. Tagumpay, San Leonardo.
BM-RA 7	1,702,761.108	494,810.381	22.874	It is located on the right side of the road alignment placed on the top bank of a creek 3.50 m. from its centerline and under a duhat tree in Brgy. Tagumpay, San Leonardo.
BM-RA 8	1,703,271.267	494,855.750	23.741	It is located on the left side of the alignment placed on the side of a road (gravel) 2 m. away from the centerline and 4 m. from the top bank of an irrigation canal in Brgy. Tabugting, Sta. Rosa.
BM-RA 9	1,703,867.668	494,960.590	23.977	It is located on the left side of the alignment placed on the side of a road 1.70 m. away from the centerline.
BM-5= BM-RA10	1,704,562.828	495,238.110	25.505	It is located on the left side of the alignment placed on the side of a dirt road 1.50 m. away from its centerline and 60 cm. from the toe of an irrigation canal.
BM-6= BM-RA11	1,704,703.014	495,521.310	25.723	It is located on the left side of the alignment placed on top of a rice puddy intersection in the middle of a ricefield in Brgy. Tagumpay, Sta. Rosa.
BM-7= BM-RA12	1,705,058.152	495,590.387	27.032	It is located on the right side of the alignment placed on top of a check gate of an irrigation canal in Brgy. Soledad, Sta. Rosa.
BM-8	1,705,401.638	496,021.555	26.111	It is located on the right side of the alignment placed on top of a rice puddy intersection in the middle of a ricefield in Brgy. Soledad, Sta. Rosa.
BM-9	1,706,337.897	496,411.792	27.188	It is located on the right side of the alignment placed on the side of the concrete road 3 m. away from its centerline in Brgy. Soledad, Sta. Rosa.
BM-10	1,706,861.482	496,511.250	26.538	It is located on the right side of the alignment placed on the intersection of a rice puddy in the middle of a ricefield in Brgy. Soledad, Sta. Rosa.
BM-11	1,707,413.404	496,659.842	27.220	It is located on the right side of the road alignment placed on the top bank of irrigation canal 1.20 m. from its centerline under the shades of an acacia tree in Brgy. Soledad, Sta. Rosa.
BM-12	1,707,844.454	496,802.502	27.148	It is located on the right side of the alignment placed on the side of a ricefield owned by Mr. Alejo Villareal in Brgy. Tagpos, Sta. Rosa.
BM-13	1,708,291.751	496,799.903	26.658	It is located on the right side of the alignment placed on the side of a ricefield under a phalanx of trees in Brgy. Tagpos, Sta. Rosa.
BM-14	1,708,620.284	497,180.515	28.714	It is located on the right side of the road alignment placed on the top bank of irrigation canal 1.50 m. from its centerline and 3 m. away the side of a road in Brgy. Tagpos, Sta. Rosa
BM-15	1,709,200.415	497,484.887	28.668	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from the centerline at Brgy. Sta. Arcadia, Cabanatuan City.
BM-16	1,709,584.212	497,862.962	29.530	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from the centerline at Brgy. Sta. Arcadia, Cabanatuan City.
BM-17	1,710,336.115	498,592.643	31.009	It is located on the left side of the alignment placed on the side of road (gravel) 1.80 m. away from its centerline in Brgy. Sta. Arcadia.
BM-18	1,710,649.187	498,773.128	30.565	It is locateson the left side of the alignment placed on the intersection of rice puddy in the middle of ricefield in the side of Brgy. Valle Cruz.
BM-19	1,711,076.165	498,651.653	31.218	It is located on the left side of the alignment placed on the side of a ricefield underneath two mango trees in Brgy. Valle Cruz.

TABLE OF HORIZONTAL AND VERTICAL CONTROL

POLYGON POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.	REMARKS
BM-20	1,711,512.317	499,109.686	31.389	It is located on the left side of the alignment placed on a rice puddy intersection in the middle of a ricefield in Brgy. Valle Cruz.
BM-21	1,712,021.897	499,309.940	32.657	It is located on the left side of the alignment placed on the side of a road 1.80 m. away from its centerline & almost 1.50 m. away from the top bank of an irri. canal in Brgy. Valle Cruz at the side of an elec. post.
BM-22	1,712,529.312	499,291.424	32.692	It is located on the right side of the alignment placed on the higher portion on the side of a dirt road 4 m. away from its centerline in Brgy. Valle Cruz.
BM-23	1,712,881.168	499,335.652	32.766	It is located on the right side of the alignment placed on a bank of a creek approximately 3 m. away from its top bank at Brgy. San Isidro, Cabanatuan City.
BM-25	1,714,097.795	499,338.845	34.013	It is located on the right side of the alignment placed on the side of a road (dirt) 1.50 m. away from its centerline and approximately 3 m. from the top bank of an irrigation canal in Brgy. San Isidro.
BM-26	1,714,739.668	499,138.544	33.408	It is located on the left side of the alignment placed on the side of a road intersection 2 m. away from its centerline adjacent to a subdivision known as Grand Victoria Estate, Brgy. Cruz Roja.
BM-27	1,715,085.051	499,202.403	33.926	It is located on the right side of the alignment placed on the intersection of a rice puddy in the middle of a ricefield in Brgy. Cruz Roja.
BM-28	1,715,321.664	499,037.069	34.467	It is located on the right side of the alignment placed on the side of the barangay road 2 m. away from its centerline at Brgy. Cruz Roja at the side of an electric post.
BM-29	1,715,891.768	498,899.775	34.622	It is located on the right side of the alignment placed on the side of a barangay road under an acacia tree 1.50 m. away from its centerline Brgy. Cruz Roja.
BM-30	1,716,304.852	498,373.638	32.793	It is located on the right side of the alignment placed on the uppermost top bank of a canal at the side of a nipa hut in Brgy. Cabaruan, Cabanatuan City.
BM-34	1,718,380.331	496,980.373	35.518	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from its CL between 2 camachile tree in Brgy. Sapang, Cabanatuan City 3 m. away from an irri. canal's top bank.
BM-36	-	-	37.133	It is located on the left side of the alignment placed underneath a mango tree in the middle of a vegetable plantation at Brgy. Pula, Cabanatuan City.
BM-37	1,719,342.545	496,251.677	37.437	It is located on the left side of the alignment placed on the side of a ricefield underneath a mango tree near a house at Brgy. Pula, Cabanatuan City.
BM-38	1,719,727.496	496,175.032	36.238	It is located on the left side of the alignment placed on the side of a dirt road 1.50 m. away from its centerline and about 1/2 m. away from an irrigation canal's top bank at Brgy. Pula, Cabanatuan City.
BM-39	1,720,595.956	496,023.421	36.396	It is located on the left side of the alignment placed on the intersection of a rice puddy in the middle of a ricefield at Brgy. Pula, Cabanatuan City.
BM-40	1,721,353.720	495,998.525	36.993	It is located on the right side of the alignment placed underneath a group of coconut tree in the middle of a ricefield at Brgy. Homestead I, Talavera.
BM-43	1,722,462.946	495,042.546	38.534	It is located on the left side of the alignment placed on the side of a road (dirt) 1.50 m. away from its centerline beside a concrete poles with marking : BM-43=T-8.
BM-44	1,722,735.654	494,806.172	38.406	It is located on the left side of the alignment placed on the side of a dirt road intersection 1.50 m. away from its centerline beside a barangay sidepoard Brgy. Patudpod, Talavera.
BM-45	1,723,356.627	494,554.149	40.327	It is located on the right side of the alignment placed on the side of a dirt road 1.50 m. away from its centerline beside a nipa hut at Brgy. Patudpod, Talavera.
BM-46	1,723,535.448	494,225.815	39.229	It is located on the left side of the alignment placed on the side of a road 2 m. away from its centerline beside a camachile tree.
BM-47	1,724,094.093	493,940.197	39.500	It is located on the right side of the alignment placed on the intersection of a rice puddy in the middle of a ricefield and about 50 m. away from the top bank of a creek at Brgy. Dimasalang Sur, Talavera.
BM-48	1,724,565.996	493,762.388	42.048	It is located on the right side of the alignment placed on the side of a dirt road 2 m. away from its centerline and 4 m. away from the top bank of an irrigation canal, Brgy. Dimasalang Sur, Talavera.
BM-49	1,725,157.190	493,693.946	42.110	It is located on the right side of the alignment placed on the side of a road 3 m. away from its centerline and 1 m. away from a canal, Brgy. Guiod, Talavera.
BM-50	1,725,535.580	493,447.698	43.895	It is located on the left side of the alignment placed on the side of a road 8 m. away from its centerline beside an electric post, Brgy. Guiod, Talavera.

TABLE OF HORIZONTAL AND VERTICAL CONTROL

POLYGON POINT	COORDINATES NORTHING	COORDINATES EASTING	ELEV.	REMARKS
BM-51	1,725,936.648	493,468.459	43.274	It is located on the right side of the alignment placed in the intersection of a rice puddy in the middle of a ricefield 150 m. away from the Centerline of a concrete barangay road, Brgy. Guiod, Talavera.
BM-52	1,726,352.052	493,319.807	43.317	It is located on the right side of the alignment placed at the side of a dirt road 1.5 m. away from the centerline of the dirt road at Brgy. Bantug Hacienda, Talavera.
BM-53	1,726,804.440	492,931.296	42.900	It is located on the right side of the alignment right in the middle of a ricefield at the side of a well placed in the rice puddy intersection.
BM-54	1,727,002.842	492,456.434	43.790	It is located on the left side of the alignment 3 m. away from the dirt road centerline and 6 m. away from the toe of an irrigation canal beneath a camachile tree.
BM-55	1,727,251.355	492,153.048	44.219	It is located on the right side of the alignment near the corner of concrete wall/fence. It is 3 m. away from the centerline of an existing road 5 m. wide at Brgy. Campos, Talavera.
BM-56	1,727,456.793	491,560.117	42.069	It is located on the left side of the alignment 70 m. away underneath a mango tree in Brgy. Campos, Talavera.
BM-57	1,727,557.279	491,163.464	45.294	It is located on the right side of the alignment placed on the toe of a ricefield near the side of a road under a coconut tree in Brgy. Lomboy, Talavera.
BM-58	1,727,578.123	490,416.550	43.530	It is located on the right side of the alignment placed on the side of a ricefield under a row of coconut trees in Brgy. Lomboy, Talavera.

NEW ACCESS ROAD 1 - TABLE OF HORIZONTAL AND VERTICAL CONTROL

BM-A3-1	1,709,244.996	497,307.583	27.574	It is located on the right side of the access road placed on the side of the access road 80 m. away from its centerline between 2 coconut trees along extg. farm road in Brgy. Sta. Arcadia, Cabanatuan City.
BM-A3-2	1,709,500.218	496,724.144	26.740	It is located on the left side of the access road placed on the side of a narra tree 5 m. away from existing irrigation road near a house in Brgy. Sta. Arcadia, Cabanatuan City.
BM-A3-3	1,709,133.419	496,759.539	26.389	It is located on the right side of the access road placed on the top bank of an irrigation canal beside an ipil-ipil and 40 m. away from its centerline in Brgy. Sta. Arcadia, Cabanatuan City.
BM-A3-4	1,710,136.779	496,074.308	26.388	It is located on the left side of the access road alignment beside an acacia tree placed on the side of a dirt road 4 m. away from its centerline in Brgy. Arcadia, Cabanatuan City.
BM-A3-5	1,710,471.747	495,959.812	26.096	It is located on the right side of the access road alignment placed on the intersection of a rice puddy near a barbed wire fence 30 m. away from the centerline of a dirt road in Brgy.
BM-A3-6	1,710,716.368	495,728.826	26.696	It is located on the right side of the road alignment near Bato bridge on its gutter 15 m. away from its 1st approach in Brgy.

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/16/02	A. ACACIO
CHECKED	10/16/02	S. JOSE
SUBMITTED	10/15/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

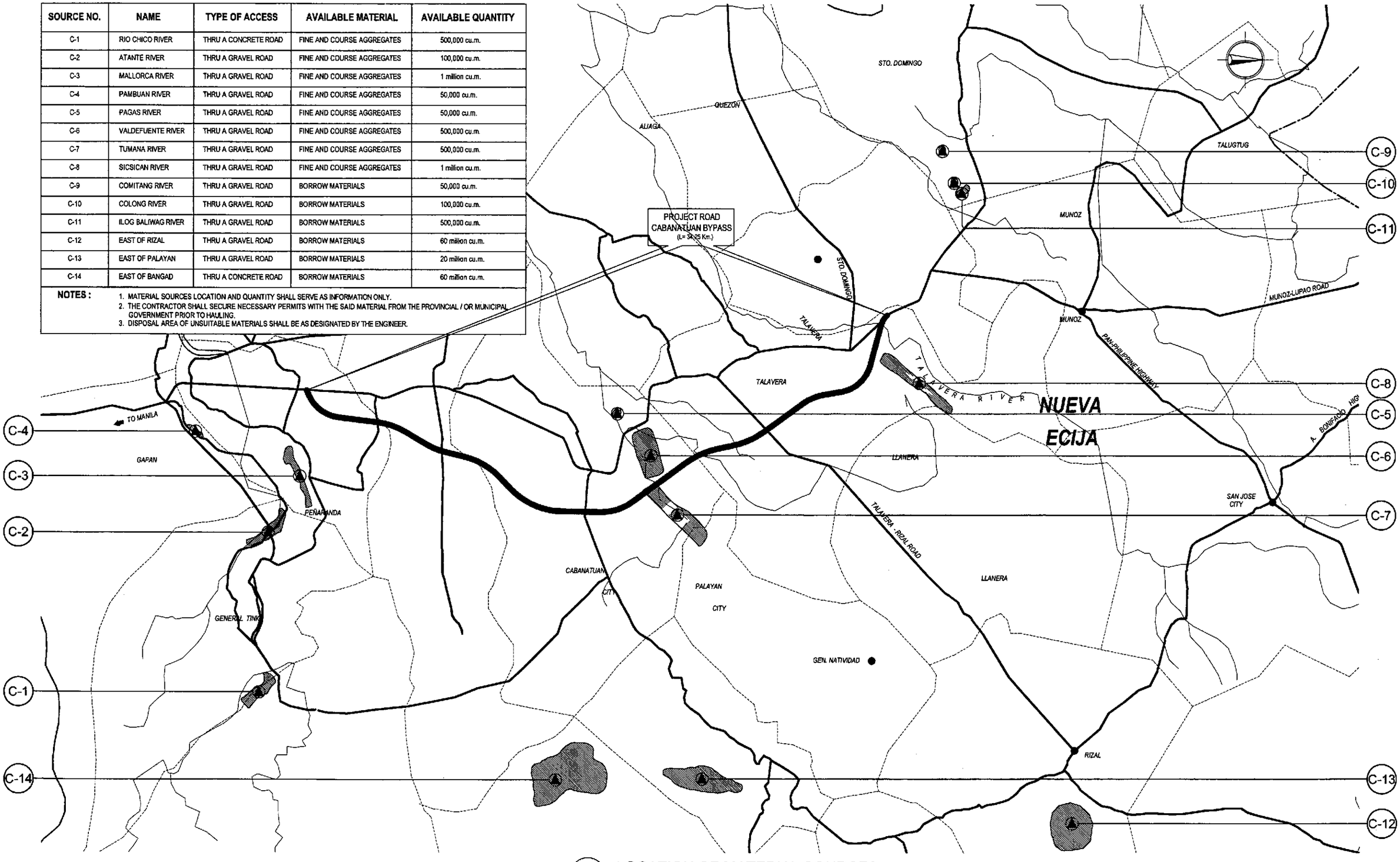
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	JOSEFINA M. ALAGAR, Chief, Highways Division	GILBERTO S. REYES, DIC, Director IV	MANUEL M. BONDAN, Undersecretary	SIMEON A. DATUMANONG, 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)	1:40,000	HORIZONTAL AND VERTICAL CONTROL MONUMENTS Sheet 2 of 2	GC-09
CABANATUAN BYPASS - CONTRACT PACKAGE II	FULL SIZE A1		

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

NOTES :

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 / GC-08 LOCATION OF MATERIAL SOURCES

SCALE AS SHOWN

JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/4/02	A. ACACIO
CHECKED	10/14/02	S. JOSE
SUBMITTED	10/18/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
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Project Director	Chief, Highways Division	DIC, 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) CABANATUAN BYPASS - CONTRACT PACKAGE II	1:80,000 FULL SIZE A1	LOCATION OF MATERIAL SOURCES	GC-10

SUMMARY OF QUANTITIES
(INITIAL STAGE)

