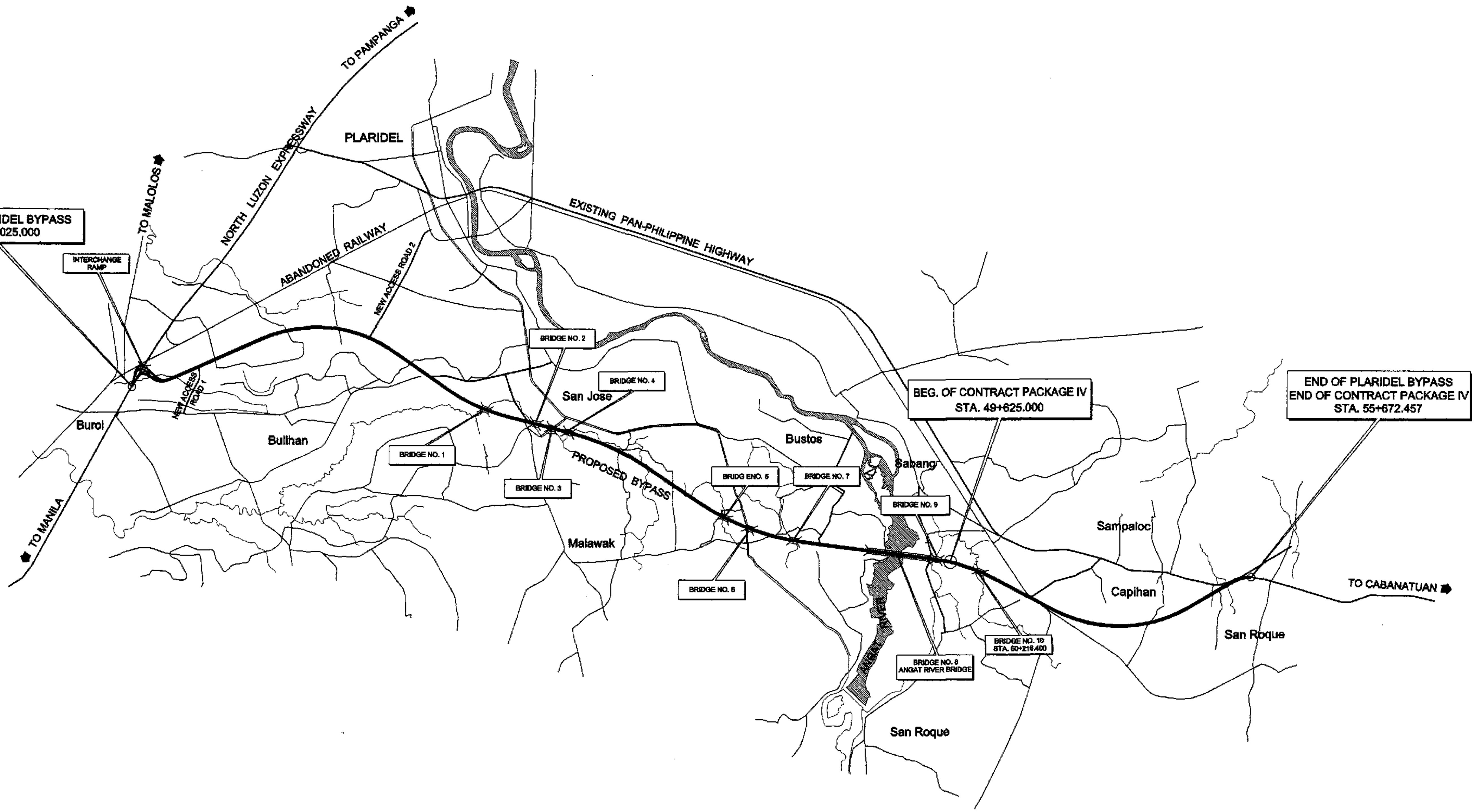
BRIDGES



(A) PLARIDEL BYPASS BRIDGE LOCATION MAP

NOT TO SCALE

JICA JAPAN INTERNATIONAL COOPERATION AGENCY KEI KATAHIRA & ENGINEERS INTERNATIONAL yec YACHIYO ENGINEERING CO., LTD.		DATE	SIGNATURE
	DESIGNED	9/28/02	E. N. SALLAN
	CHECKED	9/30/02	[illegible]
	SUBMITTED	10/16/02	M. KIUCHI 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	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director IV (OIC)	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) PLARIDEL BYPASS - CONTRACT PACKAGE IV	AS SHOWN FULL SIZE A1	BRIDGE LOCATION MAP (ULTIMATE STAGE)	BG-01

GENERAL NOTES FOR BRIDGES
(SHEET 1 OF 2)

A. DESIGN CRITERIA

1. DESIGN SPECIFICATION

(a) THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 16TH EDITION, 1996.

(b) NATIONAL STRUCTURAL CODE OF THE PHILIPPINES, VOLUME II–BRIDGES, 2ND EDITION, 1997.

2. DESIGN METHODOLOGY

LOAD FACTOR DESIGN METHOD (ULTIMATE STRENGTH DESIGN METHOD)

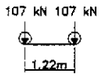
3. LOADING

3.1 DEAD LOADS

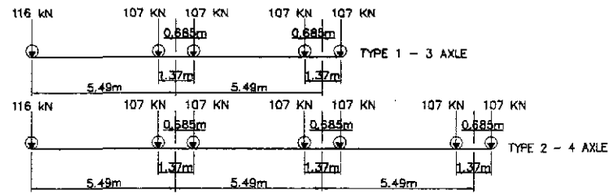
	WEIGHT
A. CONCRETE	24.00 kN/m^3
B. STEEL	77.00 kN/m^3
C. EARTH	19.00 kN/m^3
D. WEARING SURFACE	1.10 kN/m^2

3.2 LIVE LOADS

A. AASHTO HS20 (MS18) TRUCK AND EQUIVALENT LANE LOADING.
B. SIDEWALK LOAD 4.07 kN/m^2
C. ALTERNATE MILITARY LOADING.



D. PERMIT DESIGN LOAD (SPECIAL PERMIT REQUIRED BEFORE PASSING BRIDGE)



3.3 IMPACT

IN ACCORDANCE WITH DIVISION 1 OF AASHTO STANDARD SPECIFICATIONS,1996.

3.4 SEISMIC LOAD

IN ACCORDANCE WITH DIVISION 1A OF THE 1996 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES USING ACCELERATIONS COEFFICIENT OF 0.40 AND SEISMIC PERFORMANCE CATEGORY D.

3.5 OTHER LOADS

IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS, 1996.

3.6 LOAD COMBINATION

A. GROUP 1 = 1.3 [1.0 D + 1.67(L+1)n + 1.0 SF]
B. GROUP 1B = 1.3 [1.0 D + 1.0(L+1)p + 1.0 SF]
C. GROUP VII = 1.3 [1.0 D + 1.0 SF + EQ]

B. MATERIALS

1. CONCRETE

UNLESS OTHERWISE INDICATED ON PLANS, THE CONCRETE CLASS AND STRENGTH SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER	CLASS	28 – DAY CYLINDER STRENGTH		MAX. SIZE OF COARSE AGGREGATE mm (in.)	REMARKS
		MPa	PSI		
CAST – IN PLACE GIRDERS, SLABS, DIAPHRAGMS, WINGWALLS, BACKWALLS, COPINGS, COLUMNS	A (MOD)	21	3045	20 (3/4)	
FOOTINGS	A	21	3045	38 (1–1/2)	
PRECAST R.C. PILES	AA	28	4060	20 (3/4)	
THIN REINFORCED SECTIONS RAILINGS AND RAILPOST	C	21	3045	12 (1/2)	
PRESTRESSED CONCRETE MEMBERS	P	35 41	5075 5946	20 (3/4) 20 (3/4)	@ TRANSFER @ SERVICE
LEAN CONCRETE	–	17	2465	50 (2)	

2. REINFORCING STEEL

(a) REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADES 40 & 60 DEFORMED WITH MINIMUM YIELD STRENGTH.
GRADE 40 (16mmø AND SMALLER)
Fy = 276 MPa (40,000 psi)
GRADE 60 (20mmø AND LARGER)
Fy = 414 MPa (60,000 psi)

(b) REINFORCING STEEL SHALL BE FREE OF MILL SCALES, OIL OR ANY SUBSTANCES WHICH WILL WEAKEN THE BOND WITH CONCRETE.