ITEM NO.	ITEM DESCRIPTION	QUANTITY(HIGHWAY AND DRAINAGE)																QUANTITY(BRIDGE)							TOTAL QUANTITY	REMARKS
		UNIT	BYPASS	RCBC	A-13	A-14	A-14a	A-15a	A-15	C-1L	C-1R	A-16	A-17	B-8	A-18	B-9	A-19	A-20	BRIDGE #3	BRIDGE #4	BRIDGE #5	BRIDGE #6	BRIDGE #7	BRIDGE #8	BRIDGE #9		
PART C - EARTHWORKS																											
100(1)	Clearing and Grubbing	ha	45.93	-	-	4.73	-	-	-	-	-	-	-	-	-	-	-	-								51.00	
100(3)	Individual removal of trees, small (150mm<Ø<900mm)	each	152.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								152.00	
100(4)	Individual removal of trees, large (Ø>900mm)	each	19.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								19.00	
101(1)	Removal of Existing Structures and Obstructions	L.S.	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								1.00	
101(3)a	Removal of Existing PCC Pavement	m2	-	-	-	-	-	-	1,067.50	-	-	-	-	-	1,098.00	-	450.00	-								2,515.00	
102(1)	Unsuitable Excavation	m3	276,500.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								276,500.00	
103(1)	Structure Excavation	m3	478.47	369.76	-	21.93			4.54	-	-	1.99	-	-	-	-	2.54	3.99								884.00	
103(2)a	Bridge Excavation above OWL (Common Soil)	m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-			229.00	184.00	174.00	226.00	144.00	236.00	257.00	1,450.00	
103(2)c	Bridge Excavation below OWL (Common Soil)	m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					132.00		352.00	484.00	
103(3)a	Gravel Foundation Fill	m3	68.99	38.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-								108.00	
103(6)	Pipe Culverts and Drain Excavation	m3	13,477.83	-	-	615.40	-	-	133.79	-	-	39.82	-	-	-	-	47.67	90.50								14,405.00	
103(7)	Granular Backfill for Pipe Culvert	m3	6,684.64	-	-	340.17	-	-	73.37	-	-	22.01	-	-	-	-	25.93	50.03								7,197.00	
104(1)	Embankment from Roadway Excavation	m3	266.97	-	26.64	132.61	7.68	4.22	410.33	7.78	5.25	34.52	27.84	98.86	444.47	20.02	123.44	239.82								1,852.00	
104(3)	Embankment from Borrow Pit	m3	854,397.92	-	2,444.60	44,027.67	350.35	273.66	264.11	533.01	343.51	741.10	447.93	17.09	148.16	44.34	2,817.46	1,274.28	571.00	421.00	521.00	624.00	488.00	725.00	861.00	913,920.00	
104(4)	Embankment from Borrow (Selected Granular Material) for Bridge	m3																	487.00	421.00	476.00	500.00	444.00	544.00	586.00	3,458.00	
105(1)	Subgrade Preparation (Common Soil)	m2	259.00	-	153.82	295.88	54.60	30.00	1,356.50	73.71	54.20	187.22	192.01	259.09	1,543.78	133.78	497.00	710.06								5,811.00	
PART D - BASE AND SUBBASE COURSE																											
200(1)	Aggregate Subbase Course	m3	32,681.88	-	-	10,213.49	-	-	578.85	-	-	-	-	-	443.25	-	812.25	552.04	30.00	28.00	28.00	28.00	28.00	28.00	30.00	45,482.00	
201(1)	Aggregate Base Course	m3	11,850.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								11,851.00	
PART E - SURFACE COURSES																											
300(1)	Gravel Surface Course	m3	14,331.00	-	117.92	-	36.00	23.39	-	-	-	120.78	109.53	64.62	-	37.30	-	-								14,841.00	
311(1)b	PCC Pavement (Plain), t=250mm	m2	74,158.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								74,159.00	
311(1)c	PCC Pavement (Plain), t=230mm	m2	-	-	-	16,303.04	-	-	1,523.21	-	-	-	-	-	1,385.30	-	2,154.37	1,316.31								22,685.00	
311(2)	PCC Pavement (Reinforced) t=300mm Approach Slab	m2	323.52	-	-	-	-	-											118.00	118.00	118.00	118.00	116.00	118.00	118.00	1,148.00	
PART F - BRIDGE CONSTRUCTION																											
400(4)a	Precast Concrete Piles (400mmx400mm), furnished	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					664.00			664.00	
400(4)b	Precast Concrete Piles (450mmx450mm), furnished	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	971.00	298.00	334.00	403.00		446.00	1,015.00	3,467.00	
400(13)a	Precast Concrete Piles (400mmx400mm), driven	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					578.00			578.00	
400(13)b	Precast Concrete Piles (450mmx450mm), driven	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	904.00	242.00	276.00	338.00		378.00	884.00	3,022.00	
400(15)a	Test Piles (Concrete Pile 400mmx400mm)	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					47.00			47.00	
400(15)b	Test Piles (Concrete Pile 450mmx450mm)	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40.50	17.50	18.25	19.25		20.50	47.00	163.00	
400(19)a	Pile shoes for 400mmx400mm Piles	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					72.00			72.00	
400(19)b	Pile shoes for 450mmx450mm Piles	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55.00	46.00	48.00	54.00		56.00	108.00	367.00	
401(1)a	Concrete Railing Type A (Concrete Posts and Precast Beams)	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70.00	48.00	48.00	62.00	64.00	62.00	123.00	477.00	
404(1)	Reinforcing Steel (Grade 40)	kg	7,920.08	24,093.36	-	1,516.24	-	-	352.04	-	-	137.84	-	-	-	-	214.20	275.68	24,739.00	18,620.00	18,324.00	22,796.00	16,133.00	23,238.00	43,417.00	201,777.00	
404(2)	Reinforcing Steel (Grade 60)	kg	72,042.00		-		-	-		-	-		-	-	-	-			17,526.00	14,925.00	15,953.00	17,588.00	42,033.00	18,899.00	57,823.00	256,789.00	
405(1)a	Structural Concrete Class A (fc'=21MPa, max. aggregate 38mm) for heavily reinforced structures	m3	795.87	198.16	-	34.10	-	-	7.86	-	-	3.10	-	-	-	-	4.76	6.20	-	-	-	-	-	-	-	1,049.00	
405(1)b	Structural Concrete Class A1(fc'=21MPa, max. aggregate 38mm) for small & medium bridges substructures	m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	283.00	226.00	242.00	288.00	278.00	308.00	602.00	2,227.00	
405(1)c	Structural Concrete Class A1 (fc'=21MPa, max. aggregate 20mm) for small & medium bridges RCDG superstructures	m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	192.00	-	-	192.00	
405(1)d	Structural Concrete Class A1 (fc'=21MPa, max. aggregate 20mm) for small & medium bridges RCDG superstructures	m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118.00	75.00	75.00	98.00	-	98.00	208.00	672.00	
405(2)	Structural Concrete Class B (fc'=17MPa, max. aggregate 50mm) for plain or lightly reinforced structures	m3	2,471.37		-	124.27	-	-	27.52	-	-	8.04	-	-	-	-	10.00	18.28	-	-	-	-	-	-	-	2,660.00	
405(3)	Structural Concrete Class C (fc'=21MPa, max. aggregate 12mm) for thin reinforced members	m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.00	16.00	16.00	18.00	14.00	18.00	34.00	141.00	
405(6)	Lean Concrete (fc'=17MPa, max. aggregate 38mm)	m3	34.52	19.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51.00	47.00	12.00	46.00	18.00	52.00	73.00	351.00	
406(1)a	Precast Prestressed Structural Concrete Member (AASHTO Girder Type IV L=20m)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.00	15.00	
406(1)c	Precast Prestressed Structural Concrete Member (AASHTO Girder Type IV L=24m)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	-	-	-	-	10.00	
406(1)f	Precast Prestressed Structural Concrete Member (AASHTO Girder Type IV-B L=31m)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00	-	5.00	-	10.00	
406(1)i	Precast Prestressed Structural Concrete Member (AASHTO Girder Type VI L=35m)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.00	-	-	-	-	-	-	5.00	
407(1)g	Elastomeric Bearing Pad, Duro 60 (550x300x50mm)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.00	-	-	6.00	
407(1)c	Elastomeric Bearing Pad, Duro 60 (600x350x50mm)	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.00	10.00	10.00	10.00		10.00	30.00	80.00	
407(2)a	Expansion Joint, (± 40mm Movement)	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00	20.00	20.00	20.00	20.00	20.00	20.00	140.00	
407(2)g	Expansion Joint, 30mm for bridge sidewalk	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.00	4.00	3.00	3.00	4.00	4.00	3.00	25.00	
407(4)	G.I. Drain Pipe Ø150mm for Bridge Drainage	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.00	3.00	3.00	3.00	3.00	3.00	6.00	24.00	

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	DATE	SIGNATURE
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CHECKED	10/16/02	S. SOSOSE
SUBMITTED	10/18/02	M. KUCHI, TEAM LEADER

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THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE II	FULL SIZE A1	SUMMARY OF QUANTITIES (INITIAL STAGE) 1 of 2	GC-11

SUMMARY OF QUANTITIES
(INITIAL STAGE)

ITEM NO.	ITEM DESCRIPTION	QUANTITY(HIGHWAY AND DRAINAGE)																	QUANTITY(BRIDGE)							TOTAL QUANTITY	REMARKS
		UNIT	BYPASS	RCBC	A-13	A-14	A-14a	A-15a	A-15	C-1L	C-1R	A-16	A-17	B-8	A-18	B-9	A-19	A-20	BRIDGE #3	BRIDGE #4	BRIDGE #5	BRIDGE #6	BRIDGE #7	BRIDGE #8	BRIDGE #9		
PART G - DRAINAGE AND SLOPE PROTECTION STRUCTURES																											
500(1)b4	RCPC Standard Strength (32MPa), Ø610mm (24")	m	674.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	674.00	
500(1)c6	RCPC Extra Strength (32MPa), Ø910mm (36")	m	1,852.00	-	-	170.00	-	-	19.00	-	-	11.00	-	-	-	-	-	25.00	-	-	-	-	-	-	-	2,077.00	
500(1)c7	RCPC Extra Strength (32MPa), Ø1070mm (42")	m	485.00	-	-	-	-	-	15.00	-	-	-	-	-	-	-	11.00	-	-	-	-	-	-	-	-	511.00	
500(1)c8	RCPC Extra Strength (32MPa), Ø1220mm (48")	m	386.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	386.00	
502(2)b14	Special Junction Box Manhole for RCPC 1-Ø910 x 1-Ø610	each	67.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67.00	
502(2)b15	Special Junction Box Manhole for RCPC 1-Ø1070 x 1-Ø610	each	18.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.00	
502(2)b16	Special Junction Box Manhole for RCPC 1-Ø1220 x 1-Ø 810	each	12.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.00	
502(2)b17	Special Junction Box Manhole for RCPC 1-Ø 1520 x 1-Ø 610	each	4.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.00	
502(2)b36	Special Junction Box Manhole for RCPC 2-Ø 1220 x 1-Ø 610	each	4.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.00	
502(4)a1	U-shaped Concrete Ditch W=0.50m x H=0.50m	m	4,985.00	-	-	-	-	-	410.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,395.00	
502(6)b	V-shaped Lined Ditch H=500mm, 1:1.00	m	8,159.00																-	-	-	-	-	-	-	8,159.00	
502(7)a	Trapezoidal Lined Ditch B=450mm, H=500mm, 1:1.00	m	2,715.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,715.00	
504(5)	Grouted Riprap Class A	m3	2,080.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.00	40.00	178.00	52.00	176.00	54.00	51.00	2,682.00	
505(1)	Stone Masonry	m3	320.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	321.00	
508(1)	Hand Laid Rock Apron (Loose Boulder Apron)	m3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	112.00	-	110.00	115.00	-	116.00	129.00	582.00	
507(2)b	Steel Sheet Piles (400x85x8mm), furnished & driven	m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	765.00	-	-	-	-	-	765.00	
509(1)	Gabions	m3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	352.00	352.00	
510(1)	Rubble Concrete Slope Protection	m3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.00	98.00	-	117.00	-	124.00	170.00	609.00	
PART H - MISCELLANEOUS STRUCTURES																											
600(3)a	Combination Concrete Curb & Gutter/Side Strip, Type A (675x364mm)	m	2,595.00	-	-	95.00	-	-	90.00	-	-	-	-	-	170.00	-	90.00	-	-	-	-	-	-	-	-	3,040.00	
602(1)	Right-of-Way Concrete Monuments	each	444.00	-	12.00	48.00	7.00	4.00	18.00	6.00	4.00	16.00	8.00	15.00	12.00	13.00	31.00	21.00	-	-	-	-	-	-	-	657.00	
602(2)	Maintenance Marker Posts for Drainage Structure	each	120.00	-	-	14.00	-	-	4.00	-	-	2.00	-	-	-	-	2.00	4.00	-	-	-	-	-	-	-	146.00	
602(3)	Kilometer Posts	each	10.00																-	-	-	-	-	-	-	10.00	
603(3)a	Metal Guardrails (Metal Beam) Type A (Embedded in soil)	m	5,145.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,920.00	-	-	-	-	-	-	-	7,065.00	
605(1)a	Warning Signs (Triangular 900mm)	each	22.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22.00	
605(2)b	Regulatory Signs (Octagonal 600mm)	each	-	-	-	-	-	-	-	-	-	2.00	2.00	-	-	-	-	2.00	-	-	-	-	-	-	-	6.00	
605(2)c	Regulatory Signs (Circular Ø600mm)	each	22.00	-	-	1.00	-	-	2.00	-	-	-	-	-	2.00	-	2.00	-	-	-	-	-	-	-	-	29.00	
605(2)d	Regulatory Signs (Rectangular 450x750mm)	each	7.00	-	-	-	-	-	2.00	-	-	2.00	2.00	-	2.00	-	1.00	1.00	-	-	-	-	-	-	-	17.00	
605(3)c	Informatory Signs (Type B, double post)	each	-	-	-	1.00	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.00	
605(3)d	Informatory Signs (Type C, double post)	each	8.00	-	-	-	-	-	1.00	-	-	-	-	-	2.00	-	2.00	-	-	-	-	-	-	-	-	13.00	
607(2)b	Reflectorized Pavement Studs (Raised Profile Type, two faces reflective)	each	100.00	-	-	5.00	-	-	10.00	-	-	-	-	-	10.00	-	10.00	-	-	-	-	-	-	-	-	135.00	
607(3)	Chatter Bars (one face reflective)	each	388.00	-	-	16.00	-	-	28.00	-	-	-	-	-	24.00	-	38.00	-	-	-	-	-	-	-	-	494.00	
608(1)	Furnishing and Placing Top Soil	m3	52,239.52	-	126.78	958.59	29.19	28.94	28.00	34.60	27.74	65.15	67.95	39.78	22.67	16.52	81.34	61.18	-	-	-	-	-	-	-	53,829.00	
610(1)	Sodding	m2	261,197.60	-	1,267.84	9,585.87	291.88	289.44	226.08	346.00	277.38	651.51	679.46	397.76	226.67	165.17	813.44	611.82	-	-	-	-	-	-	-	277,030.00	
611(1)c	Trees (Furnishing and Transplanting) High Tree (Young Tree) 1.5m < H < 3.0m	each	773.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	773.00	
612(1)a	Reflectorized Thermoplastic Pavement Markings (White)	m2	3,203.42	-	-	62.56	-	-	118.13	-	-	44.55	57.57	-	173.95	-	274.48	119.56	-	-	-	-	-	-	-	4,055.00	
612(1)b	Reflectorized Thermoplastic Pavement Markings (Yellow)	m2	276.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	277.00	
SPL 620(1)a	Traffic Signal Pole Type A (Mast Arm Post H=6.7m)	each	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.00	
SPL 620(1)b	Traffic Signal Pole Type A (Mast Arm Post H=6.0m)	each	8.00																-	-	-	-	-	-	-	8.00	
SPL 620(1)c	Traffic Signal Pole Type B (Ø 114.3mm x 4.2m)	each	13.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.00	
SPL 620(1)d	Traffic Signal Pole Type C (Ø 114.3mm x 3.4m)	each	15.00																-	-	-	-	-	-	-	15.00	
SPL 620(1)e	Traffic Signal Pole Type D (Ø 114.3mm x 3.0m)	each	4.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.00	
SPL 620(2)a	Traffic Signal Lamps Type A (5 vehicle lamps)	each	26.00																-	-	-	-	-	-	-	26.00	
SPL 620(2)b	Traffic Signal Lamps Type B (3 vehicle lamps)	each	27.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27.00	
SPL 620(2)c	Traffic Signal Lamps Type C (2 pedestrian lamps)	each	22.00																-	-	-	-	-	-	-	22.00	
SPL 620(4)a	Street Lighting Poles (Single Lamp)	each	-	-	-	1.00	-	-	2.00	-	-	-	-	-	2.00	-	4.00	-	-	-	-	-	-	-	-	9.00	
SPL 620(4)b	Street Lighting Poles (Dual Lamp)	each	45.00	-	-	2.00	-	-	4.00	-	-	-	-	-	4.00	-	2.00	-	-	-	-	-	-	-	-	57.00	
SPL 620(4)d	Street Lighting Service Pole with Panel	each	-	-	-	1.00	-	-	1.00	-	-	-	-	-	1.00	-	1.00	-	-	-	-	-	-	-	-	4.00	
SPL 620(4)e	Fluorescent Lighting for Underpass Culverts	each	4.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.00	

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/24/07	JAPIA
CHECKED	10/24/07	S. GOSE
SUBMITTED	10/18/07	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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : FULL SIZE A1

SHEET CONTENTS :
SUMMARY OF QUANTITIES
(INITIAL STAGE)
2 of 2

SHEET NO. :
GC-12

ROADWAY

GENERAL NOTES
HIGHWAY / CIVIL AND DRAINAGE

1.0 DESIGN STANDARDS / SPECIFICATIONS

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

1.2 ALL WORKS SHALL COMPLY WITH THE DPWH STANDARD SPEICIFICATIONS, 1995 EDITION, VOLUME II, HIGHWAYS, BRIDGES, AND AIRPORTS, AND THE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2.0 SURVEY CONTROLS AND REFERENCES

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

GPS STA.	NORTHING	EASTING	ELEVATIONS	DESCRIPTION
CAB–1	1,701,482.713	493,518.261	23.777	Located in Brgy. Tagumpay, San Leonardo, Nueva Ecija. It is drilled on the left side of the Tambo Bridge's first approach, about 0.05 cm. above the bridge's concrete sidewalk.
CAB–2	1,701,869.179	493,628.408	22.525	Located in Brgy. Tagumpay, San Leonardo, Nueva Ecija. It is embedded in an open space 80 m. from highway, 15 m. from dirt road going to an ostrich farm, about 40cm x 40cm & 0.05cm above the ground.
CAB–3	1,706,316.913	495,963.410	25.984	Located in Brgy. Soledad, Sta. Rosa, Nueva Ecija. It is embeded on a 40cm x 40cm conc mons. beside an irri. canal about 8m from rd. CL & 3 km. from the highway intersec. of Fort Magsaysay & Cabanatuan City.
CAB–4	1,706,340.784	496,322.453	26.299	Located in Brgy. Soledad, Sta. Rosa, Nueva Ecija. It is embedded on a 40 cm x 40 cm conc. mons. on the left side of the rd. going to Fort Magsaysay & about 370 m. from GPS Sta. CAB–3, about 4 m from rd. CL.
CAB–4A	1,708,633.059	497,110.500	27.917	Located in Brgy. Tagpos, Sta. Rosa, Nueva Ecija on Diaz property. From the highway northbound take a right turn on Mabini extension, on Mercury Drugstore going to Brgy. Sta. Arcadia. 4.9 km. from the highway take a right turn on the intersection of the dirt road after the one–way bridge with a water pipe rail. It is 1.4 km. from the intersection beside an irrigation canal on the left side.
CAB–5	1,709,079.199	498,487.150	31.478	Located in Brgy. Sta. Arcadia, Cabanatuan, Nueva Ecija. From the highway northbound take a right turn on Mabini extension, Mercury Drugstore going to Brgy. Sta. Arcadia. 3.9 km. from the intersection highway, take a left turn to a dirt road it is embedded on the right side of the road 200 m. from the Mabini extension road centerline.
CAB–6	1,709,731.859	498,528.332	31.285	Located in Brgy. Sta. Arcadia, Cabanatuan, Nueva Ecija. From the highway northbound take a right turn on Mabini extension, Mercury Drugstore going to Brgy. Sta. Arcadia. 3.2 km. from the intersection highway, take a left turn to a dirt road it is embedded on the left side of the road near an irrigation dike 500 m. from the Mabini extension road centerline.
CAB–7	1,713,329.143	499,115.186	33.346	Located in Brgy. San Isidro, Cabanatuan, Nueva Ecija. It is embedded on the sidewalk of the DPWH 3rd Engineering District driveway, about 20 m. from the centerline of the road.
CAB–8	1,713,603.208	499,247.649	33.467	Located in Urban Poor Housing Project, San Isidro, Cabanatuan, Nueva Ecija. Going to Palayan City take a left turn to the dirt road beside the DPWH compound leading to the site of the housing project, then turn right. It is embedded on the right side of the dirt road near the electric post 400 m. from the centerline of the highway.
CAB8A	1,715,705.803	498,487.077	34.234	Located in Brgy. Roja, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway to a road before the Valdefuente bridge. 3 km. from the highway, turn left to a bridge.
CAB8B	1,717,749.623	496,746.648	34.436	Location in Brgy. Sapang, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a rt. turn on Maharlika highway after the Valdefuente br. to road going to Brgy. Sapang. It is emb. on the left side of the road.
CAB9	1,718,805.446	496,330.000	37.709	Located in Brgy. Buliran, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway after the Valdefuerte bridge to a road going to Brgy. Dalampang. 2.5 km. from the highway taking the left fork turn right at the intersection to a dirt road leading to Brgy. Balite. It is embedded near an irrigation dike 800 m. from the bridge.
CAB10	1,719,118.959	497,481.612	37.713	Located in Brgy. Dalampang, Cabanatuan, Nueva Ecija. From Cabanatuan City proper take a right turn on Maharlika highway after the Valdefuerte bridge to a road going to Brgy. Dalampang. 2.5 km. from the highway taking the left fork turn right at the intersection to a dirt road leading to Brgy. Balite. It is embedded near an irrigation dike on the right side, 1.9 km. from the bridge.
CAB11	1,721,785.046	495,194.942	39.469	Located in Homestead I, Talavera, Nueva Ecija. Taking the Maharlika highway to Muñoz, turn right on Pinagpanaan intersection to the highway going to Pantabangan. 4.3 km. from the intersection turn right to a dirt road. It is embedded on the right beside an irrigation canal 70 m. from the centerline of the highway.
CAB12	1,722,163.770	495,433.939	37.949	Located in Homestead I, Talavera, Nueva Ecija. Taking the Maharlika highway to Muñoz, turn right on Pinagpanaan intersection to the highway going to Pantabangan. 4.8 km. from the intersection on the right side 50 m. from the centerline of the hughway.
CAB13	1,718,173.662	489,601.903	44.230	Located in Brgy. San Pascual, Talavera, Nueva Ecija. It is embedded on the right side of the bridge 2.3 km. from San Pascual market going to San Jose.
CAB14	1,729,259.352	489,626.465	43.827	Located in Brgy. Bagong Silang, Talavera, Nueva Ecija. Take a right turn 3.4 km. from San Pascual market going to San Jose to a dirt road. It is embedded on a rice puddy dike on the right side of the road 500 m. from the highway.

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

3.0 ALIGNMENT CONTROLS AND REFERENCES

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

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

3.2.3 ALONG CABANATUAN BYPASS
- FLOODING OCCURENCE ALONG PAN–PHIL. HIGHWAY FROM KM POST 102 TO KM POST 104, (LEFT SIDE, KM 100+480 TO KM 102+000)
- NATIONAL POWER CORPORATION TRANSMISSION TOWER (NEAR BEG. AND END OF BYPASS)
- EXISTING LANDFILL AREA (LEFT SIDE, KM 115+700 CENTERLINE)

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

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

3.5 EXISTING PAVEMENT GRADES OF PAN–PHILIPPINE HIGHWAY.

4.0 DIMENSIONS

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

5.0 STATIONINGS

5.1 CENTERLINE STATIONINGS OF THE PROJECT WERE BASED FROM THE NEAREST KILOMETER POST STATION ALONG THE PAN–PHILIPPINE HIGHWAY WHICH IS KM.100 NEAR THE START OF BYPASS.

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

6.0 ELEVATION AND GRADES

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

7.0 HORIZONTAL TRANSITIONS

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

8.0 UTILIZATION OF GRAVEL MATERIALS

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

9.0 REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS

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

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

10.0 ROAD CONNECTIONS AND PRIVATE ENTRANCES

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

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

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

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

11.0 DRAINAGE STRUCTURES

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

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

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

11.4 ANY CLEANING, UNCLOGGING AND/OR RE–LAYING OF EXISTING DRAINAGE STRUCTURES AS DIRECTED BY THE ENGINEER TO SUIT ACTUAL FIELD CONDITION SHALL BE UNDERTAKEN BY THE CONTRACTOR TO INSURE AN OPERATIONAL DRAINAGE SYSTEM FOR THE PROJECT, AND SHALL BE WITHOUT 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.

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JAPAN INTERNATIONAL COOPERATION AGENCY

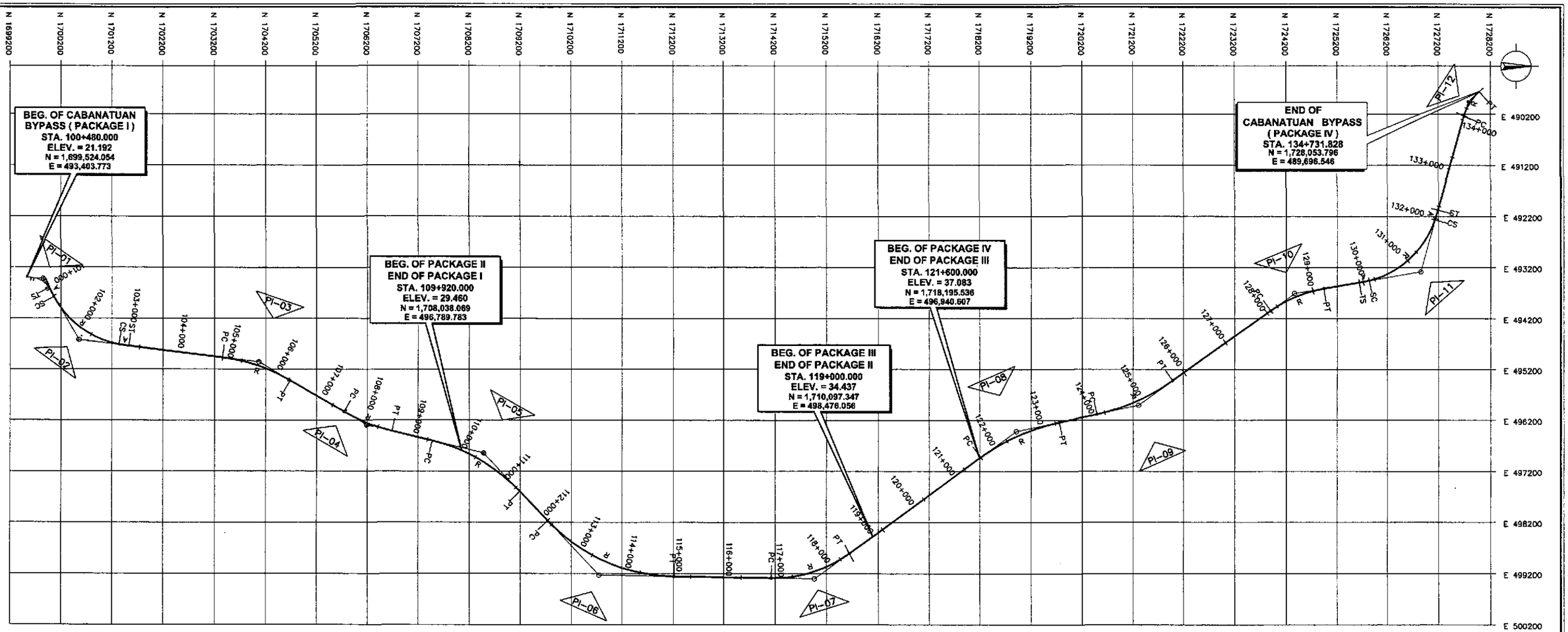
KATAHIRA & ENGINEERS INTERNATIONAL — YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/9/02	A. ACACIO
CHECKED	10/10/02	S. JOSE
SUBMITTED	10/10/02	M. KATAOKA, 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 :	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) CABANATUAN BYPASS - CONTRACT PACKAGE II	FULL SIZE A1	GENERAL NOTES HIGHWAY/ CIVIL AND DRAINAGE	RG-01



ELEMENTS OF CURVES

P.I. No.	STATION	DISTANCE	AZIMUTH	TANGENT Θs	DEFLECTION ANGLE	A / R	Ls / Lc	STATION
BEG.	100+480.00							
		326.146	183°25'21"	246.146	56°16'36"	160.000	64.000	TS=100+560.000
01	100+806.146							SC=100+624.000
		1,385.199	239°41'57"	4°35'01"		400.000	328.886	CS=100+952.886
								ST=101+016.886
				147.870	52°39'26"	600.000	200.000	TS=101+164.756
02	102+155.940							SC=101+364.756
		3,544.720	187°02'31"	3°10'59"		1,800.000	1,454.277	TS=102+819.034
								SC=103+019.034
				720.109		–	–	
03	105+572.571				23°15'08"			PC=104+852.462
		2,451.020	210°17'39"	–		3,500.000	1,420.397	PT=106+272.858
				514.528		–	–	
04	108+003.769				16°43'34"			PC=107+489.241
		2,363.853	193°34'05"	–		3,500.000	1,021.737	PT=108+510.979
				1,035.121		–	–	
05	110+360.304				32°37'04"			PC=109+325.183
		3,288.872	226°31'09"	–		3,500.000	2,012.865	PT=111+338.048
				1,469.788		–	–	
06	113+591.799				45°33'32"			PC=112+122.011
		4,225.526	180°57'37"	–		3,500.000	2,783.035	PT=114+905.046
				840.295		–	–	
07	117+660.785				37°09'25"			PC=116+820.490
		4,885.881	143°48'12"	–		2,500.000	1,621.273	PT=118+441.763

ELEMENTS OF CURVES

P.I. No.	STATION	DISTANCE	AZIMUTH	TANGENT Θs	DEFLECTION ANGLE	A / R	Ls / Lc	STATION
08	122+487.349	4,885.881	143°48'12"	856.992	24°11'07"	–	–	PC=121+630.356
		2,447.505	167°59'20"	–		4,000.000	1,688.459	PT=123+318.815
09	124+909.328			837.385	23°38'52"	–	–	PC=124+071.944
		3,773.512	144°20'28"			4,000.000	1,650.927	PT=125+722.871
10	128+658.998			577.297	26°00'20"	–	–	PC=128+081.701
		2,530.124	170°20'47"	–		2,500.000	1,134.704	PT=129+216.405
11	131+169.232			1,250.689	65°09'11"	600.000	200.000	TS=129+918543
		3,450.454	105°11'37"	3°10'59"		1,800.000	1,846.841	SC=130+118.543
								CS=131+965.384
12	134+365.149			292.954	32°39'23"	–	–	ST=132+165.384
		382.627	137°50'54"			1,000.000	569.960	PC=134+072.196
END	134+731.823							PT=134+642.155

TABLE OF COORDINATES

P.I. No.	NORTHING	EASTING		NORTHING	EASTING
BEG.	1,699,524.054	493,403.773			
			TS	1,699,603.912	493,408.549
01	1,699,849.619	493,423.243	SC	1,699,667.655	493,414.070
			CS	1,699,940.066	493,581.402
			ST	1,699,973.809	493,635.763

TABLE OF COORDINATES

P.I. No.	NORTHING	EASTING		NORTHING	EASTING
02	1,700,548.505	494,619.209	TS	1,700,048.415	493,763.432
			SC	1,700,152.489	493,934.189
			CS	1,701,334.236	494,712.538
			ST	1,701,532.212	494,740.724
03	1,704,066.486	495,053.779	PC	1,703,351.810	494,985.496
			PT	1,704,688.262	495,417.031
04	1,706,182.811	496,290.171	PC	1,705,738.544	496,030.623
			PT	1,706,682.980	496,410.880
05	1,708,480.693	496,844.734	PC	1,707,474.481	496,601.893
			PT	1,709,192.973	497,595.822
06	1,710,743.806	499,231.154	PC	1,709,732.427	498,164.670
			PT	1,712,213.387	499,255.786
07	1,714,968.738	499,301.970	PC	1,714,128.561	499,287.887
			PT	1,715,646.852	498,805.727
08	1,718,911.622	496,416.576	PC	1,718,220.033	496,922.679
			PT	1,719,749.852	496,238.234
09	1,721,305.544	495,907.244	PC	1,720,486.493	496,081.506
			PT	1,721,985.920	495,419.082
10	1,724,371.527	493,707.438	PC	1,723,902.473	494,043.979
			PT	1,724,940.649	493,610.632
11	1,728,885.824	493,283.184	TS	1,725,632.845	493,492.891
			SC	1,725,829.332	493,455.713
			CS	1,727,137.632	492,288.171
			ST	1,727,193.505	492,076.192
12	1,727,770.121	489,953.318	PC	1,727,693.343	490,236.031
			PT	1,727,987.313	489,756.723
END	1,728,053.796	489,696.546			