3. PRESTRESSING STEEL

PRESTRESSING STEEL SHALL BE SEVEN–WIRE UNCOATED STRESS–RELIEVED STRANDS AND SHALL CONFORM TO AASHTO M203 (ASTM A416) WITH MINIMUM ULTIMATE STRENGTH OF Fy = 1860 MPa (270,000psi).

4. STRUCTURAL STEEL, BOLTS AND WELDS

MATERIALS	UNIT WEIGHT
STEEL PLATES AND ROLLED SHAPES	AASHTO M183 (ASTM A36)
BOLTS	AASHTO M164 (ASTM A325)
WELDS	AWS D1.1 – 183, E70XX SERIES

5. ELASTOMERIC BEARING PADS

ELASTOMERIC BEARING PADS SHALL BE 100% VIRGIN CHLOROPRENE (NEOPRENE) PADS WITH DUROMETER HARDNESS 60 AND SHALL BE LAMINATED WITH NON–CORROSIVE MILD STEEL SHEETS. ELASTOMERIC PADS SHALL CONFORM TO THE REQUIREMENTS AS PRESCRIBED IN DPWH D.O. NO. 25 SERIES OF 1997 "REVISED DPWH STANDARD SPECIFICATION FOR ELASTOMERIC BEARING PAD."

SPECIFICATIONS

DURO HARDNESS, SHORE A (ASTM D–2240)–––––60	
TENSILE STRENGTH ASTM	D 412–175 Kg/cm2 (min)
ULTIMATE ELONGATION %	350 % (min)
MATERIAL	NEOPRENE

C. CONSTRUCTION

ALL WORKS SHALL COMPLY WITH 1995 DPWH SPECIFICATION FOR ROADS AND BRIDGES OR MODIFIED BY SPECIAL PROVISIONS.

1. DIMENSIONS

1.1 SECTION, DIMENSIONS AND DISTANCES SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES. THE INDICATED DIMENSION SHALL GOVERN UNLESS OTHERWISE SPECIFIED.

1.2 ALL DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

1.3 ALL STATIONING ARE IN KILOMETER PLUS METER AND ELEVATION IN METER.

2. SETTING OUT

THE SETTING OUT AND THE ELEVATIONS OF THE DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE APPROVED BY THE ENGINEER/CONSULTANT PRIOR TO THE START OF ANY CONSTRUCTION WORK.

3. REINFORCED CONCRETE

a. ALL CAST IN PLACE CONCRETE SHALL BE CLASS "A" EXCEPT RAILINGS WHICH SHALL BE CLASS "C" UNLESS OTHERWISE NOTED ON THE PLANS. ALL EXPOSED EDGES SHALL BE CHAMFERED 25mm EXCEPT RAILINGS AND RE–ENTRANT ANGLES WHICH SHALL BE CHAMFERED AND FILLETED 13mm RESPECTIVELY.

b. CONCRETE MIX AND PLACING

(1) DESIGN OF CONCRETE MIX SHALL MEET THE DESIGN CONCRETE STRENGTH GIVEN UNDER ITEM 1 OF MATERIALS.

(2) CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH THE SPECIFICATION.

(3) FOR CONCRETE DEPOSITED AGAINST THE GROUND, LEAN CONCRETE WITH A MINIMUM THICKNESS OF 200mm SHALL LAID FIRST BEFORE INSTALLING THE REINFORCEMENT. THIS LEAN CONCRETE SHALL NOT BE CONSIDERED IN MEASURING THE STRUCTURAL DEPTH OF CONCRETE SECTION.

(4) THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER/CONSULTANT FOR APPROVAL PLACING SEQUENCES FOR ALL CONCRETING WORK.

c. BAR BENDING, SPLICING AND PLACING

(1) THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER/CONSULTANT FOR APPROVAL OF SHOP DRAWINGS INDICATING THE BENDING, CUTTING, SPLICING AND INSTALLATION OF ALL REINFORCING BARS.

(2) BARS SHALL BE BEND COLD. BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS PERMITTED BY THE ENGINEER/CONSULTANT.

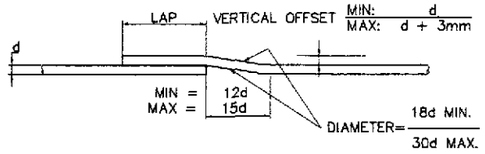
(3) BAR SPLICING NOT INDICATED ON DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

(4) WELDED SPLICES, IF APPROVED BY THE ENGINEER, SHALL DEVELOP IN TENSION AT LEST 125% OF THE SPECIFIED YIELD STRENGTH OF THE BARS.

(5) NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE SPLICED.

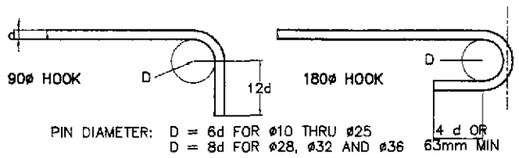
(6) UNLESS OTHERWISE SHOWN ON DRAWINGS, THE CLEAR DISTANCE BETWEEN PARALLEL BARS IN A LAYER SHALL NOT BE LESS THAN 1.5 TIMES THE NOMINAL DIAMETER OF THE BAR NOR LESS THAN 1.5 TIMES THE MAXIMUM SIZE OF COARSE AGGREGATE. THE CLEAR DISTANCE BETWEEN LAYERS SHALL NOT LESS THAN 25mm NOR ONE BAR DIAMETER. THE BARS IN THE UPPER LAYER SHALL BE PLACED DIRECTLY ABOVE THOSE IN THE BOTTOM LAYER.

(7) CRANKED SPLICES



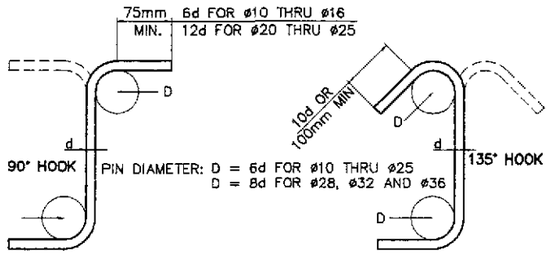
(8) HOOKS AND BENDS

DIMENSIONS OF 90–DEGREE AND 180–DEGREE HOOKS



PIN DIAMETER: D = 6d FOR ø10 THRU ø25
D = 8d FOR ø28, ø32 AND ø36

DIMENSIONS FOR STIRRUPS AND TIE HOOKS



PIN DIAMETER: D = 6d FOR ø10 THRU ø25
D = 8d FOR ø28, ø32 AND ø36

d. CONCRETE COVER TO REINFORCEMENT

UNLESS OTHERWISE NOTED, ALL BAR DIMENSIONS ARE REFERRED TO THE CENTER OF BARS AND THE MINIMUM COVERING MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF ANY BAR SHALL BE 40mm. FOR SUBSTRUCTURE PERMANENTLY EXPOSED TO EARTH, COVERING SHALL BE 75mm.

e. CONSTRUCTION JOINT

(1) THE POSITION AND FORM OF ANY CONSTRUCTION JOINT SHALL BE AS SHOWN ON DRAWINGS OR AS AGREED WITH THE ENGINEER/CONSULTANT.