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/9/02	A. ACACIO
CHECKED	10/16/02	S. GOSE
SUBMITTED	10/17/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

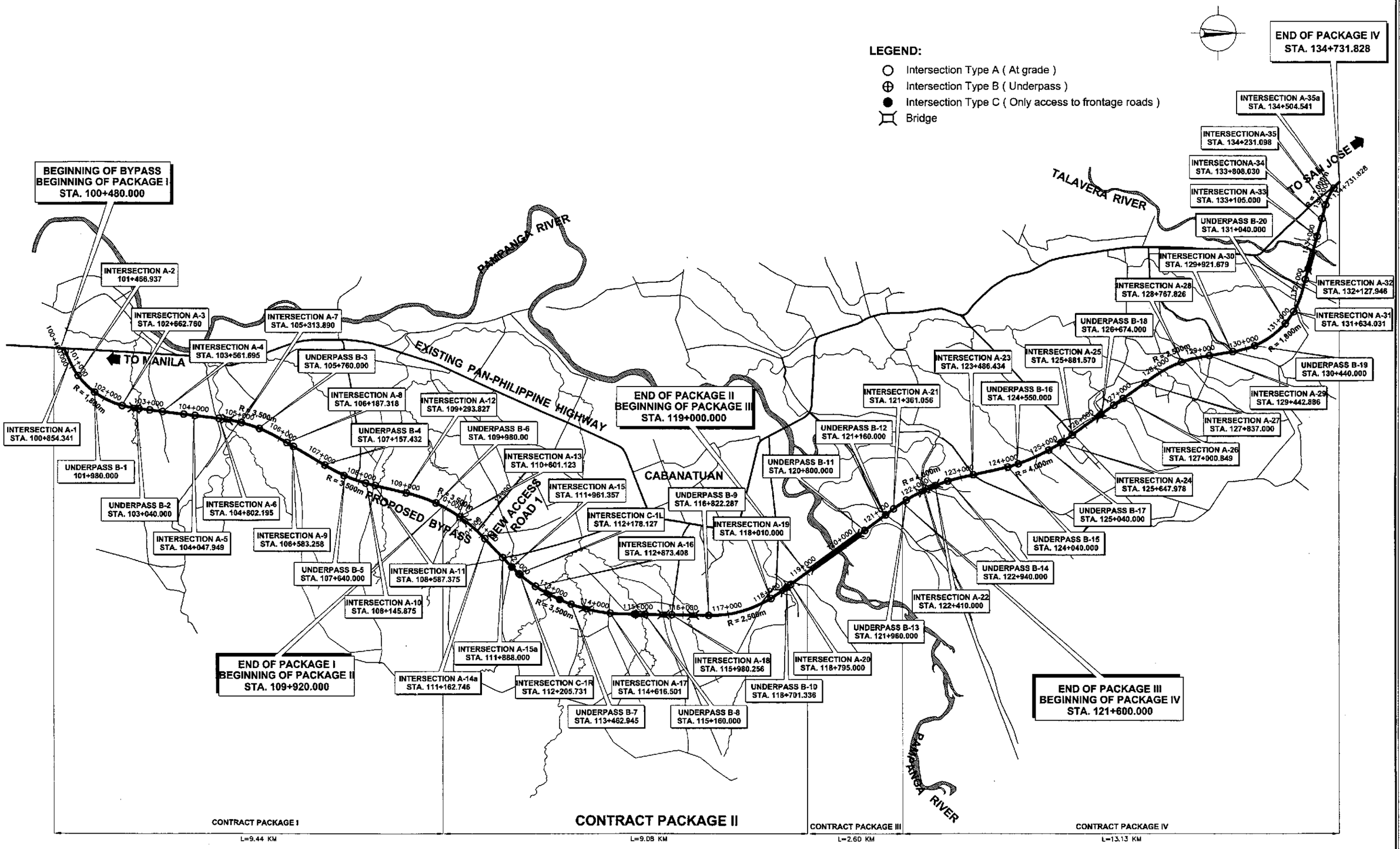
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONDOAN	SIMEON A. DATUMANONG
Project 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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : 1:40,000 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 — YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/16/02	A. ACACIO
CHECKED	10/16/02	S. JOSE
SUBMITTED	10/16/02	M. PALUCH 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)
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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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : 1:40,000 FULL SIZE A1

SHEET CONTENTS : LOCATION OF INTERSECTIONS/ UNDERPASSES ALONG BYPASSES

SHEET NO. : RG-03

SCHEDULE OF TRAFFIC SIGNS
CONTRACT PACKAGE II (INITIAL STAGE)

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

STATION	REF. NO.	REMARKS
110+980	W3-1	RIGHTSIDE MAIN BYPASS
111+042	W1-4(L)	LEFT SIDE MAIN BYPASS
111+220	W3-1	LEFT SIDE MAIN BYPASS
111+395	W1-4(R)	LEFT SIDE MAIN BYPASS
111+840	W3-1	RIGHT SIDE MAIN BYPASS
111+885	W1-4(L)	LEFT SIDE MAIN BYPASS
112+090	W3-1	LEFT SIDE MAIN BYPASS
112+217	W1-4(R)	LEFT SIDE MAIN BYPASS
112+760	W2-8	RIGHT SIDE MAIN BYPASS
112+990	W2-8	LEFT SIDE MAIN BYPASS
114+500	W2-8	RIGHT SIDE MAIN BYPASS
114+730	W2-8	LEFT SIDE MAIN BYPASS
115+785	W3-1	RIGHT SIDE MAIN BYPASS
115+940	W1-4(L)	LEFT SIDE MAIN BYPASS
116+100	W3-1	LEFT SIDE MAIN BYPASS
116+230	W1-4(R)	LEFT SIDE MAIN BYPASS
117+890	W3-1	RIGHT SIDE MAIN BYPASS
117+915	W1-4(L)	LEFT SIDE MAIN BYPASS
118+140	W3-1	LEFT SIDE MAIN BYPASS
118+267	W1-4(R)	LEFT SIDE MAIN BYPASS
118+680	W2-8	RIGHT SIDE MAIN BYPASS
118+920	W2-8	LEFT SIDE MAIN BYPASS

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

STATION	REF. NO.	REMARKS
00+987.00	R1-1A	RIGHT SIDE INTERSECTION A-16
01+021.00	R1-1A	LEFT SIDE INTERSECTION A-16
00+989.00	R1-1A	RIGHT SIDE INTERSECTION A-17
01+020.00	R1-1A	LEFT SIDE INTERSECTION A-17
00+986.00	R1-1A	RIGHT SIDE INTERSECTION A-20
01+030.00	R1-1A	LEFT SIDE INTERSECTION A-20

ITEM 605 (2)c REGULATORY SIGNS (RECTANGULAR 450x750mm)

STATION	REF. NO.	REMARKS
111+084	R2-7(L)	CENTER ISLAND MAIN BYPASS
111+940	R2-7(L)	CENTER ISLAND MAIN BYPASS
111+985	R2-7(L)	CENTER ISLAND MAIN BYPASS
00+953	R3-6P	RIGHT SIDE INTERSECTION A-15
01+045	R3-6P	LEFT SIDE INTERSECTION A-15
00+956	R3-6P	RIGHT SIDE INTERSECTION A-16
01+034	R3-6P	LEFT SIDE INTERSECTION A-16
00+960	R3-6P	RIGHT SIDE INTERSECTION A-17
01+040	R3-6P	LEFT SIDE INTERSECTION A-17
115+964	R2-7(L)	CENTER ISLAND MAIN BYPASS
115+998	R2-7(L)	CENTER ISLAND MAIN BYPASS
00+959	R3-6P	RIGHT SIDE INTERSECTION A-18
01+043	R3-6P	LEFT SIDE INTERSECTION A-18
117+988	R2-7(L)	CENTER ISLAND MAIN BYPASS
118+032	R2-7(L)	CENTER ISLAND MAIN BYPASS
00+951	R3-6P	RIGHT SIDE INTERSECTION A-19
01+030	R3-6P	LEFT SIDE INTERSECTION A-20

ITEM 605 (2)d REGULATORY SIGNS (CIRCULAR 600mm DIA.)

STATION	REF. NO.	REMARKS
110+862	R6-4	RIGHT SIDE MAIN BYPASS
110+715	R6-4	LEFT SIDE MAIN BYPASS
111+084	R3-15	CENTER ISLAND MAIN BYPASS
111+118	R3-15	CENTER ISLAND MAIN BYPASS
00+020	R3-15	CENTER ISLAND INTERSECTION A-14
111+940	R3-15	CENTER ISLAND MAIN BYPASS
111+985	R3-15	CENTER ISLAND MAIN BYPASS
00+979	R3-15	CENTER ISLAND INTERSECTION A-15
01+019	R3-15	CENTER ISLAND INTERSECTION A-15
113+172	R6-4	RIGHT SIDE MAIN BYPASS
113+207	R6-4	LEFT SIDE MAIN BYPASS
114+068	R6-4	RIGHT SIDE MAIN BYPASS
114+103	R6-4	LEFT SIDE MAIN BYPASS
115+299	R6-4	RIGHT SIDE MAIN BYPASS
115+341	R6-4	LEFT SIDE MAIN BYPASS
115+785	R6-4	RIGHT SIDE MAIN BYPASS
115+830	R6-4	LEFT SIDE MAIN BYPASS
115+964	R3-15	CENTER ISLAND MAIN BYPASS
115+998	R3-15	CENTER ISLAND MAIN BYPASS
00+982	R3-15	CENTER ISLAND INTERSECTION A-18
01+020	R3-15	CENTER ISLAND INTERSECTION A-18
116+443	R6-4	RIGHT SIDE MAIN BYPASS
116+485	R6-4	LEFT SIDE MAIN BYPASS
117+988	R3-15	CENTER ISLAND MAIN BYPASS
118+032	R3-15	CENTER ISLAND MAIN BYPASS
00+978	R3-15	CENTER ISLAND INTERSECTION A-19
01+022	R3-15	CENTER ISLAND INTERSECTION A-19
118+577	R6-4	RIGHT SIDE MAIN BYPASS
118+650	R6-4	LEFT SIDE MAIN BYPASS

ITEM 605 (3) INFORMATORY SIGNS

STATION	REF. NO.	REMARKS
a. 1984 x 1110		
	GS-2	LEFT SIDE INTERSECTION A-14
b. 2472 x 1380		
110+940	GS-8	RIGHT SIDE MAIN BYPASS
111+300	GS-9	LEFT SIDE MAIN BYPASS
111+780	GS-10	RIGHT SIDE MAIN BYPASS
c. 2472 x 1900		
112+140	GS-11	LEFT SIDE MAIN BYPASS
d. 1984 x 1630		
0+900	GS-12	RIGHT SIDE INTERSECTION A-15
e. 2442 x 1900		
1+100	GS-13	LEFT SIDE INTERSECTION A-15
1+100	GS-13	RIGHT SIDE INTERSECTION A-18
f. 2560 x 1900		
115+740	GS-14	RIGHT SIDE MAIN BYPASS
116+150	GS-15	LEFT SIDE MAIN BYPASS
g. 2530 x 1630		
0+900	GS-16	RIGHT SIDE INTERSECTION A-18
0+920	GS-16	RIGHT SIDE INTERSECTION A-19
h. 2560 x 1630		
117+840	GS-17	RIGHT SIDE MAIN BYPASS
118+180	GS-18	LEFT SIDE MAIN BYPASS
i. 2450 x 1630		
1+070	GS-19	RIGHT SIDE INTERSECTION A-19

SCHEDULE OF GUARDRAIL, ROADSIDE PLANTING, GROUTED RIPRAP AND PAVEMENT SURFACING
CONTRACT PACKAGE II (INITIAL STAGE)

GUARDRAIL SCHEDULE

STATION FROM	STATION TO	LENGTH (m)	LOCATION
109+940	110+080	140	RIGHT SIDE OF BYPASS
110+540	110+595	55	RIGHT SIDE OF BYPASS
110+600	110+668	68	RIGHT SIDE OF BYPASS
110+712	110+800	88	RIGHT SIDE OF BYPASS
113+070	113+173	103	RIGHT SIDE OF BYPASS
13+204	113+310	106	RIGHT SIDE OF BYPASS
113+380	113+530	150	RIGHT SIDE OF BYPASS
113+990	114+073	83	RIGHT SIDE OF BYPASS
114+103	114+200	97	RIGHT SIDE OF BYPASS
115+150	115+302	152	RIGHT SIDE OF BYPASS
115+340	115+700	360	RIGHT SIDE OF BYPASS
115+700	115+789	89	RIGHT SIDE OF BYPASS
115+828	115+900	72	RIGHT SIDE OF BYPASS
116+340	116+443	103	RIGHT SIDE OF BYPASS
116+481	116+560	79	RIGHT SIDE OF BYPASS
116+620	116+930	310	RIGHT SIDE OF BYPASS
118+400	118+578	178	RIGHT SIDE OF BYPASS
118+647	118+720	73	RIGHT SIDE OF BYPASS
118+860	118+960	100	RIGHT SIDE OF BYPASS
109+940	110+080	140	LEFT SIDE OF BYPASS
110+560	110+598	38	LEFT SIDE OF BYPASS
110+605	110+668	63	LEFT SIDE OF BYPASS
110+712	110+800	88	LEFT SIDE OF BYPASS
113+070	113+173	103	LEFT SIDE OF BYPASS
113+204	113+310	106	LEFT SIDE OF BYPASS
113+380	113+530	150	LEFT SIDE OF BYPASS
113+980	114+072	92	LEFT SIDE OF BYPASS
114+106	114+200	94	LEFT SIDE OF BYPASS
115+150	115+300	150	LEFT SIDE OF BYPASS
115+340	115+787	447	LEFT SIDE OF BYPASS
115+826	115+900	74	LEFT SIDE OF BYPASS
116+340	116+446	106	LEFT SIDE OF BYPASS
116+485	116+560	75	LEFT SIDE OF BYPASS
116+620	116+930	310	LEFT SIDE OF BYPASS
118+400	118+578	178	LEFT SIDE OF BYPASS
118+647	118+795	148	LEFT SIDE OF BYPASS
118+860	118+960	100	LEFT SIDE OF BYPASS
0+940	0+985	45	LEFT SIDE OF BYPASS
0+940	0+985	45	LEFT SIDE OF A-20
1+015	1+930	915	LEFT SIDE OF A-20
1+015	1+930	915	RIGHT SIDE OF A-20

SCHEDULE OF GROUTED RIPRAP (LEFT SIDE)

STATION FROM	STATION TO	LENGTH (m)	VOLUME (m^3)
110+020	110+220	200	198.25
110+900	110+940	40	24.51
113+140	113+171	31	27.38
113+206	113+240	34	26.35
114+020	114+073	53	41.07
114+108	114+130	22	20.62
115+280	115+300	20	15.50
115+343	115+360	17	13.17
115+630	115+785	155	170.41
115+828	115+974	146	180.51
115+994	116+060	66	58.28
116+430	116+445	15	13.25
116+487	116+510	23	20.31
118+550	118+577	27	41.37
0+970	0+990	20	14.42
1+012	1+030	18	12.97

SCHEDULE OF GROUTED RIPRAP (RIGHT SIDE)

STATION FROM	STATION TO	LENGTH (m)	VOLUME (m^3)
109+920	109+975	55	42.62
109+985	110+220	235	232.94
110+645	110+667	22	13.48
110+714	110+780	66	40.44
110+900	110+940	40	24.51
113+140	113+172	32	28.26
113+206	113+280	74	57.34
114+040	114+070	30	23.25
114+105	114+130	25	23.43
115+220	115+300	80	61.99
115+340	115+360	20	15.50
115+630	115+788	158	173.71
115+830	115+966	136	149.52
115+987	116+060	73	64.47
116+420	116+441	21	18.54
116+483	116+505	22	19.43
118+540	118+577	37	56.69
118+649	118+694	45	68.94
118+707	118+795	88	134.82
0+970	0+990	20	14.42
1+012	1+030	18	12.97

STONE MASONRY

STATION FROM	STATION TO	LENGTH (m.)	LOCATION
115+130	115+140	10	18.34
114+140	115+160	20	50.83
115+160	115+180	20	60.82
115+180	115+200	20	71.68
115+200	115+220	20	81.00
115+220	115+230	10	38.14
	TOTAL	320.80	