(2) THE INTERFACE BETWEEN THE FIRST AND SECOND POUR CONCRETES SHALL BE ROUGHENED WITH AN AMPLITUDE OF 6MM MINIMUM.

f. FALSEWORK

ALL FALSEWORK SHALL BE DESIGNED BY THE CONTRACTOR SUBJECT TO THE APPROVAL BY THE ENGINEER/CONSULTANT.

g. FORMWORK

FORMWORKS SHALL BE CONSTRUCTED SUCH THAT IT WILL NOT YIELD UNDER THE LOAD AND SHALL BE SUCH AS TO AVOID THE FORMATION OF FINE. ALL CORNERS OF CONCRETE MEMBERS SHALL BE CHAMFERED TO 25mm UNLESS NOTED OTHERWISE ON DRAWINGS. STRIPPING OF FORMS AND SHORES SHALL BE AS DESIGNATED BY THE ENGINEER/CONSULTANT. THE FOLLOWING MAYBE USED AS A GUIDE.

	MIN. TIME
SHORING UNDER GIRDERS, BEAMS, FRAMES. . . .	14 DAYS
DECK SLABS	14 DAYS
WALLS.	7 DAYS
COLUMNS.	7 DAYS
SIDES OF BEAMS AND ALL OTHER VERTICAL SURFACES	2 DAYS

h. PROTECTION AND CURING OF CONCRETE

CONCRETE SURFACES SHALL BE PROTECTED FROM HARMFULS EFFECTS OF SUN, WIND AND RUNNING WATERS AND SHALL BE KEPT DAMP FOR AT LEAST 7 DAYS.

6. EMBANKMENT CONSTRUCTION SEQUENCE

APPROACH EMBANKMENT SHALL BE CONSTRUCTED PRIOR TO DRIVING OF ABUTMENT PILES.

7. (a) REINFORCED CONCRETE PILES/TEST PILES

ALL PILES SHALL BE 400mm x 400mm AND 450mm x 450mm PRECAST REINFORCED CONCRETE, FRESH OR SALT WATER TYPE, UNLESS OTHERWISE NOTED. ALL PRECAST R.C. PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 50 TONNES (490 KN) AND 70 TONNES (680 KN), RESPECTIVELY EACH AND TO THE FULL AUTHORIZED PAY LENGTH AND IN ACCORDANCE WITH ITEM 400 (13) (PILE DRIVING) OF THE STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, VOL.II 1995. ACTUAL CASTING LENGTH SHALL BE DETERMINED FROM THE RESULT OF DRIVING TEST PILE.
CUT–OFF SHALL BE AUTHORIZED ONLY UPON PRIOR APPROVAL OF THE ENGINEER/CONSULTANT. ALL PILES SHALL BE PROVIDED WITH METAL SHOES FOR HARD DRIVING. TEST PILE SHALL BE DRIVEN AS DIRECTED BY THE ENGINEER/CONSULTANT.

(b) STEEL H–PILES/SHEET PILES

THE MINIMUM QUANTITY REQUIREMENT FOR FOUNDATION PILING SHALL ONFORM TO THE SPECIFICATION FOR STRUCTURAL STEEL FOR BRIDGES, AASHTO M270 (ASTM A 709) GRADE 36 AND/OR JIS G 3101 SS400.
FULL–LENGTH PILES SHALL BE USED WHERE PRACTICABLE.
IF SPLICING IS PERMITTED, THE METHOD OF SPLICING SHALL BE AS SHOWN ON THE PLANS OR AS APPROVED BY THE ENGINEER/CONSULTANT.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	9/29/02	E. AN SALLAN
CHECKED	9/30/02	[illegible]
SUBMITTED	9/30/02	M. KUDO, 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	ADRIANO N. DOROY, Chief, Bridges Division	GILBERTO S. REYES, Director IV (OIC)	MANUEL M. BONDAD, 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) PLARIDEL BYPASS - CONTRACT PACKAGE IV	AS SHOWN FULL SIZE A1	GENERAL NOTES FOR BRIDGES (SHEET 1 OF 2) (ULTIMATE STAGE)	BG-02

GENERAL NOTES FOR BRIDGES
(SHEET 2 OF 2)

8. STRUCTURAL STEEL

THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR ALL STRUCTURAL STEEL WORK. THESE SHOP DRAWINGS SHALL BE APPROVED BY THE ENGINEER BEFORE ANY FABRICATION COMMENCES.

9. SHORING

(a) CAMBER FOR REINFOCED CONCRETE SUPERSTRUCTURES WERE DETERMINED BASED ON THE USE OF SHORINGS DURING CONSTRUCTION.

(b) CAMBER FOR COMPOSITE SUPERSTRUCTURES WITH PRECAST PRESTRESSED GIRDERS WERE DETERMINED BASED ON UNSHORED CONDITIONS.

10. EXCAVATION

EXCAVATION FOR STRUCTURES SHALL BE TO THE NEAT LINES OF FOOTING OR AS SPECIFIED IN THE STANDARD SPECIFICATIONS.

11. WATER ELEVATION

WATER ELEVATIONS SHOWN ON PLANS ARE APPROXIMARE ONLY AND VARIATION FOUND DURING CONSTRUCTION SHALL NOT BE CONSIDERED AS A BASIS FOR EXTRA COMPENSATION.

12. DETOUR

THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN DETOUR BRIDGES, AND/OR ROADS DURING CONSTRUCTION TO ALLOW CONTINUOUS FLOW OF TRAFFIC. THEY SHALL BE CONSTRUCTED ON LOCATION AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER/CONSULTANT. NO ADDITIONAL COST SHALL BE ALLOWED FOR ANY RELOCATION OF DETOUR.

13. PRESTRESSED CONCRETE

GIRDER DESIGN GUIDE

a.) POST-TENSIONING ; THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST-TENSIONED DESIGNS, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES, METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED, SHALL BE AS APPROVED BY THE ENGINEERS/CONSULTANT. A PORTION OF THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS. ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON PLANS. THE TOTAL POST-TENSION FORCE AFTER LOSSES REQUIRED AT MIDSPAN SHALL BE PROVIDED AS CALLED FOR IN THE VARIOUS DESIGNS. THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR ELASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION, FRICTION, AND EFFICIENCY OF END ANCHORAGES. AFTER SECURING THE END ANCHORAGES ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH "SPECIFICATIONS".

b.) CONCRETE FOR GIRDERS SHALL BE A MINIMUM STRENGTH OF 41 N/mm^2 (6,000 PSI) AT THE AGE OF 28 DAYS.

c.) CONCRETE FOR CAST-IN-PLACE SLAB HAVE A MINIMUM STRENGTH 21 N/mm^2 (3,000 PSI) AT THE AGE OF 28 DAYS.

d.) THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDON SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

e.) THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 35 MPa (5,000 PSI). A GRID CONSISTING OF ø12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST-TENSIONING SYSTEM.

f.) HANDLING PRESTRESSED CONCRETE BEAMS : THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. ATTENTION IS DIRECTED TO THE INCREASED DIFFICULTY OF LIFTING BEAMS WITHOUT END BLOCKS. THE CONTRACTORS PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFUL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWING FOR APPROVAL. THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

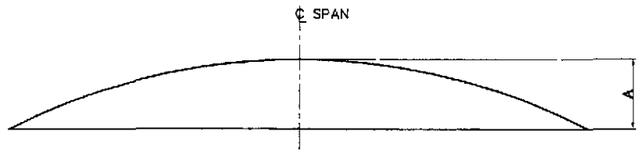
g.) CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE ENGINEER THE CALCULATED ELONGATION OF THE PRESTRESSING TENDONS CORRESPONDING TO THE REQUIRED JACKING FORCES.

h.) SHOP DRAWING SHALL SUBMIT FOR APPROVAL PRIOR TO FABRICATION.

14. DRAWINGS

a.) ALL ELEVATIONS, STATIONING AND DIMENSIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION.

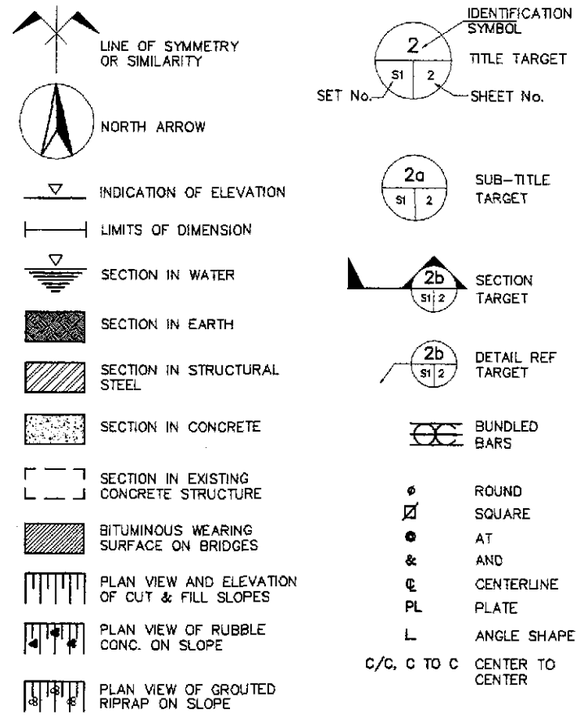
b.) ALL QUANTITIES SHALL BE VERIFIED DURING CONSTRUCTION.



DEAD LOAD CAMBER DIAGRAM

A = FABRICATION CAMBER – ESTIMATED PRESTRESS CAMBER LESS DEFLECTION DUE TO GIRDER DEAD LOAD

SYMBOLS



ABBREVIATIONS

ABT	ABOUT	kPa	KILOPASCAL
ABUT	ABUTMENT	m	METER
BEG	BEGINNING	mm	MILLIMETER
BET	BETWEEN	MAX	MAXIMUM
BOTT	BOTTOM	MFWL	MAX. FLOOD WATER LEVEL
BR	BRIDGE	MIN	MINIMUM
BRG	BEARING	MO	MIDDLE ORDINATE
CLR	CLEAR	MPa	MEGAPASCAL
cm	CENTIMETER	N	NEWTON
COL	COLUMN	NF	NEAR FACE
CONC	CONCRETE	No.	NUMBER
CONST	CONSTRUCTION	O.C.	ON CENTER
CTR	CENTER	PEJ	PREMOULDED EXPANSION JOINT
DET	DETAIL	PVC	POLYVINYL CHLORIDE
DIAM	DIAMETER	PVI	POINT OF VERT. INTERSECTION
DIAPH	DIAPHRAGM	QTY	QUANTITY
DWG	DRAWING	R	RADIUS
EA	EACH	RC	REINFORCED CONCRETE
EF	EACH FACE	RDWY	ROADWAY
ELEV	ELEVATION	REINF	REINFORCEMENT
ENGR	ENGINEER	SDWK	SIDEWALK
EQ	EQUAL	SL	SLOPE
EW	EACHWAY	SP	SPIRAL
EXP	EXPANSION	SPCD	SPACED
EXT	EXTERIOR	SPCS	SPACES
EXIST	EXISTING	STD	STANDARD
FF	FAR FACE	STIR	STIRRUP
FTG	FOOTING	STA	STATION
GEN	GENERAL	STRUCT	STRUCTURE
HOR	HORIZONTAL	SYMM	SYMMETRY
HW	HIGH WATER	THK	THICK
INT	INTERIOR	TYP	TYPICAL
INTERM	INTERMEDIATE	VAR	VARIABLE
JT	JOINT	VERT	VERTICAL
L	LENGTH	VOL	VOLUME
LG	LONG	W	WIDTH
kg	KILOGRAM	W/	WITH
kN	KILONEWTON	&	AND

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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

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Project Director	Chief, Bridges Division	Director IV (OIC)	Undersecretary	Secretary

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

SCALE : AS SHOWN — FULL SIZE A1

SHEET CONTENTS : GENERAL NOTES FOR BRIDGES (SHEET 2 OF 2) (ULTIMATE STAGE)

SHEET NO. : BG-03

BRIDGE NAME : BRIDGE NO. 10 (ULTIMATE STAGE)
BRIDGE LENGTH : 36.00 m
SPECIFICATION : 1 - 3600 m SPAN TYPE VI PSCG ON SEAT TYPE ABUTMENT

SUMMARY OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	ABUTMENT		SUPER-STRUCTURE	TOTAL
			" A1 "	" A2 "		
101(7)	Removal of Existing Slope Protection	cu.m.	52.00	47.00		99.00
101(8)	Removal of Existing Slope Protection (Hand Laid Rock)	cu.m.	25.00	23.00		48.00
103(2)a	Bridge Excavation, Common, Above O.W.L.	cu.m.	148.00	115.00		263.00
104(3)	Embankment from Borrow Pit	cu.m.	452.00	431.00		883.00
104(4)	Embankment for Bridge Approach	cu.m.	294.00	294.00		588.00
200(1)	Aggregate Subbase Course	cu.m.	14.00	14.00		28.00
311(2)	PCC Pavement (Reinforced) t=300mm, Including Dowel Bars (Approach Slab)	sq.m.	60.00	60.00		120.00
400(4)b	RC Piles (450 mm x 450 mm) Furnished	l.m.	726.00	682.00		1,408.00
400(13)b	RC Piles (450 mm x 450 mm) Driven	l.m.	726.00	682.00		1,408.00
400(15)b	Test Piles (450 mm x450 mm)	l.m.	25.25	25.25		50.50
400(19)b	Pile Shoes	each	34.00	32.00		66.00
401(1)a	Concrete Post and Railing	l.m.			72.00	72.00
404(1)	Reinforcing Steel, Grade 40	kg	4,753.00	4,348.00	15,954.00	25,055.00
404(2)	Reinforcing Steel, Grade 60	kg	11,508.00	11,145.00	1,802.00	24,455.00
405(1)b	Structural Concrete Class "A" (fc'= 21MPa)	cu.m.	179.00	169.00		348.00
405(1)d	Structural Concrete Class "A1" (fc'= 21MPa)	cu.m.			118.00	118.00
405(3)	Structural Concrete Class "C" (fc' = 21MPa)	cu.m.	4.00	4.00	11.00	19.00
405(6)	Structural Concrete Class "B" (Lean Concrete) fc'= 17MPa	cu.m.	16.00	16.00		32.00
406(1)k	Prestressed Concrete Girder Type VI L=36.00m	each			5.00	5.00
407(1)c	Elastomeric Bearing Pad (600x350x50, Duro 60)	each	5.00	5.00		10.00
407(2)a	Expansion Joint, (±40mm Movement)	l.m.	10.00	10.00		20.00
407(2)g	Expansion Joint, 30mm for Bridge Sidewalk	l.m.	2.00	2.00		4.00
407(4)	Metal Drain (150 mm ø G.I. Drain Pipe)	l.m.			3.00	3.00
504(1)	Grouted Riprap, Class "A"	cu.m.	14.00	14.00		28.00
510(1)	Rubble Concrete	cu.m.	43.00	41.00		84.00
506(1)	Hand Laid Rock	cu.m.		26.00		26.00
507(2)b	Steel Sheet Pile (85x400x8mm Thk.), Furnished and Driven	l.m.	189.00			189.00