UNSUITABLE EXCAVATION

STATION FROM	STATION TO	THICKNESS	STATION FROM	STATION TO	THICKNESS
109+874.23	110+134.23	0.50	114+304.23	114+594.23	0.30
110+134.23	110+714.23	1	114+594.23	114+834.23	0.50
110+764.23	111+094.23	1	114+834.23	116+274.23	0.70
111+094.23	111+434.23	0.40	116+274.23	116+454.23	1
111+434.23	111+814.23	0.60	116+484.23	116+824.23	1
111+814.23	112.274.23	0.40	116+824.23	117+434.23	0.5
112+274.23	112+534.23	0.50	117+434.23	117+734.23	0.3
112+534.23	113.014.23	0.80	117+734.23	117+834.23	0.6
113+014.23	113+174.23	0.60	117+834.23	118+584.23	0.2
113+204.23	113+524.23	0.50	118+644.23	119+014.23	0.2
113+524.23	114+074.23	0.30			
114+104.23	114+304.23	0.60			

A. ROADSIDE PLANTING (HIGH TREE)

STATION FROM	STATION TO	LENGTH (L.M.) LEFT	LENGTH (L.M.) RIGHT
109+920	110+000	80	80
110+000	110+700	660	660
110+700	111+400	640	640
111+400	112+100	640	640
112+100	112+800	660	640
112+800	113+500	540	580
113+500	114+200	480	480
114+200	114+900	600	600
114+900	115+600	580	500
115+600	116+300	520	500
116+300	117+000	400	400
117+000	117+700	700	700
117+700	118+400	650	610
118+400	119+100	440	270

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/4/02	S. LUNA
CHECKED	10/16/02	S. GOSE
SUBMITTED	10/25/02	M. UKKAKOSIN, 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)
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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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : FULL SIZE A1

SHEET CONTENTS :
SCHED. OF GUARDRAIL, TRAFFIC SIGNS GROUTED RIPRAP, SLOPE PROTECTION, PLANTING & UNSUITABLE EXCAVATION

SHEET NO. : RG-04

SCHEDULE OF PAVEMENT MARKINGS

CONTRACT PACKAGE II (INITIAL STAGE)

ITEM 612(1) - REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS

1. EDGE LINES

1.1 LEFT SIDE, OUTER EDGE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
109+920.00	111+072.23	1152.23	MAIN BYPASS
111+072.23	00+030.98	32.25	MAIN BYPASS TO LT OF A-14
00+030.98	00+120.00	89.02	LEFT OF A-14
00+020.78	00+120.00	99.22	RIGHT OF A-14
00+020.78	111+117.83	18.19	RT OF A-14 TO MAIN BYPASS
111+117.83	111+951.69	833.86	MAIN BYPASS
111+951.69	00+985.66	12.78	MAIN BYPASS TO RT OF A-15
00+855.00	00+985.66	130.66	RIGHT OF A-15
00+855.00	00+967.99	112.99	LEFT OF A-15
00+967.99	111+991.74	20.77	LEFT OF A-15 TO MAIN BYPASS
111+991.74	112+861.83	870.09	MAIN BYPASS
112+861.83	00+991.28	13.38	MAIN BYPASS TO RT OF A-16
00+966.00	00+991.28	25.28	RIGHT OF A-16
00+966.00	00+991.28	25.28	LEFT OF A-16
00+991.28	112+884.99	13.38	LEFT OF A-16 TO MAIN BYPASS
112+884.99	114+602.00	1717.01	MAIN BYPASS
114+602.00	00+990.58	13.77	MAIN BYPASS TO RT OF A-17
00+959.71	00+990.58	30.87	RIGHT OF A-17
00+959.71	00+991.64	31.93	LEFT OF A-17
00+991.64	114+625.19	12.99	LEFT OF A-17 TO MAIN BYPASS
114+625.19	115+964.79	1339.60	MAIN BYPASS
115+964.79	00+981.56	14.90	MAIN BYPASS TO RT OF A-18
00+890.00	00+981.56	91.56	RIGHT OF A-18
00+890.00	00+978.81	88.81	LEFT OF A-18
00+978.81	115+998.91	16.51	LEFT OF A-18 TO MAIN BYPASS
115+998.91	117+998.14	1999.23	MAIN BYPASS
117+998.14	00+983.63	16.30	MAIN BYPASS TO RT OF A-19
00+740.00	00+983.63	243.63	RIGHT OF A-19
00+740.00	00+970.92	230.92	LEFT OF A-19
00+970.92	118+037.54	17.60	LEFT OF A-19 TO MAIN BYPASS
118+037.54	118+776.61	739.07	MAIN BYPASS
118+776.61	00+983.23	17.80	MAIN BYPASS TO RT OF A-20
00+890.00	00+983.23	93.23	RIGHT OF A-20
00+890.00	00+989.93	99.93	LEFT OF A-20
00+989.93	118+809.92	20.94	LEFT OF A-20 TO MAIN BYPASS
118+809.92	119+000.00	190.08	MAIN BYPASS

1.2 RIGHT SIDE, OUTER EDGE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
109+920.00	111+930.97	2010.97	MAIN BYPASS
111+930.97	01+032.00	20.77	MAIN BYPASS TO RT OF A-15
01+032.00	01+160.00	128.00	RIGHT OF A-15
01+014.34	01+160.00	145.66	LEFT OF A-15
01+014.34	111+971.02	12.78	LEFT OF A-15 TO MAIN BYPASS
111+971.02	112+861.92	890.90	MAIN BYPASS
112+861.92	01+018.23	13.32	MAIN BYPASS TO RT OF A-16
01+018.23	01+034.00	15.77	RIGHT OF A-16
01+024.74	01+034.00	9.26	LEFT OF A-16
01+024.74	112+891.33	23.47	LEFT OF A-16 TO MAIN BYPASS
112+891.33	114+603.32	1711.99	MAIN BYPASS
114+603.32	01+017.61	12.94	MAIN BYPASS TO RT OF A-17
01+017.61	01+040.00	22.39	RIGHT OF A-17
01+025.43	01+040.00	14.57	LEFT OF A-17
01+025.43	114+633.06	24.16	LEFT OF A-17 TO MAIN BYPASS
114+633.06	115+961.61	1328.55	MAIN BYPASS
115+961.61	01+021.18	16.53	MAIN BYPASS TO RT OF A-18
01+021.18	01+110.00	88.82	RIGHT OF A-18
01+018.45	01+110.00	91.55	LEFT OF A-18
01+018.45	115+995.72	14.90	LEFT OF A-18 TO MAIN BYPASS
115+995.72	117+983.02	1987.30	MAIN BYPASS
117+983.02	01+028.74	17.41	MAIN BYPASS TO RT OF A-19
01+028.74	01+130.00	101.26	RIGHT OF A-19
01+016.30	01+130.00	113.70	LEFT OF A-19
01+016.30	118+021.66	16.16	LEFT OF A-19 TO MAIN BYPASS
118+021.66	118+776.61	754.95	MAIN BYPASS
118+776.61	01+029.70	36.65	MAIN BYPASS TO RT OF A-20
01+029.70	01+170.00	140.30	RIGHT OF A-20
01+027.74	01+170.00	142.26	LEFT OF A-20
01+027.74	118+818.87	17.80	LEFT OF A-20 TO MAIN BYPASS
118+818.87	119+000.00	181.13	MAIN BYPASS

1.3 LEFT SIDE, INNER EDGE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
110+922.13	111+089.13	167.00	APPROACH TO A-14
111+113.04	111+249.43	136.39	APPROACH TO A-14
111+774.34	111+944.76	170.42	APPROACH TO A-15
111+977.45	112+146.52	169.07	APPROACH TO A-15
115+853.82	115+967.50	113.68	INTERSECTION A-18
115+994.00	116+160.94	166.94	INTERSECTION A-18
117+824.56	117+992.87	168.31	INTERSECTION A-19
118+027.31	118+195.65	168.34	INTERSECTION A-19
00+012.74	00+059.22	46.48	INTERSECTION A-14
00+961.99	00+983.43	21.44	INTERSECTION A-15
01+016.56	01+039.26	22.70	INTERSECTION A-15
00+941.25	00+983.75	42.50	INTERSECTION A-18
01+016.25	01+058.74	42.49	INTERSECTION A-18
00+958.03	00+979.27	21.24	INTERSECTION A-19
01+020.48	01+041.73	21.25	INTERSECTION A-19

1.4 RIGHT SIDE, INNER EDGE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
110+922.13	111+089.13	167.00	APPROACH TO A-14
111+113.04	111+249.43	136.39	APPROACH TO A-14
111+774.34	111+944.76	170.42	APPROACH TO A-15
111+977.45	112+146.52	169.07	APPROACH TO A-15
115+853.82	115+967.50	113.68	INTERSECTION A-18
115+994.00	116+160.94	166.94	INTERSECTION A-18
117+824.56	117+992.87	168.31	INTERSECTION A-19
118+027.31	118+195.65	168.34	INTERSECTION A-19
00+012.74	00+059.22	46.48	INTERSECTION A-14
00+961.99	00+983.43	21.44	INTERSECTION A-15
01+016.56	01+039.26	22.70	INTERSECTION A-15
00+941.25	00+983.75	42.50	INTERSECTION A-18
01+016.25	01+058.74	42.49	INTERSECTION A-18
00+958.03	00+979.27	21.24	INTERSECTION A-19
01+020.48	01+041.73	21.25	INTERSECTION A-19

2.0 CENTERLINE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
109+920.00	110+674.13	754.13	150mm x 3.0m @ 9.0m GAP
110+674.13	110+884.13	210.00	150mm x 3.0m @ 4.50m GAP
111+293.04	111+735.76	442.72	150mm x 3.0m @ 4.50m GAP
112+186.98	112+713.32	526.34	150mm x 3.0m @ 4.50m GAP
112+818.32	112+858.32	40.00	200mm UNBROKEN LINE
112+888.41	112+928.41	40.00	200mm UNBROKEN LINE
113+033.41	113+243.41	210.00	150mm x 3.0m @ 4.50m GAP
113+243.41	114+243.17	999.76	150mm x 3.0m @ 9.0m GAP
114+243.17	114+453.17	210.00	150mm x 3.0m @ 4.50m GAP
114+558.17	114+603.17	45.00	200mm UNBROKEN LINE
114+629.64	114+669.64	40.00	200mm UNBROKEN LINE
114+774.64	114+984.64	210.00	150mm x 3.0m @ 4.50m GAP
114+984.64	115+610.00	625.36	150mm x 3.0m @ 9.0m GAP
115+610.00	115+820.00	210.00	150mm x 3.0m @ 4.50m GAP
116+200.00	116+410.00	210.00	150mm x 3.0m @ 4.50m GAP
116+410.00	117+574.88	1164.88	150mm x 3.0m @ 9.0m GAP
117+574.88	117+784.88	210.00	150mm x 3.0m @ 4.50m GAP
118+235.31	118+643.46	408.15	150mm x 3.0m @ 4.50m GAP
118+738.46	118+778.46	40.00	200mm UNBROKEN LINE
118+817.43	118+857.43	40.00	200mm UNBROKEN LINE
118+962.43	119+000.00	37.57	150mm x 3.0m @ 4.50m GAP
00+099.00	00+120.00	21.00	A-14: 100mm x 3.0m @ 4.50m GAP
00+855.00	00+922.39	67.39	A-15: 100mm x 3.0m @ 4.50m GAP
01+068.00	01+160.00	92.00	A-15: 100mm x 3.0m @ 4.50m GAP
00+966.04	00+987.54	21.50	A-16: 100mm UNBROKEN LINE
01+022.06	01+034.06	12.00	A-16: 100mm UNBROKEN LINE
00+964.20	00+989.20	25.00	A-17: 100mm UNBROKEN LINE
01+020.00	01+040.00	20.00	A-17: 100mm UNBROKEN LINE
00+890.00	00+912.50	22.50	A-18: 100mm x 3.0m @ 4.50m GAP
01+087.50	01+110.00	22.50	A-18: 100mm x 3.0m @ 4.50m GAP
00+740.00	00+906.76	166.76	A-19: 100mm x 3.0m @ 4.50m GAP

2.0 CENTERLINE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
00+081.59	01+130.00	1048.41	A-19: 100mm x 3.0m @ 4.50m GAP
00+890.00	00+955.74	65.74	A-20: 100mm x 3.0m @ 4.50m GAP
00+955.74	00+985.74	30.00	A-20: 100mm UNBROKEN LINE
01+025.50	01+055.50	30.00	A-20: 100mm UNBROKEN LINE
01+055.50	01+170.00	114.50	A-20: 100mm x 3.0m @ 4.50m GAP

3.0 LANE LINE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
111+029.10	111+059.10	30.00	(RS) LANE LINE 150mmx3.0m @ 4.50m GAP
111+059.10	111+089.10	30.00	(RS) LANE LINE 150mm UNBROKEN
00+020.49	00+050.49	30.00	(LS) LANE LINE 100mm UNBROKEN
111+880.72	111+910.72	30.00	(RS) LANE LINE 150mmx3.0m @ 4.50m GAP
111+910.72	111+940.72	30.00	(RS) LANE LINE 150mm UNBROKEN
111+988.41	112+018.41	30.00	(LS) LANE LINE 150mm UNBROKEN
112+018.41	112+041.95	23.54	(LS) LANE LINE 150mmx3.0m @ 4.50m GAP
112+818.32	112+858.32	40.00	(RS) LANE LINE 150mm UNBROKEN
112+888.41	112+928.41	40.00	(LS) LANE LINE 150mm UNBROKEN
114+558.17	114+603.17	45.00	(RS) LANE LINE 150mm UNBROKEN
114+629.64	114+669.64	40.00	(LS) LANE LINE 150mm UNBROKEN
115+910.00	115+934.00	24.00	(RS) LANE LINE 150mmx3.0m @ 4.50m GAP
115+934.00	115+964.00	30.00	(RS) LANE LINE 150mm UNBROKEN
115+994.51	116+024.51	30.00	(LS) LANE LINE 150mm UNBROKEN
116+024.51	116+054.51	30.00	(LS) LANE LINE 150mmx3.0m @ 4.50m GAP
00+952.50	00+982.50	20.00	(RS) LANE LINE 100mm UNBROKEN (A-18)
01+019.66	01+039.66	20.00	(LS) LANE LINE 100mm UNBROKEN (A-18)
117+929.87	117+959.87	30.00	(RS) LANE LINE 150mmx3.0m @ 4.50m GAP
117+959.87	117+989.87	30.00	(RS) LANE LINE 150mm UNBROKEN
118+033.70	118+063.70	30.00	(LS) LANE LINE 150mm UNBROKEN
118+063.70	118+090.34	26.64	(LS) LANE LINE 150mmx3.0m @ 4.50m GAP
00+958.02	00+978.02	20.00	(RS) LANE LINE 100mm UNBROKEN (A-19)
01+021.73	01+041.73	20.00	(LS) LANE LINE 100mm UNBROKEN (A-19)
118+738.46	118+778.46	40.00	(RS) LANE LINE 150mm UNBROKEN
118+817.43	118+857.43	40.00	(LS) LANE LINE 150mm UNBROKEN

4.0 CONTINUITY LINE

STATION FROM	STATION TO	LENGTH (m)	REMARKS
110+984.10	111+029.10	45.00	(RS) 150mm x 1.0m @ 3.0m GAP
111+835.72	111+880.72	45.00	(RS) 150mm x 1.0m @ 3.0m GAP
112+041.95	112+086.95	45.00	(LS) 150mm x 1.0m @ 3.0m GAP
112+773.32	112+818.32	45.00	(RS) 150mm x 1.0m @ 3.0m GAP
112+928.41	112+973.41	45.00	(LS) 150mm x 1.0m @ 3.0m GAP
114+513.17	114+558.17	45.00	(RS) 150mm x 1.0m @ 3.0m GAP
114+669.64	114+714.64	45.00	(LS) 150mm x 1.0m @ 3.0m GAP
115+865.00	115+910.00	45.00	(RS) 150mm x 1.0m @ 3.0m GAP
116+054.51	116+100.00	45.49	(LS) 150mm x 1.0m @ 3.0m GAP
117+884.87	117+929.87	45.00	(RS) 150mm x 1.0m @ 3.0m GAP
118+090.34	118+135.34	45.00	(LS) 150mm x 1.0m @ 3.0m GAP
118+693.46	118+738.46	45.00	(RS) 150mm x 1.0m @ 3.0m GAP
118+857.43	118+902.43	45.00	(LS) 150mm x 1.0m @ 3.0m GAP

5.0 CHEVRON

STATION FROM	STATION TO	LENGTH (m)	REMARKS
110+884.13	110+922.13	38.00	CENTER OF MAIN BYPASS
111+249.43	111+293.04	43.61	CENTER OF MAIN BYPASS
00+059.22	00+099.00	39.78	CENTER OF A-14
111+735.76	111+774.34	38.58	CENTER OF MAIN BYPASS
112+145.52	112+186.98	40.46	CENTER OF MAIN BYPASS
00+922.39	00+961.99	39.60	CENTER OF A-15
01+039.26	01+068.00	28.74	CENTER OF A-15
112+713.32	112+818.32	105.00	CENTER OF MAIN BYPASS
112+928.41	113+033.41	105.00	CENTER OF MAIN BYPASS
114+453.17	114+558.17	105.00	CENTER OF MAIN BYPASS
114+669.64	114+774.64	105.00	CENTER OF MAIN BYPASS
115+820.00	115+853.82	33.82	CENTER OF MAIN BYPASS
116+160.94	116+200.00	39.06	CENTER OF MAIN BYPASS
00+912.50	00+941.25	28.75	CENTER OF A-18

5.0 CHEVRON

STATION FROM	STATION TO	LENGTH (m)	REMARKS
01+058.74	01+087.50	28.76	CENTER OF A-18
117+784.88	117+824.56	39.68	CENTER OF MAIN BYPASS
118+195.65	118+235.31	39.66	CENTER OF MAIN BYPASS
00+906.76	00+958.03	51.27	CENTER OF A-19
01+041.73	01+081.59	39.86	CENTER OF A-19
118+643.46	118+738.46	95.00	CENTER OF MAIN BYPASS
118+857.43	118+962.43	105.00	CENTER OF MAIN BYPASS

6.0 BARRIER LINES

STATION FROM	STATION TO	LENGTH (m)	REMARKS
110+674.13	110+884.13	210.00	RIGHT SIDE
111+293.04	111+503.04	210.00	LEFT SIDE
111+503.04	111+735.76	232.72	RIGHT SIDE
112+186.98	112+396.98	210.00	LEFT SIDE
112+503.32	112+713.32	210.00	RIGHT SIDE
113+033.41	113+243.41	210.00	LEFT SIDE
114+243.17	114+453.17	210.00	RIGHT SIDE
114+774.64	114+984.64	210.00	LEFT SIDE
115+610.00	115+820.00	210.00	RIGHT SIDE
116+200.00	116+410.00	210.00	LEFT SIDE
117+574.88	117+784.88	210.00	RIGHT SIDE
118+235.31	118+445.31	210.00	LEFT SIDE
118+433.46	118+643.46	210.00	RIGHT SIDE
118+962.43	119+000.00	37.57	LEFT SIDE

7.0 ARROWS

ARROW TYPE	NUMBER OF ARROWS	LOCATION
A	3	APPROACHING INTERSECTION A-14
C	1	APPROACHING INTERSECTION A-14
A	4	APPROACHING INTERSECTION A-15
B	4	APPROACHING INTERSECTION A-15
A	2	APPROACHING INTERSECTION A-16
C	2	APPROACHING INTERSECTION A-16
A	2	APPROACHING INTERSECTION A-17
C	2	APPROACHING INTERSECTION A-17
A	4	APPROACHING INTERSECTION A-18
B	4	APPROACHING INTERSECTION A-18
A	4	APPROACHING INTERSECTION A-19
B	4	APPROACHING INTERSECTION A-19
A	2	APPROACHING INTERSECTION A-20
C	2	APPROACHING INTERSECTION A-20

NOTE:

A – LEFT/RIGHT ARROW

B – COMBINATION OF STRAIGHT AND LEFT ARROWS OR STRAIGHT AND RIGHT ARROWS

C – STRAIGHT ARROW

8.0 PEDESTRIAN AND STOP LINES

LOCATION		AREA (m^2) PEDESTRIAN	AREA (m^2) STOP LINE	REMARKS
INT. A-14	MAIN BYPASS	13.16	7.94	SIGNALIZED
	A-14	10.94	2.84	
INT. A-15	MAIN BYPASS	9.86	7.61	SIGNALIZED
	A-15	12.32	4.28	
INT. A-16	MAIN BYPASS	20.98	5.85	UNSIGNALIZED
	A-16	29.62	1.90	
INT. A-17	MAIN BYPASS	26.04	5.85	UNSIGNALIZED
	A-17	38.22	2.13	
INT. A-18	MAIN BYPASS	11.20	8.03	SIGNALIZED
	A-18	20.81	4.20	
INT. A-19	MAIN BYPASS	12.97	8.56	SIGNALIZED
	A-19	22.75	4.20	
INT. A-20	MAIN BYPASS	27.20	5.85	UNSIGNALIZED
	A-20	48.38	2.03	

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/16/02	S. LUNA
CHECKED	10/16/02	S. JOSE
SUBMITTED	10/18/02	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	JOSEFINA M. ALAGAR	GILBERTO S. REYES	MANUEL M. BONOAN	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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : FULL SIZE A1

SHEET CONTENTS : SCHEDULE OF PAVEMENT MARKINGS

SHEET NO. : RG-05

SCHEDULE OF ROAD RIGHT-OF-WAY MARKER

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
BYPASS - LEFT SIDE				
211L	109+940	−18.000	1,708,063.630	496,781.257
212L	109+980	−18.000	1,708,100.371	496,797.585
213L	110+000	−19.000	1,708,119.087	496,804.997
214L	110+040	−19.000	1,708,155.553	496,821.956
215L	110+060	−20.000	1,708,174.145	496,829.690
216L	110+080	−20.000	1,708,192.260	496,838.432
217L	110+100	−19.000	1,708,209.883	496,848.175
218L	110+120	−18.000	1,708,227.445	496,858.015
219L	110+220	−18.000	1,708,316.681	496,904.267
220L	110+320	−18.000	1,708,404.560	496,953.049
221L	110+420	−18.000	1,708,491.010	497,004.322
222L	110+440	−19.000	1,708,508.649	497,014.022
223L	110+500	−19.000	1,708,559.635	497,046.265
224L	110+520	−20.000	1,708,577.052	497,056.369
225L	110+597.085	−20.189	1,708,641.611	497,099.292
226L	110+614.333	−18.886	1,708,655.162	497,110.197
227L	110+660	−21.000	1,708,693.976	497,134.839
228L	110+679.868	−23.215	1,708,711.525	497,144.671
229L	110+699.141	−23.632	1,708,727.485	497,155.711
230L	110+740	−21.000	1,708,759.023	497,182.227
231L	110+760	−20.000	1,708,774.511	497,195.104
232L	110+780	−19.000	1,708,789.921	497,208.065
233L	110+800	−18.000	1,708,805.253	497,221.110
234L	110+820	−17.000	1,708,820.505	497,234.240
235L	110+900	−17.000	1,708,883.247	497,284.494
236L	110+920	−18.000	1,708,899.390	497,296.511
237L	110+940	−19.000	1,708,915.469	497,308.624
238L	110+960	−21.000	1,708,932.130	497,320.069
239L	110+980	−22.000	1,708,948.082	497,332.376
240L	111+040	−22.000	1,708,993.545	497,372.105
241L	111+060	−23.000	1,709,009.216	497,384.777
242L	111+080	−26.000	1,709,026.165	497,396.062
244L	111+120	−29.000	1,709,057.861	497,421.154
245L	111+140	−29.000	1,709,072.582	497,434.936
246L	111+160	−28.000	1,709,086.534	497,449.526
247L	111+180	−27.000	1,709,100.399	497,464.192
248L	111+240	−27.000	1,709,143.580	497,506.512
249L	111+300	−27.000	1,709,186.030	497,549.567
250L	111+320	−29.000	1,709,201.459	497,562.695
251L	111+360	−29.000	1,709,229.121	497,591.796
252L	111+380	−28.000	1,709,242.157	497,606.996
253L	111+600	−28.000	1,709,393.542	497,766.629
254L	111+800	−28.000	1,709,531.164	497,911.750
255L	111+820	−29.000	1,709,545.652	497,925.574
256L	111+860	−29.000	1,709,573.177	497,954.598
257L	111+880	−28.000	1,709,586.213	497,969.798
258L	111+895	−27.000	1,709,595.809	497,981.370
259L	111+948	−27.000	1,709,632.279	498,019.827
260L	112+001	−27.932	1,709,669.425	498,057.643
261L	112+160	−28.000	1,709,778.823	498,172.606
262L	112+183.875	−27.036	1,709,794.677	498,190.233
263L	112+260	−27.000	1,709,848.172	498,243.561
264L	112+280	−28.000	1,709,863.118	498,256.651
265L	112+360	−28.000	1,709,920.894	498,311.054
266L	112+420	−28.000	1,709,965.033	498,350.982
267L	112+440	−29.000	1,709,980.558	498,363.371
268L	112+500	−29.000	1,710,025.585	498,402.269
269L	112+560	−29.000	1,710,071.273	498,440.389
270L	112+580	−28.000	1,710,086.017	498,453.698
271L	112+600	−28.000	1,710,101.466	498,466.145
272L	112+660	−28.000	1,710,148.238	498,502.955
273L	112+720	−28.000	1,710,195.634	498,538.958
274L	112+740	−29.000	1,710,212.162	498,549.973
275L	112+780	−29.000	1,710,244.224	498,573.331
276L	112+859.496	−28.510	1,710,308.448	498,619.063
277L	112+885.646	−29.452	1,710,330.419	498,632.873
278L	112+940	−27.000	1,710,373.984	498,664.731
279L	113+060	−27.000	1,710,474.798	498,728.086
280L	113+080	−28.000	1,710,492.322	498,737.448
281L	113+100	−29.000	1,710,509.894	498,746.708
282L	113+120	−31.000	1,710,528.016	498,755.000
283L	113+140	−33.000	1,710,546.175	498,763.182
284L	113+181.150	−33.000	1,710,581.647	498,783.265
285L	113+202.020	−33.999	1,710,600.208	498,792.415
286L	113+216.971	−33.999	1,710,613.192	498,799.529
287L	113+240	−32.000	1,710,632.307	498,812.140
288L	113+320	−32.000	1,710,702.577	498,848.818
289L	113+380	−32.000	1,710,755.820	498,875.267
290L	113+440.571	−31.112	1,710,809.647	498,901.844
291L	113+454.216	−30.946	1,710,821.852	498,907.672
292L	113+520	−31.000	1,710,881.359	498,934.321
293L	113+540	−32.000	1,710,899.937	498,941.298
294L	113+560	−32.000	1,710,918.160	498,949.086
295L	113+580	−31.000	1,710,936.041	498,957.693
296L	113+600	−30.000	1,710,953.977	498,966.200
297L	113+620	−29.000	1,710,971.966	498,974.607
298L	113+640	−28.000	1,710,990.008	498,982.913
299L	113+720	−28.000	1,711,064.088	499,011.371
300L	113+780	−28.000	1,711,120.085	499,031.599
301L	113+800	−27.000	1,711,138.473	499,039.074
302L	113+820	−28.000	1,711,157.571	499,044.551
303L	113+880	−28.000	1,711,214.103	499,063.172
304L	113+900	−27.000	1,711,232.717	499,070.117
305L	113+980	−27.000	1,711,308.727	499,093.006
306L	114+000	−30.000	1,711,328.625	499,095.569
307L	114+020	−32.000	1,711,348.255	499,098.977
308L	114+040	−33.000	1,711,367.632	499,103.236
309L	114+060	−34.000	1,711,387.027	499,107.383
310L	114+095.344	−34.004	1,711,420.913	499,116.145
311L	114+105.348	−33.996	1,711,430.518	499,118.571
312L	114+120	−34.000	1,711,444.602	499,122.061
313L	114+140	−33.000	1,711,463.615	499,127.707
314L	114+160	−32.000	1,711,482.666	499,133.245
315L	114+180	−30.000	1,711,501.532	499,139.651
316L	114+200	−29.000	1,711,520.661	499,144.975
317L	114+220	−28.000	1,711,539.827	499,150.191
318L	114+320	−28.000	1,711,637.081	499,169.723
319L	114+400	−28.000	1,711,715.262	499,183.344
320L	114+420	−29.000	1,711,735.009	499,185.481
321L	114+520	−29.000	1,711,833.192	499,199.424
322L	114+600	−29.000	1,711,912.000	499,208.554
323L	114+630.081	−28.100	1,711,941.598	499,212.417
324L	114+700	−28.000	1,712,010.695	499,218.428
325L	114+780	−28.000	1,712,089.891	499,223.497
326L	114+800	−27.000	1,712,109.560	499,225.480
327L	114+900	−27.000	1,712,208.833	499,228.703
328L	114+980	−27.000	1,712,288.783	499,230.046
329L	115+040	−27.000	1,712,348.774	499,231.052
330L	115+060	−28.000	1,712,368.788	499,230.387
331L	115+100	−28.000	1,712,408.783	499,231.058
332L	115+120	−27.000	1,712,428.763	499,232.393
333L	115+153	−27.000	1,712,461.758	499,232.945
334L	115+180	−28.000	1,712,488.771	499,232.398
335L	115+200	−28.000	1,712,508.768	499,232.734
336L	115+220	−29.000	1,712,528.782	499,232.069
337L	115+240	−31.000	1,712,548.813	499,230.404
338L	115+260	−33.000	1,712,568.844	499,228.740
339L	115+280	−34.000	1,712,588.858	499,228.075
340L	115+337.526	−34.000	1,712,646.376	499,229.039
341L	115+344.386	−34.000	1,712,653.235	499,229.154
342L	115+360	−34.000	1,712,668.847	499,229.416
343L	115+380	−33.000	1,712,688.827	499,230.751
344L	115+400	−31.000	1,712,708.791	499,233.086
345L	115+420	−30.000	1,712,728.771	499,234.421
346L	115+440	−29.000	1,712,748.752	499,235.756
347L	115+460	−29.000	1,712,768.749	499,236.091
348L	115+480	−28.000	1,712,788.729	499,237.426
349L	115+600	−28.000	1,712,908.712	499,239.437
350L	115+620	−29.000	1,712,928.726	499,238.772
351L	115+640	−30.000	1,712,948.740	499,238.108
352L	115+680	−30.000	1,712,988.735	499,238.778
353L	115+700	−31.000	1,713,008.749	499,238.113
354L	115+720	−32.000	1,713,028.762	499,237.449
355L	115+740	−34.000	1,713,048.793	499,235.784
356L	115+791.254	−33.812	1,713,100.037	499,236.831
357L	115+810.914	−33.352	1,713,119.686	499,237.621
358L	115+840	−32.000	1,713,148.746	499,239.480
359L	115+860	−31.000	1,713,168.726	499,240.795
360L	115+880	−30.000	1,713,188.706	499,242.130
361L	115+900	−30.000	1,713,208.704	499,242.465
362L	115+920	−31.000	1,713,228.718	499,241.800
363L	115+962.690	−31.000	1,713,271.402	499,242.516
364L	116+002	−28.000	1,713,310.656	499,246.174
365L	116+120	−28.000	1,713,428.639	499,248.152
366L	116+280	−28.000	1,713,588.617	499,250.833
367L	116+300	−29.000	1,713,608.631	499,250.168
368L	116+320	−30.000	1,713,628.645	499,249.504
369L	116+380	−30.000	1,713,688.636	499,250.509
370L	116+400	−31.000	1,713,708.650	499,249.845
371L	116+420	−33.000	1,713,728.681	499,248.180
372L	116+478.325	−35.000	1,713,787.031	499,247.158
373L	116+478.456	−19.162	1,713,786.896	499,262.995
374L	116+495.193	−36.000	1,713,803.914	499,246.441
375L	116+720	−34.000	1,714,028.656	499,252.208
376L	116+740	−33.000	1,714,048.636	499,253.543
377L	116+780	−33.000	1,714,088.630	499,254.213
378L	116+800	−32.000	1,714,108.611	499,255.548
379L	116+830.123	−32.038	1,714,138.608	499,255.994
380L	116+846.479	−32.697	1,714,154.757	499,255.491
381L	116+960	−33.000	1,714,266.757	499,253.358
382L	116+980	−31.000	1,714,286.568	499,254.507
383L	117+000	−30.000	1,714,306.350	499,254.497
384L	117+020	−29.000	1,714,326.138	499,254.329
385L	117+040	−28.000	1,714,345.933	499,254.002
386L	117+080	−28.000	1,714,385.361	499,250.879
387L	117+100	−27.000	1,714,405.150	499,250.077
388L	117+160	−27.000	1,714,464.161	499,243.736
389L	117+220	−27.000	1,714,523.002	499,235.981
390L	117+240	−28.000	1,714,542.422	499,232.093
391L	117+340	−28.000	1,714,639.853	499,215.264
392L	117+420	−28.000	1,714,717.264	499,199.003
393L	117+440	−29.000	1,714,736.304	499,193.578
394L	117+520	−29.000	1,714,812.972	499,174.243
395L	117+580	−29.000	1,714,870.045	499,158.137
396L	117+600	−28.000	1,714,889.273	499,153.421
397L	117+700	−28.000	1,714,983.280	499,122.785
398L	117+820	−28.000	1,715,094.359	499,081.095
399L	117+840	−29.000	1,715,112.291	499,072.706
400L	117+920	−29.000	1,715,184.899	499,041.403
401L	117+940	−28.000	1,715,203.309	499,034.124
402L	117+960	−27.000	1,715,221.668	499,026.695
403L	117+967.869	−27.050	1,715,228.687	499,023.330
404L	117+989.047	−27.063	1,715,247.578	499,014.273
405L	118+044.025	−20.013	1,715,299.476	498,996.327
406L	118+060	−20.000	1,715,313.568	498,989.079
407L	118+080	−19.000	1,715,331.606	498,980.748
408L	118+120	−19.000	1,715,366.536	498,961.889
409L	118+140	−18.000	1,715,384.376	498,953.124
410L	118+160	−17.000	1,715,402.152	498,944.211
411L	118+200	−17.000	1,715,436.489	498,924.229
412L	118+220	−18.000	1,715,453.019	498,913.177
413L	118+300	−18.000	1,715,520.349	498,871.054
414L	118+340	−18.000	1,715,553.500	498,849.190
415L	118+440	−18.000	1,715,634.810	498,792.234
416L	118+460	−19.000	1,715,650.349	498,779.624
417L	118+480	−19.000	1,715,666.489	498,767.813
418L	118+500	−20.000	1,715,682.038	498,755.195
419L	118+520	−21.000	1,715,697.588	498,742.577
420L	118+540	−21.000	1,715,713.728	498,730.766
421L	118+560	−24.000	1,715,728.096	498,716.533
422L	118+595.028	−25.000	1,715,755.773	498,695.040
423L	118+632.888	−27.000	1,715,785.145	498,671.068
424L	118+660	−22.000	1,715,809.977	498,659.092
425L	118+700	−22.000	1,715,842.256	498,635.469
426L	118+720	−21.000	1,715,858.987	498,624.465
427L	118+768	−19.000	1,715,898.904	498,597.732
428L	118+804	−19.000	1,715,927.956	498,576.472
429L	118+860	−19.000	1,715,973.147	498,543.401
430L	118+880	−20.000	1,715,988.697	498,530.783
431L	118+900	−20.000	1,716,004.837	498,518.972
432L	118+920	−19.000	1,716,021.567	498,507.968
433L	118+940	−18.000	1,716,038.298	498,496.964
434L	118+980	−18.000	1,716,070.577	498,473.341
435L	119+000	−19.000	1,716,086.127	498,460.723
BYPASS - RIGHT SIDE				
179R	109+940	18.000	1,708,049.199	496,814.238
180R	110+020	18.000	1,708,121.741	496,846.973
181R	110+080	18.000	1,708,175.647	496,872.608
182R	110+100	17.000	1,708,193.959	496,880.461
183R	110+120	17.000	1,708,211.784	496,889.316
184R	110+140	16.000	1,708,230.011	496,897.380
185R	110+240	16.000	1,708,318.122	496,943.689
186R	110+320	16.000	1,708,387.636	496,982.537
187R	110+380	16.000	1,708,439.179	497,012.710
188R	110+400	17.000	1,708,455.726	497,023.819
189R	110+460	17.000	1,708,506.551	497,055.154
190R	110+520	17.000	1,708,556.832	497,087.354
191R	110+540	18.000	1,708,572.917	497,099.113
192R	110+588.042	18.082	1,708,612.565	497,125.802
193R	110+604.901	18.169	1,708,626.358	497,135.345
194R	110+640	20.000	1,708,653.975	497,156.773
195R	110+660	21.000	1,708,669.634	497,169.066
196R	110+680.134	23.342	1,708,684.542	497,182.612
197R	110+698.856	23.754	1,708,699.364	497,193.851
198R	110+740	21.000	1,708,733.905	497,215.889
199R	110+760	20.000	1,708,750.407	497,227.025
200R	110+780	19.000	1,708,766.850	497,238.259
201R	110+800	18.000	1,708,783.232	497,249.590
202R	110+820	17.000	1,708,799.554	497,261.018
203R	110+840	16.000	1,708,815.815	497,272.543
204R	110+900	16.000	1,708,862.324	497,310.013
205R	110+960	16.000	1,708,908.183	497,348.275
206R	110+980	17.000	1,708,922.672	497,361.962
207R	111+000	17.000	1,708,937.733	497,374.972
208R	111+020	18.000	1,708,952.060	497,388.820
209R	111+040	19.000	1,708,966.303	497,402.745
210R	111+060	22.000	1,708,979.124	497,418.235
211R	111+080	25.000	1,708,991.845	497,433.786
212R	111+100	26.000	1,709,005.817	497,447.927
213R	111+150.075	26.212	1,709,042.003	497,481.999
214R	111+174.464	26.473	1,709,059.339	497,498.893
215R	111+320	27.000	1,709,161.025	497,601.439
216R	111+420	27.000	1,709,229.773	497,673.866
217R	111+440	26.000	1,709,244.261	497,687.890
218R	111+720	26.000	1,709,436.933	497,890.860
219R	111+740	27.000	1,709,449.969	497,906.060
220R	111+926	27.000	1,709,577.958	498,041.022
221R	111+979.550	28.000	1,709,614.081	498,080.566
222R	112+120	28.000	1,709,710.726	498,182.478