NOTE: ALL QUANTITIES SHALL BE VERIFIED DURING CONSTRUCTION

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

	DATE	SIGNATURE
DESIGNED	9/28/07	E. M. SALLAN
CHECKED	9/30/07	N. KOBAYASHI
SUBMITTED	10/16/07	M. LOUCKS 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	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director	Chief, Bridges Division	Director IV (OIC)	Undersecretary	Secretary

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

SCALE : N. T. S. FULL SIZE A1

SHEET CONTENTS : BRIDGE NO.10 SUMMARY OF QUANTITIES (ULTIMATE STAGE)

SHEET NO. : BG-04

BRIDGE NAME : BRIDGE NO. 10 (LEFT FRONTAGE)
BRIDGE LENGTH : 36.00 m
SPECIFICATION : 1 - 3600 m SPAN TYPE VI PSCG ON SEAT TYPE ABUTMENT

SUMMARY OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	ABUTMENT		SUPER-STRUCTURE	TOTAL
			" A1 "	" A2 "		
103(2)a	Bridge Excavation, Common, Above O.W.L.	cu.m.	126.00	120.00		246.00
104(3)	Embankment from Borrow Pit	cu.m.	255.00	212.00		467.00
104(4)	Embankment for Bridge Approach	cu.m.	226.00	226.00		452.00
200(1)	Aggregate Subbase Course	cu.m.	12.00	12.00		24.00
311(2)	PCC Pavement (Reinforced) t=300mm, Including Dowel Bars (Approach Slab)	sq.m.	41.00	41.00		82.00
400(4)b	RC Piles (450 mm x 450 mm) Furnished	l.m.	582.00	582.00		1,164.00
400(13)b	RC Piles (450 mm x 450 mm) Driven	l.m.	550.00	550.00		1,100.00
400(15)b	Test Piles (450 mm x 450 mm)	l.m.	25.25	25.25		50.50
400(19)b	Pile Shoes	each	26.00	26.00		52.00
401(1)a	Concrete Post and Railing	l.m.			72.00	72.00
404(1)	Reinforcing Steel, Grade 40	kg	3,965.00	3,965.00	14,532.00	22,462.00
404(2)	Reinforcing Steel, Grade 60	kg	9,213.00	9,213.00	1,336.00	19,762.00
405(1)b	Structural Concrete Class "A" (fc'= 21MPa)	cu.m.	138.00	138.00		276.00
405(1)d	Structural Concrete Class "A1" (fc'= 21MPa)	cu.m.			95.00	95.00
405(3)	Structural Concrete Class "C" (fc' = 21MPa)	cu.m.	6.00	6.00	23.00	35.00
405(6)	Structural Concrete Class "B" (Lean Concrete) fc'= 17MPa	cu.m.	19.00	19.00		38.00
406(1)k	Prestressed Concrete Girder Type VI L=36.00m	each			4.00	4.00
407(1)c	Elastomeric Bearing Pad (600x350x50, Duro 60)	each	4.00	4.00		8.00
407(2)a	Expansion Joint, (±40mm Movement)	l.m.	10.00	10.00		20.00
407(2)g	Expansion Joint, 30mm for Bridge Sidewalk	l.m.	3.00	3.00		6.00
407(4)	Metal Drain (150 mm ø G.I. Drain Pipe)	l.m.			3.00	3.00
504(1)	Grouted Riprap, Class "A"	cu.m.	14.00	14.00		28.00
510(1)	Rubble Concrete	cu.m.	47.00	40.00		87.00
506(1)	Hand Laid Rock	cu.m.	36.00	36.00		72.00

BRIDGE NAME : BRIDGE NO. 10 (RIGHT FRONTAGE)
BRIDGE LENGTH : 36.00 m
SPECIFICATION : 1 - 3600 m SPAN TYPE VI PSCG ON SEAT TYPE ABUTMENT

SUMMARY OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	ABUTMENT		SUPER-STRUCTURE	TOTAL
			" A1 "	" A2 "		
101(7)	Removal of Existing Slope Protection	cu.m.	52.00	47.00		99.00
101(8)	Removal of Existing Slope Protection (Hand Laid Rock)	cu.m.	25.00	23.00		48.00
103(2)a	Bridge Excavation, Common, Above O.W.L.	cu.m.	138.00	113.00		251.00
104(3)	Embankment from Borrow Pit	cu.m.	400.00	356.00		756.00
104(4)	Embankment for Bridge Approach	cu.m.	249.00	226.00		475.00
200(1)	Aggregate Subbase Course	cu.m.	12.00	12.00		24.00
311(2)	PCC Pavement (Reinforced) t=300mm, Including Dowel Bars (Approach Slab)	sq.m.	41.00	41.00		82.00
400(4)b	RC Piles (450 mm x 450 mm) Furnished	l.m.	628.00	582.00		1,210.00
400(13)b	RC Piles (450 mm x 450 mm) Driven	l.m.	594.00	550.00		1,144.00
400(15)b	Test Piles (450 mm x450 mm)	l.m.	25.25	25.25		50.50
400(19)b	Pile Shoes	each	28.00	26.00		54.00
401(1)a	Concrete Post and Railing	l.m.			72.00	72.00
404(1)	Reinforcing Steel, Grade 40	kg	4,574.00	3,943.00	14,546.00	23,063.00
404(2)	Reinforcing Steel, Grade 60	kg	10,402.00	9,123.00	1,336.00	20,861.00
405(1)b	Structural Concrete Class "A" (fc'= 21MPa)	cu.m.	158.00	138.00		296.00
405(1)d	Structural Concrete Class "A1" (fc'= 21MPa)	cu.m.			95.00	95.00
405(3)	Structural Concrete Class "C" (fc' = 21MPa)	cu.m.	6.00	6.00	23.00	35.00
405(6)	Structural Concrete Class "B" (Lean Concrete) fc'= 17MPa	cu.m.	21.00	20.00		41.00
406(1)k	Prestressed Concrete Girder Type VI L=36.00m	each			4.00	4.00
407(1)c	Elastomeric Bearing Pad (600x350x50, Duro 60)	each	4.00	4.00		8.00
407(2)a	Expansion Joint, (±40mm Movement)	l.m.	10.00	10.00		20.00
407(2)g	Expansion Joint, 30mm for Bridge Sidewalk	l.m.	3.00	3.00		6.00
407(4)	Metal Drain (150 mm ø G.I. Drain Pipe)	l.m.			3.00	3.00
504(1)	Grouted Riprap, Class "A"	cu.m.	22.00	22.00		44.00
510(1)	Rubble Concrete	cu.m.	48.00	54.00		102.00
506(1)	Hand Laid Rock	cu.m.		41.00		41.00
507(2)b	Steel Sheet Pile (85x400x8mm Thk.), Furnished and Driven	l.m.	291.00			291.00

NOTE: ALL QUANTITIES SHALL BE VERIFIED DURING CONSTRUCTION

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

	DATE	SIGNATURE
DESIGNED	9/25/02	E.N. SALLAN
CHECKED	9/30/02	M. KOBAYASHI
SUBMITTED	10/16/02	M. IKEUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