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/4/02	S. LUNA
CHECKED	10/14/02	S. JOSE
SUBMITTED	10/15/02	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. BONOAN	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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE :
NOT TO SCALE
FULL SIZE A1

SHEET CONTENTS :
SCHEDULE OF ROAD RIGHT-OF-WAY MARKERS (1 OF 3)

SHEET NO. :
RG-06

SCHEDULE OF ROAD RIGHT-OF-WAY MARKER

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
223R	112+200	28.000	1,709,766.836	498,240.371
224R	112+220	27.000	1,709,781.777	498,253.938
225R	112+300	27.000	1,709,839.512	498,310.201
226R	112+320	26.000	1,709,854.831	498,323.331
227R	112+380	26.000	1,709,899.191	498,364.390
228R	112+400	27.000	1,709,913.464	498,378.650
229R	112+480	27.000	1,709,974.015	498,431.871
230R	112+540	27.000	1,710,020.218	498,470.870
231R	112+560	28.000	1,710,035.132	498,484.467
232R	112+640	28.000	1,710,098.070	498,534.879
233R	112+720	28.000	1,710,162.143	498,583.840
234R	112+740	27.000	1,710,178.928	498,595.045
235R	112+860.859	27.706	1,710,277.617	498,666.085
236R	112+892.061	27.009	1,710,304.193	498,683.283
237R	112+940	26.000	1,710,345.018	498,709.116
238R	113+020	26.000	1,710,413.009	498,752.387
239R	113+040	27.000	1,710,429.638	498,763.814
240R	113+060	27.000	1,710,446.854	498,774.293
241R	113+080	28.000	1,710,463.617	498,785.532
242R	113+100	29.000	1,710,480.448	498,796.678
243R	113+120	31.000	1,710,496.848	498,808.594
244R	113+140	32.000	1,710,513.819	498,819.556
245R	113+160	33.000	1,710,530.859	498,830.423
246R	113+167.173	34.046	1,710,536.649	498,834.896
247R	113+184.010	35.000	1,710,551.014	498,844.042
248R	113+220	36.000	1,710,582.378	498,862.454
249R	113+240	33.000	1,710,601.574	498,869.415
250R	113+300	33.000	1,710,655.185	498,897.593
251R	113+320	32.000	1,710,673.614	498,905.889
252R	113+340	31.000	1,710,692.085	498,914.077
253R	113+360	31.000	1,710,710.155	498,923.054
254R	113+380	30.000	1,710,728.714	498,931.028
255R	113+471.018	29.908	1,710,811.824	498,970.000
256R	113+484.295	29.953	1,710,824.007	498,975.558
257R	113+560	30.000	1,710,893.955	499,006.165
258R	113+580	29.000	1,710,912.933	499,013.065
259R	113+600	28.000	1,710,931.946	499,019.853
260R	113+620	27.000	1,710,950.991	499,026.530
261R	113+700	27.000	1,711,026.078	499,055.869
262R	113+760	27.000	1,711,082.823	499,076.743
263R	113+780	26.000	1,711,102.148	499,082.540
264R	113+860	26.000	1,711,178.476	499,108.410
265R	113+940	26.000	1,711,255.375	499,132.528
266R	113+960	27.000	1,711,274.401	499,139.241
267R	113+980	27.000	1,711,293.749	499,144.887
268R	114+000	29.000	1,711,312.584	499,152.346
269R	114+020	31.000	1,711,331.473	499,159.701
270R	114+040	32.000	1,711,350.676	499,165.986
271R	114+060	34.000	1,711,369.664	499,173.129
272R	114+077.718	34.001	1,711,386.972	499,177.653
273R	114+088.713	34.999	1,711,397.478	499,181.385
274R	114+120	32.000	1,711,428.845	499,186.153
275R	114+140	31.000	1,711,448.692	499,189.943
276R	114+160	30.000	1,711,468.554	499,193.618

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
277R	114+180	29.000	1,711,488.431	499,197.178
278R	114+200	28.000	1,711,508.322	499,200.623
279R	114+220	27.000	1,711,528.228	499,203.954
280R	114+240	26.000	1,711,548.146	499,207.169
281R	114+360	26.000	1,711,666.865	499,229.955
282R	114+380	27.000	1,711,686.558	499,234.343
283R	114+480	27.000	1,711,786.157	499,249.649
284R	114+580	27.000	1,711,886.152	499,262.104
285R	114+660	27.000	1,711,966.379	499,270.008
286R	114+680	26.000	1,711,986.543	499,270.701
287R	114+740	26.000	1,712,046.829	499,275.078
288R	114+760	25.000	1,712,066.999	499,275.309
289R	114+820	25.000	1,712,127.352	499,278.307
290R	114+880	25.000	1,712,187.748	499,280.270
291R	114+900	26.000	1,712,207.868	499,281.694
292R	114+920	26.000	1,712,227.903	499,282.033
293R	114+940	27.000	1,712,247.883	499,283.368
294R	115+040	27.000	1,712,347.869	499,285.044
295R	115+060	28.000	1,712,367.850	499,286.379
296R	115+080	29.000	1,712,387.830	499,287.714
297R	115+100	29.000	1,712,407.827	499,288.050
298R	115+120	27.000	1,712,427.858	499,286.385
299R	115+153	27.000	1,712,460.853	499,286.938
300R	115+200	28.000	1,712,507.830	499,288.726
301R	115+220	28.000	1,712,527.827	499,289.061
302R	115+240	31.000	1,712,547.774	499,292.396
303R	115+260	32.000	1,712,567.754	499,293.731
304R	115+280	35.000	1,712,587.701	499,297.065
305R	115+304.526	35.000	1,712,612.224	499,297.476
306R	115+315.386	34.717	1,712,623.087	499,297.375
307R	115+360	34.000	1,712,667.707	499,297.408
308R	115+380	32.000	1,712,687.738	499,295.742
309R	115+400	31.000	1,712,707.752	499,295.077
310R	115+420	30.000	1,712,727.766	499,294.412
311R	115+440	29.000	1,712,747.779	499,293.748
312R	115+460	28.000	1,712,767.793	499,293.083
313R	115+660	28.000	1,712,967.765	499,296.435
314R	115+680	29.000	1,712,987.746	499,297.770
315R	115+700	29.000	1,713,007.743	499,298.105
316R	115+720	30.000	1,713,027.723	499,299.440
317R	115+740	32.000	1,713,047.687	499,301.775
318R	115+760	33.000	1,713,067.668	499,303.110
319R	115+801.254	33.000	1,713,108.916	499,303.801
320R	115+820.914	33.000	1,713,128.573	499,304.131
321R	115+840	33.000	1,713,147.656	499,304.451
322R	115+860	31.000	1,713,167.687	499,302.786
323R	115+880	30.000	1,713,187.701	499,302.121
324R	115+920	30.000	1,713,227.695	499,302.792
325R	115+940	29.000	1,713,247.709	499,302.127
326R	115+954	28.300	1,713,261.719	499,301.662
327R	116+000	27.000	1,713,307.734	499,301.133
328R	116+160	27.000	1,713,467.712	499,303.814
329R	116+180	26.000	1,713,487.726	499,303.150
330R	116+260	26.000	1,713,567.715	499,304.490

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
331R	116+280	27.000	1,713,587.695	499,305.825
332R	116+320	27.000	1,713,627.689	499,306.496
333R	116+340	28.000	1,713,647.670	499,307.831
334R	116+360	29.000	1,713,667.650	499,309.166
335R	116+380	30.000	1,713,687.631	499,310.501
336R	116+400	32.000	1,713,707.594	499,312.836
337R	116+420	33.000	1,713,727.575	499,314.171
338R	116+440	35.000	1,713,747.539	499,316.506
339R	116+459.006	18.672	1,713,766.816	499,300.499
340R	116+458.333	36.000	1,713,765.852	499,317.813
341R	116+500	34.000	1,713,807.547	499,316.511
342R	116+520	33.000	1,713,827.561	499,315.847
343R	116+560	33.000	1,713,867.555	499,316.517
344R	116+580	32.000	1,713,887.569	499,315.852
345R	116+700	32.000	1,714,007.552	499,317.863
346R	116+720	31.000	1,714,027.566	499,317.199
347R	116+797.115	31.000	1,714,104.670	499,318.491
348R	116+815.086	29.921	1,714,122.657	499,317.714
349R	116+860	30.000	1,714,168.041	499,318.237
350R	116+880	31.000	1,714,188.288	499,319.176
351R	116+900	31.000	1,714,208.535	499,318.952
352R	116+920	32.000	1,714,228.802	499,319.566
353R	116+940	32.000	1,714,249.050	499,319.018
354R	116+960	31.000	1,714,269.255	499,317.309
355R	116+980	30.000	1,714,289.437	499,315.439
356R	117+000	29.000	1,714,309.596	499,313.408
357R	117+020	28.000	1,714,329.729	499,311.216
358R	117+040	27.000	1,714,349.837	499,308.864
359R	117+140	27.000	1,714,450.492	499,299.674
360R	117+240	27.000	1,714,550.698	499,286.467
361R	117+340	27.000	1,714,650.297	499,269.263
362R	117+440	27.000	1,714,749.127	499,248.090
363R	117+540	27.000	1,714,847.032	499,222.982
364R	117+640	27.000	1,714,943.855	499,193.979
365R	117+740	27.000	1,715,039.440	499,161.127
366R	117+860	27.000	1,715,152.294	499,116.699
367R	117+880	28.000	1,715,171.286	499,109.588
368R	117+973.172	28.248	1,715,257.195	499,071.009
369R	118+020	28.000	1,715,299.651	499,050.032
370R	118+040	23.000	1,715,315.439	499,036.471
371R	118+060	22.000	1,715,332.928	499,026.351
372R	118+080	22.000	1,715,350.795	499,016.980
373R	118+100	21.000	1,715,368.112	499,006.586
374R	118+120	21.000	1,715,385.820	498,996.934
375R	118+140	20.000	1,715,402.962	498,986.268
376R	118+160	19.000	1,715,420.010	498,975.470
377R	118+180	18.000	1,715,436.965	498,964.539
378R	118+200	17.000	1,715,453.825	498,953.478
379R	118+280	17.000	1,715,522.444	498,911.308
380R	118+360	17.000	1,715,589.678	498,866.965
381R	118+380	18.000	1,715,606.833	498,856.366
382R	118+440	18.000	1,715,656.049	498,821.301
383R	118+460	19.000	1,715,672.790	498,810.290
384R	118+480	19.000	1,715,688.930	498,798.479

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
385R	118+500	20.000	1,715,705.661	498,787.475
386R	118+520	21.000	1,715,722.391	498,776.471
387R	118+540	22.000	1,715,739.122	498,765.466
388R	118+560	23.000	1,715,755.852	498,754.462
389R	118+592.028	25.000	1,715,782.880	498,737.162
390R	118+632.888	26.000	1,715,816.444	498,713.839
391R	118+680	23.000	1,715,852.692	498,683.595
392R	118+700	22.000	1,715,868.241	498,670.977
393R	118+720	21.000	1,715,883.790	498,658.359
394R	118+740	21.000	1,715,899.930	498,646.548
395R	118+760	19.000	1,715,914.889	498,633.123
396R	118+780	19.000	1,715,931.029	498,621.312
397R	118+820	17.000	1,715,962.128	498,596.075
398R	118+860	17.000	1,715,994.408	498,572.453
399R	118+900	17.000	1,716,026.687	498,548.831
400R	118+920	18.000	1,716,043.418	498,537.827
401R	119+000	18.000	1,716,107.977	498,490.582

INTERSECTION A-13

A13-1L	0+890	−5.000	1,708,680.02	497,020.84
A13-2L	0+920	−4.946	1,708,669.25	497,048.69
A13-3L	0+960	−8.000	1,708,662.40	497,087.56
A13-4L	1+040	−6.250	1,708,619.88	497,151.92
A13-5L	1+080	−3.381	1,708,610.39	497,191.49
A13-6L	1+110	−3.250	1,708,600.56	497,220.00
A13-1R	0+890	3.250	1,708,672.32	497,017.86
A13-2R	0+940	5.199	1,708,654.07	497,065.09
A13-3R	0+960	6.750	1,708,648.03	497,084.21
A13-4R	1+040	7.000	1,708,606.74	497,150.25
A13-5R	1+080	4.878	1,708,602.47	497,189.16
A13-6R	1+110	5.000	1,708,592.76	497,217.31

INTERSECTION A-14

A14-1L	0+040	−12.500	1,709,039.407	497,390.055
A14-2L	0+060	−12.500	1,709,052.202	497,374.684
A14-3L	0+080	−10.000	1,709,066.918	497,360.912
A14-4L	0+400	−10.000	1,709,271.641	497,114.967
A14-5L	0+700	−10.000	1,709,464.622	496,884.952
A14-6L	1+000	−10.000	1,709,662.393	496,659.371
A14-7L	1+300	−10.000	1,709,860.164	496,433.790
A14-8L	1+600	−10.000	1,710,057.935	496,208.210
A14-9L	1+667.857	−10.000	1,710,102.668	496,157.185
A14-10L	1+700	−10.000	1,710,125.359	496,133.311
A14-11L	1+740	−10.000	1,710,156.153	496,106.267
A14-12L	1+788.804	−10.000	1,710,197.140	496,077.643
A14-13L	1+870.959	−10.000	1,710,267.239	496,034.798
A14-14L	1+900	−10.000	1,710,291.235	496,019.321
A14-15L	1+920	−10.000	1,710,307.312	496,007.996
A14-16L	1+944.658	−10.000	1,710,326.600	495,993.305
A14-17L	2+100	−10.000	1,710,448.220	495,896.663
A14-18L	2+293.021	−10.000	1,710,599.339	495,776.579
A14-19L	2+320	−11.000	1,710,624.377	495,760.534
A14-20L	2+340	−11.120	1,710,645.515	495,753.831
A14-21L	2+360	−11.000	1,710,667.587	495,751.699
A14-22L	2+380	−12.000	1,710,689.516	495,752.794
A14-23L	2+386.163	−19.256	1,710,696.819	495,746.687

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
A14-1R	0+040	12.500	1,709,058.621	497,406.049
A14-2R	0+060	12.500	1,709,071.416	497,390.678
A14-3R	0+080	10.000	1,709,082.290	497,373.707
A14-4R	0+400	10.000	1,709,287.012	497,127.762
A14-5R	0+700	10.000	1,709,479.661	496,898.137
A14-6R	1+000	10.000	1,709,677.432	496,672.556
A14-7R	1+300	10.000	1,709,875.202	496,446.975
A14-8R	1+600	10.000	1,710,072.973	496,221.394
A14-9R	1+667.857	10.000	1,710,117.707	496,170.370
A14-10R	1+700	10.000	1,710,139.291	496,147.660
A14-11R	1+740	10.000	1,710,168.583	496,121.936
A14-12R	1+788.804	10.000	1,710,207.571	496,094.708
A14-13R	1+870.959	10.000	1,710,277.669	496,051.863
A14-14R	1+900	10.000	1,710,302.479	496,035.861
A14-15R	1+920	10.000	1,710,319.101	496,024.152
A14-16R	1+944.658	10.000	1,710,339.042	496,008.964
A14-17R	2+100	10.000	1,710,460.662	495,912.321
A14-18R	2+293.021	10.000	1,710,611.782	495,792.237
A14-19R	2+320	11.000	1,710,632.978	495,780.783
A14-20R	2+340	11.000	1,710,649.946	495,775.503
A14-21R	2+360	11.000	1,710,667.624	495,773.699
A14-22R	2+380	12.000	1,710,685.450	495,776.447
A14-23R	2+386.711	20.623	1,710,690.604	495,786.082

INTERSECTION A-14a

A14a-1L	0+010	−9.000	1,709,055.700	497,498.898
A14a-2L	0+020	−9.675	1,709,047.593	497,507.397
A14a-3L	0+060	−5.000	1,709,003.728	497,512.393
A14a-1R	0+010	9.000	1,709,042.676	497,486.474
A14a-2R	0+020	8.636	1,709,036.891	497,492.538
A14a-3R	0+040	5.000	1,709,022.659	497,500.493
A14a-3R	0+060	5.000	1,709,002.754	497,502.441

INTERSECTION A-15

A15-1L	0+855	−7.500	1,709,766.072	498,041.290
A15-2L	0+880	−7.500	1,709,741.447	498,045.602
A15-3L	0+900	−5.665	1,709,720.498	498,047.261
A15-4L	0+920	−7.500	1,709,699.114	498,046.526
A15-5L	0+949.131	−11.000	1,709,672.222	498,047.983
A15-6L	1+026	−19.215	1,709,601.510	498,073.204
A15-7L	1+040	−12.500	1,709,586.276	498,070.203
A15-8L	1+080	−7.500	1,709,546.296	498,075.364
A15-9L	1+120	−7.500	1,709,507.093	498,084.978
A15-10L	1+160	−7.500	1,709,467.543	498,092.183
A15-1R	0+855	7.500	1,709,763.485	498,026.515
A15-2R	0+900	6.498	1,709,720.145	498,034.103
A15-3R	0+940	10.500	1,709,680.795	498,026.287
A15-4R	0+960	12.500	1,709,658.444	498,026.060
A15-5R	1+047	10.000	1,709,573.872	498,050.168
A15-6R	1+080	7.500	1,709,542.545	498,060.841
A15-7R	1+120	7.500	1,709,504.062	498,070.287
A15-8R	1+160	7.500	1,709,464.909	498,077.416

INTERSECTION A-15a

A15a-1L	0+020	−5.000	1,709,587.670	497,964.525
A15a-2L	0+060	−5.000	1,709,586.268	497,924.549
A15a-1R	0+020	5.000	1,709,597.664	497,964.175

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/10/02	S. LUNA
CHECKED	10/10/02	S. GOSE
SUBMITTED	10/10/02	A. KUMAGAI 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	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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE :
NOT TO SCALE
FULL SIZE A1

SHEET CONTENTS :
SCHEDULE OF ROAD RIGHT-OF-WAY MARKERS (2 OF 3)

SHEET NO. :
RG-07

SCHEDULE OF ROAD RIGHT-OF-WAY MARKER

POINT NO.	STATION	OFFSET FROM CENTERLINE	NORTHING	EASTING
A15a–2R	0+060	5.000	1,709,596.262	497,924.199
INTERSECTION C-1L				
C1L–1L	0+020	–7.500	1,709,781.549	498,170.212
C1L–2L	0+060	–4.988	1,709,794.871	498,132.885
C1L–3L	0+070	–5.000	1,709,795.491	498,123.082
C1L–1R	0+020	6.500	1,709,795.065	498,173.863
C1L–2R	0+060	4.013	1,709,803.732	498,134.465
C1L–3R	0+070	4.000	1,709,805.370	498,124.548
INTERSECTION C-1R				
C1R–1L	0+070	–4.000	1,709,774.740	498,308.290
C1R–1R	0+020	6.500	1,709,768.027	498,257.378
C1R–2R	0+060	5.000	1,709,767.287	498,297.090
C1R–3R	0+070	5.000	1,709,765.835	498,306.984
INTERSECTION A-16				
A16–1L	0+900	–8.000	1,710,357.702	498,567.038
A16–2L	0+920	–8.000	1,710,348.203	498,583.551
A16–3L	0+940	–8.500	1,710,341.552	498,602.040
A16–4L	0+960	–8.000	1,710,332.983	498,621.722
A16–5L	1+033	–8.000	1,710,291.868	498,682.207
A16–6L	1+060	–7.000	1,710,276.698	498,703.694
A16–7L	1+080	–8.000	1,710,268.148	498,720.573
A16–8L	1+100	–8.000	1,710,261.788	498,739.479
A16–1R	0+900.462	5.725	1,710,347.724	498,560.863
A16–2R	0+920	6.000	1,710,337.340	498,578.452
A16–3R	0+940	6.000	1,710,329.945	498,597.401
A16–4R	0+957	7.000	1,710,316.580	498,619.196
A16–5R	1+033	7.000	1,710,279.465	498,673.771
A16–6R	1+060	6.000	1,710,265.286	498,697.467
A16–7R	1+080	6.000	1,710,256.806	498,716.552
A16–8R	1+100	6.000	1,710,250.395	498,735.643
INTERSECTION B-7				
B7–1L	0+950	–4.000	1,710,819.253	498,889.321
B7–2L	1+050	–4.000	1,710,822.444	498,989.270
B7–1R	0+950	4.000	1,710,811.257	498,889.577
B7–2R	1+050	4.000	1,710,814.448	498,989.526
INTERSECTION A-17				
A17–1L	0+900	–7.000	1,711,937.760	499,139.590
A17–2L	0+960	–7.000	1,711,934.543	499,199.504
A17–3L	1+040	–7.000	1,711,930.252	499,279.388
A17–4L	1+100	–7.000	1,711,927.035	499,339.302
A17–1R	0+900	7.000	1,711,923.781	499,138.839
A17–2R	0+960	7.000	1,711,920.563	499,198.753
A17–3R	1+040	8.000	1,711,915.274	499,278.584
A17–4R	1+100	7.000	1,711,913.055	499,338.551
INTERSECTION B-8				
B8–1L	0+873.141	–8.138	1,712,529.955	499,168.142
B8–2L	0+876	–5.000	1,712,525.886	499,166.933
B8–3L	0+920	–4.891	1,712,488.555	499,189.481
B8–4L	0+940	–5.000	1,712,477.479	499,202.830
B8–5L	0+960	–5.000	1,712,473.974	499,220.149
B8–6L	1+040	–5.000	1,712,471.005	499,301.717
B7–7L	1+048.898	–5.000	1,712,464.784	499,310.827
B7–8L	1+070	–5.000	1,712,444.266	499,320.797
B8–1R	0+873.105	10.434	1,712,520.384	499,152.225
B8–2R	0+876	5.000	1,712,520.716	499,158.374
B8–3R	0+920	5.140	1,712,482.709	499,181.330
B8–4R	0+940	5.000	1,712,468.469	499,198.493
B8–5R	1+040	5.000	1,712,461.706	499,298.039
B8–6R	1+048.898	5.000	1,712,457.973	499,303.504
B8–7R	1+070	5.000	1,712,440.581	499,311.501
INTERSECTION A-18				
A18–1L	0+890	7.500	1,713,291.659	499,163.597
A18–2L	0+918	7.500	1,713,288.941	499,191.465
A18–3L	0+960	12.000	1,713,280.385	499,232.830
A18–4L	1+040	12.000	1,713,272.619	499,312.452
A18–5L	1+085	7.500	1,713,272.730	499,357.676
A18–6L	1+110	7.500	1,713,270.303	499,382.558
A18–1R	0+890	–7.500	1,713,308.588	499,165.054
A18–2R	0+918	–7.500	1,713,303.870	499,192.921
A18–3R	0+960	–12.000	1,713,304.272	499,235.160
A18–4R	1+040	–12.000	1,713,296.506	499,314.782
A18–5R	1+085	–7.500	1,713,287.659	499,359.133
A18–6R	1+110	–7.500	1,713,285.232	499,384.015
INTERSECTION B-9				
B9–71L	0+910	–3.000	1,714,188.808	499,220.929
B9–2L	0+920	–3.000	1,714,182.861	499,229.005
B9–3L	0+932.291	–3.000	1,714,174.110	499,238.460
B9–4L	0+955.858	–3.500	1,714,155.865	499,252.719
B9–5L	1+040	–5.000	1,714,114.489	499,325.127
B9–6L	1+055	–3.000	1,714,104.493	499,336.723
B9–7L	1+070	–3.000	1,714,096.029	499,349.106
B9–1R	0+910	3.500	1,714,183.574	499,217.076
B9–2R	0+920	3.500	1,714,177.664	499,225.100
B9–3R	0+932.291	3.500	1,714,169.816	499,233.580
B9–4R	1+040	4.500	1,714,106.420	499,320.114
B9–5R	1+055	3.500	1,714,099.127	499,333.055
B9–6R	1+070	3.500	1,714,090.663	499,345.438
INTERSECTION A-19				
A19–1L	0+740	7.500	1,715,411.107	498,830.470
A19–2L	0+760	7.500	1,715,402.037	498,848.295
A19–3L	0+780	7.500	1,715,392.252	498,864.107
A19–4L	0+800	7.500	1,715,379.508	498,877.570
A19–5L	0+820	7.500	1,715,364.542	498,888.252
A19–6L	0+880	7.500	1,715,312.152	498,917.345
A19–7L	0+900	7.500	1,715,294.150	498,929.442
A19–8L	0+920	9.250	1,715,278.821	498,946.254
A19–9L	0+940	11.250	1,715,259.401	498,957.665
A19–10L	0+960	13.250	1,715,256.129	498,989.054
A19–11L	1+044	14.000	1,715,252.890	499,072.995
A19–12L	1+060	11.000	1,715,265.253	499,088.512
A19–13L	1+080	7.500	1,715,265.962	499,107.574
A19–14L	1+100	7.500	1,715,260.711	499,125.819
A19–15L	1+114.818	7.500	1,715,255.280	499,138.800
A19–16L	1+130	7.500	1,715,248.735	499,152.499
A19–1R	0+740	–7.500	1,715,424.476	498,837.273
A19–2R	0+760	–7.500	1,715,415.406	498,855.098
A19–3R	0+780	–7.500	1,715,404.157	498,873.233
A19–4R	0+800	–7.500	1,715,389.462	498,888.879
A19–5R	0+820	–7.500	1,715,371.953	498,901.293
A19–6R	0+880	–7.500	1,715,319.433	498,930.459
A19–7R	0+900	–8.000	1,715,304.610	498,940.881
A19–8R	0+920	–8.500	1,715,294.426	498,954.713
A19–9R	0+940	–10.500	1,715,290.861	498,971.203
A19–10R	0+960	–12.250	1,715,291.618	498,989.810
A19–11R	1+035	–14.500	1,715,291.544	499,064.844
A19–12R	1+060	–10.500	1,715,286.684	499,090.236
A19–13R	1+100	–6.000	1,715,273.407	499,130.409
A19–14R	1+114.818	–6.000	1,715,267.461	499,144.619
A19–15R	1+130	–6.000	1,715,260.916	499,158.319
INTERSECTION A-20				
A20–1L	0+890	–7.500	1,715,832.973	498,547.932
A20–2L	0+971	–8.500	1,715,908.811	498,577.639
A20–3L	1+029	–7.500	1,715,961.473	498,601.963
A20–4L	1+060	–7.500	1,715,988.509	498,611.326
A20–5L	1+080	–7.500	1,716,005.905	498,610.434
A20–6L	1+120	–7.500	1,716,042.347	498,595.765
A20–7L	1+140	–7.500	1,716,064.529	498,592.674
A20–8L	1+170	–7.500	1,716,095.494	498,598.853
A20–1R	0+890	7.500	1,715,827.732	498,561.987
A20–2R	0+940	7.500	1,715,874.058	498,579.834
A20–3R	0+967.937	9.364	1,715,898.798	498,592.747
A20–4R	1+024	10.390	1,715,949.678	498,616.313
A20–5R	1+040	7.500	1,715,965.483	498,620.126
A20–6R	1+040.745	12.500	1,715,964.147	498,625.001
A20–7R	1+049.201	12.500	1,715,973.448	498,628.535
A20–8R	1+050.805	7.500	1,715,976.637	498,624.253
A20–9R	1+060	7.500	1,715,986.781	498,626.226
A20–10R	1+080	7.500	1,716,009.147	498,625.080
A20–11R	1+120	7.500	1,716,046.853	498,610.072
A20–12R	1+140	7.500	1,716,064.106	498,607.668
A20–13R	1+170	7.500	1,716,091.802	498,613.391

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JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/4/02	S. LUNA
CHECKED	10/16/02	SJ. GOSE
SUBMITTED	10/8/02	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, DIC, Director IV	MANUEL M. BONOAN, Undersecretary	SIMEON A. DATUMANONG, 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) CABANATUAN BYPASS - CONTRACT PACKAGE II	NOT TO SCALE FULL SIZE A1	SCHEDULE OF ROAD RIGHT-OF-WAY MARKERS (3 OF 3)	RG-08