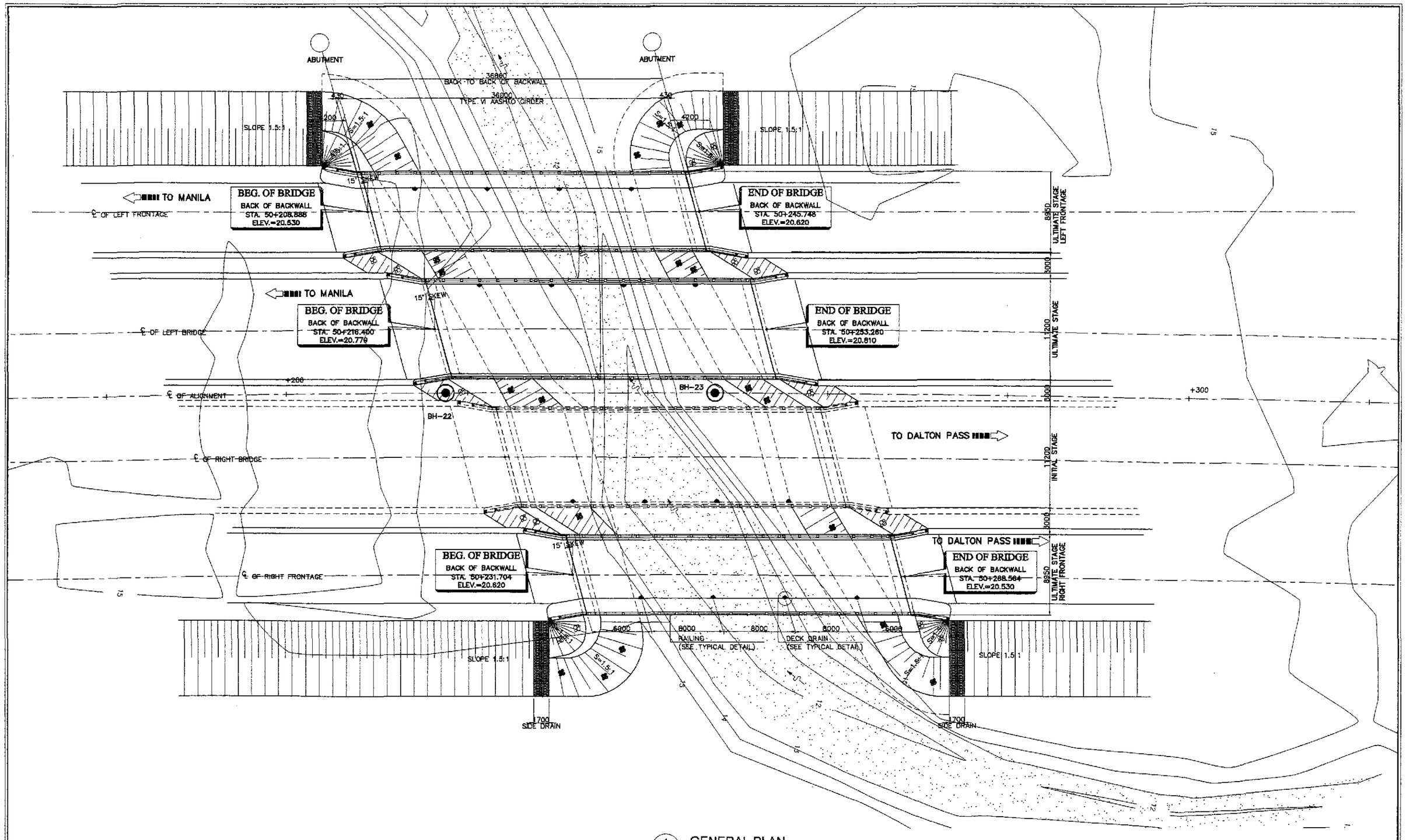
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

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

SCALE : N. T. S. FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
SUMMARY OF QUANTITIES
(LEFT AND RIGHT FRONTAGE)
(ULTIMATE STAGE)

SHEET NO. : BG-05



1 / - GENERAL PLAN
SCALE 1:200

A / - PLARIDEL BYPASS BRIDGE NO.10 (STA. 50+216.400)
SCALE AS SHOWN

PERFECTO L. ZAPLAN JR.
OIC Chief, Hydraulics Division, BOD

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

	DATE	SIGNATURE
DESIGNED	9/28/02	E.M. SALLAN
CHECKED	9/30/02	
SUBMITTED	10/16/02	M. KUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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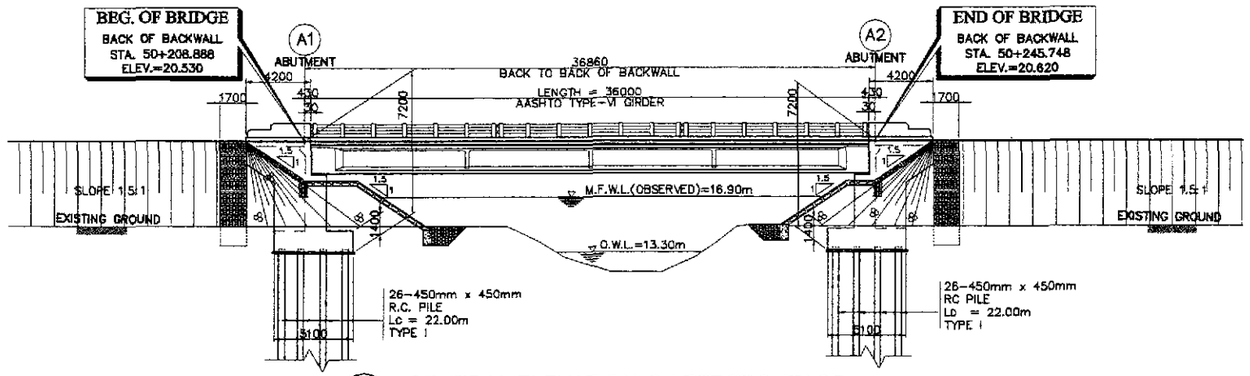
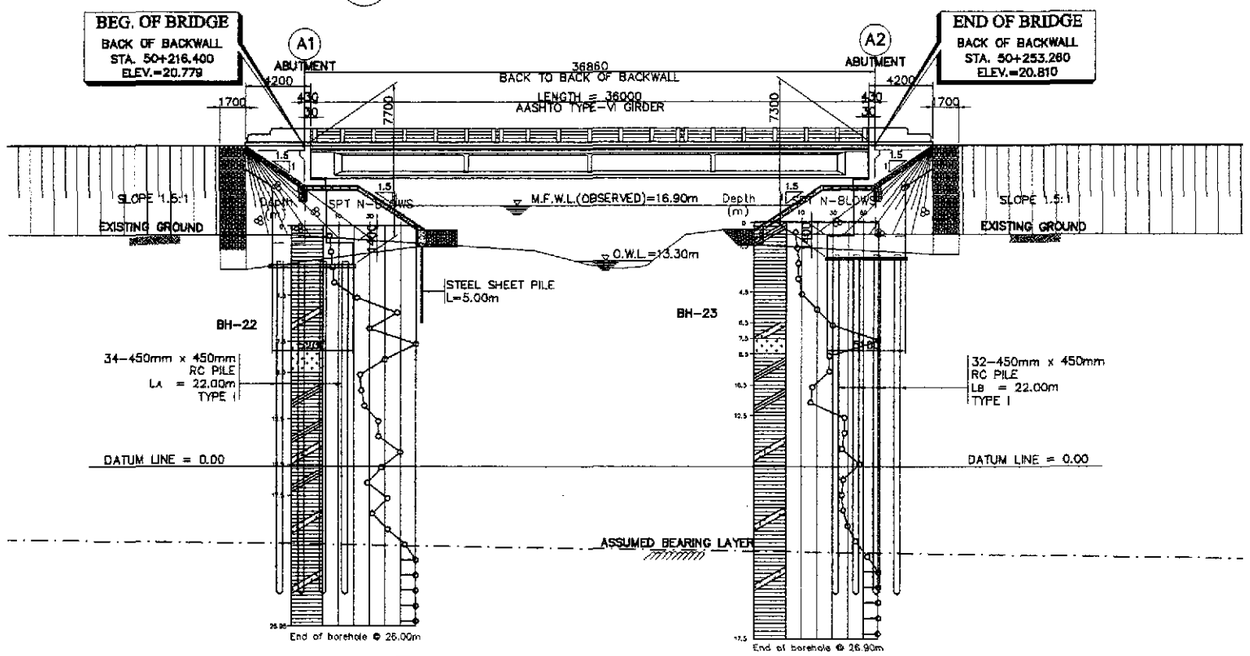
Project Director	Chief, Bridges Division	Director IV (OIC)	Undersecretary	Secretary

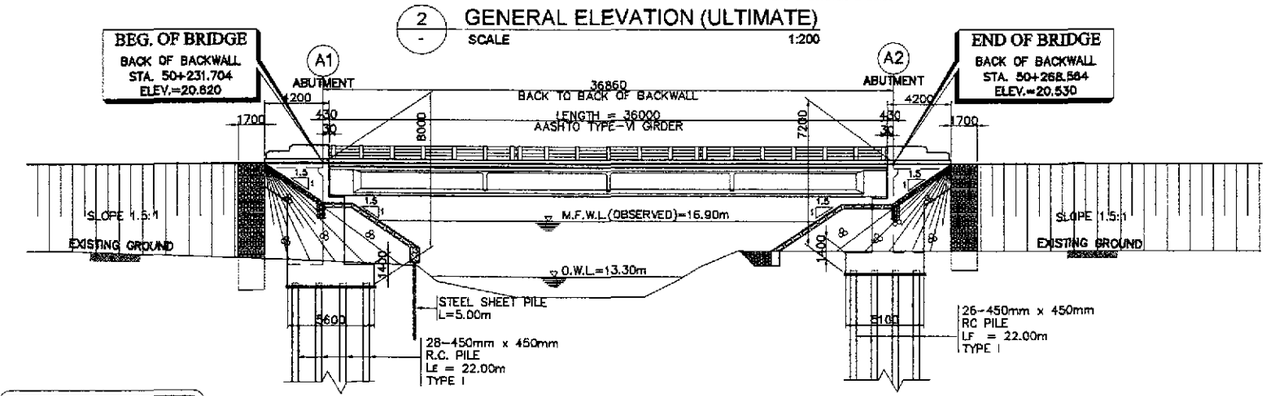
PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	1 : 200	BRIDGE NO. 10 GENERAL PLAN AND SECTIONS (ULTIMATE STAGE)	B10-01
PLARIDEL BYPASS - CONTRACT PACKAGE IV	FULL SIZE A1		



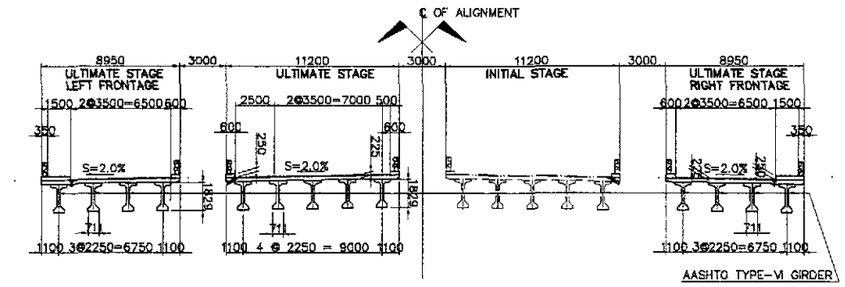
1 - GENERAL ELEVATION @ LEFT FRONTAGE
SCALE 1:200



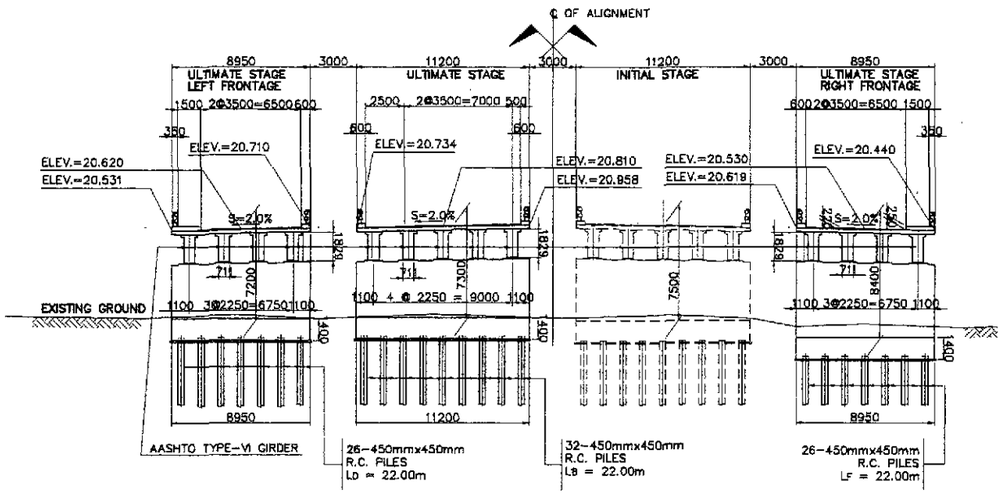
2 - GENERAL ELEVATION (ULTIMATE)
SCALE 1:200



3 - GENERAL ELEVATION @ RIGHT FRONTAGE
SCALE 1:200



3A - SECTION @ MID-SPAN
SCALE 1:400



3B - SECTION@ ABUTMENT A2
SCALE 1:400

HYDRAULIC DESIGN DATA	
VELOCITY @ 50 YEARS, Vso	2.133 m/sec
DISCHARGE @ 50 YEARS, Qso	101.400 cu.m/sec
CATCHMENT AREA, CA	12.300 sq. km

NOTE :

PRIOR TO CONSTRUCTION SOIL INVESTIGATION SHALL BE CONDUCTED FOR CONFIRMATION OF ASSUMED BEARING CAPACITY AND FOOTING ELEVATION.

THE PILE LENGTH RECOMMENDED ARE MINIMUM. SHOULD THE SOIL AT THE RECOMMENDED LENGTH BE INADEQUATE BEARING MATERIAL, LENGTH SHALL BE INCREASED. THE MINIMUM EMBEDMENT LENGTH INTO ADEQUATE SOIL FOR 400 x 400 R. C. PILE IS 1000mm WHILE FOR 450 x 450 R. C. PILE IS 1200mm.

PERFECTO L. ZAPLAN JR.
OIC Chief, Hydraulics Division, BOD

A - PLARIDEL BYPASS BRIDGE NO.10 (STA. 50+216.400)
SCALE AS SHOWN

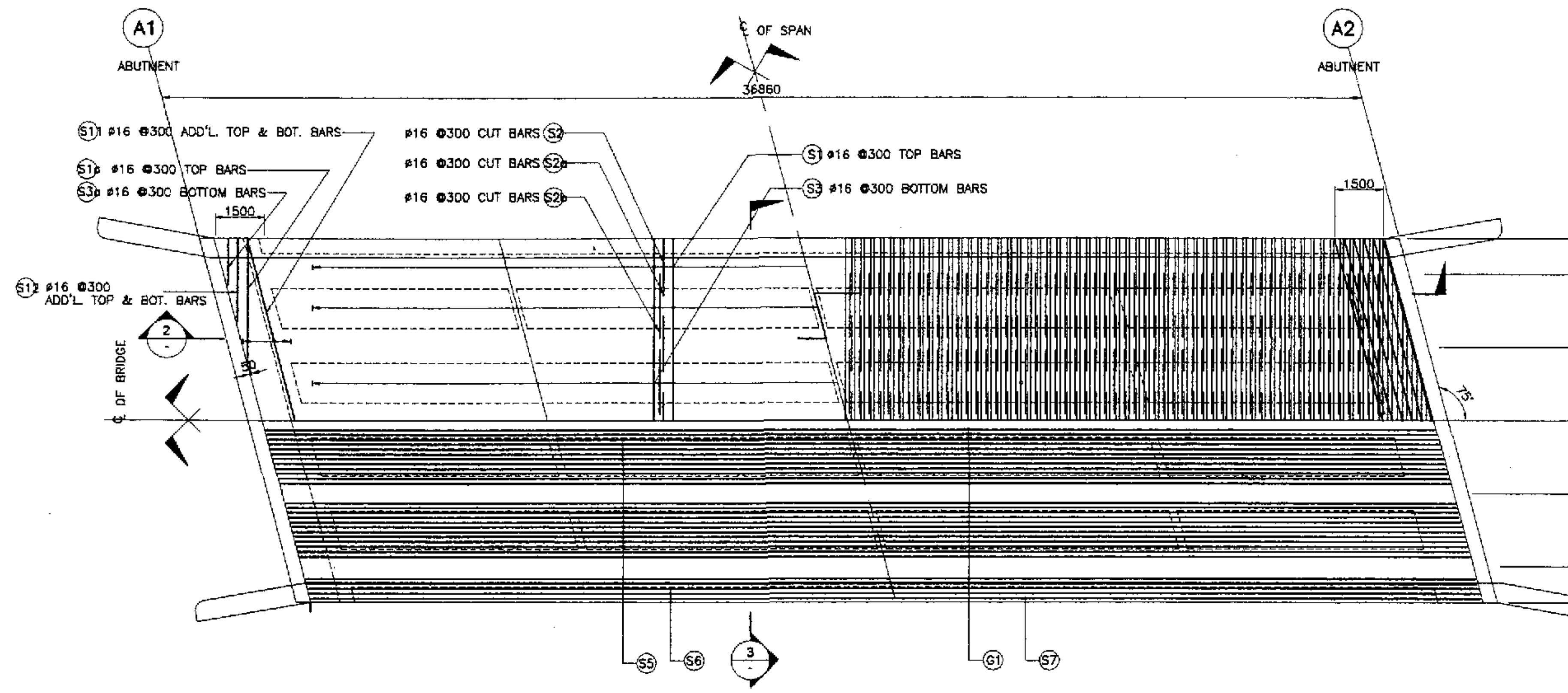
JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED		F. N. SALLAN
CHECKED		
SUBMITTED		TEAM LEADER

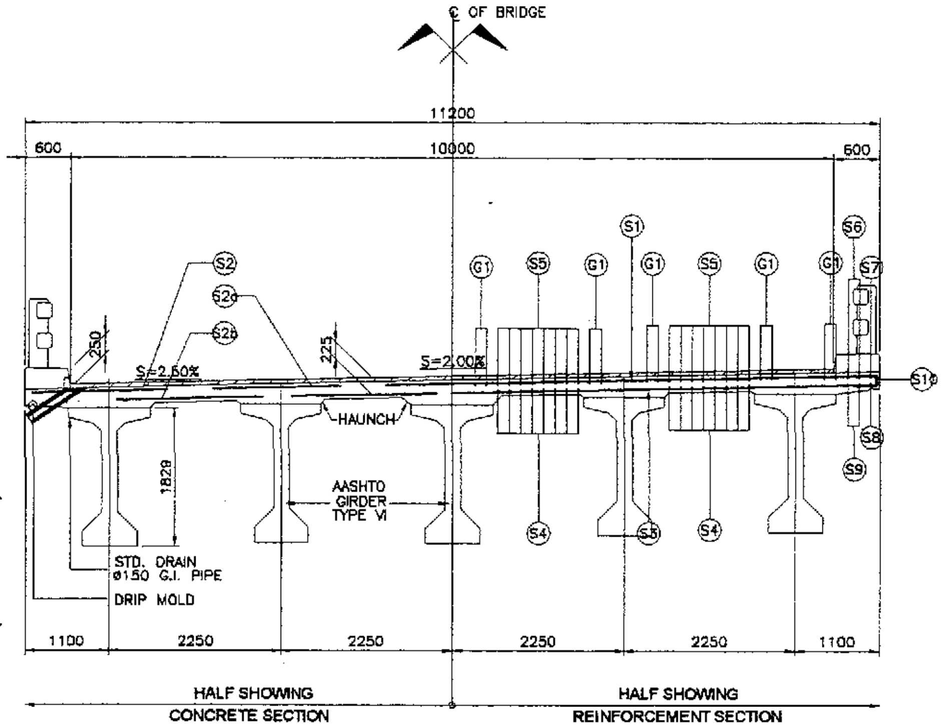
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

FJHL – 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	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director	Chief, Bridges Division	Director IV (OIC)	Undersecretary	Secretary

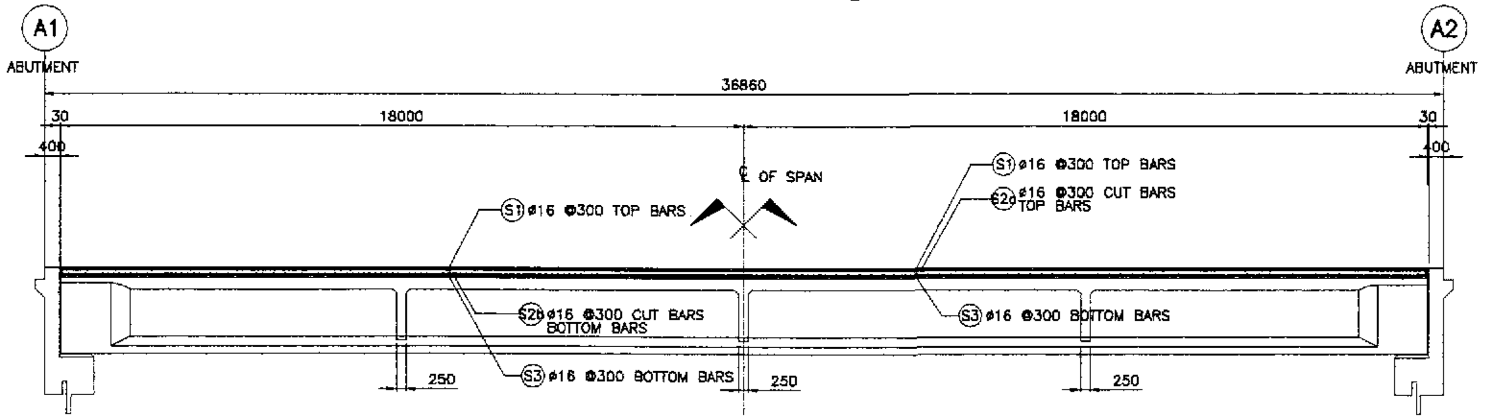
PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	1 : 200	BRIDGE NO. 10 GENERAL ELEVATION AND SECTIONS (ULTIMATE STAGE)	B10-02
PLARIDEL BYPASS - CONTRACT PACKAGE IV	FULL SIZE A1		



1 FRAMING PLAN
SCALE 1 : 100

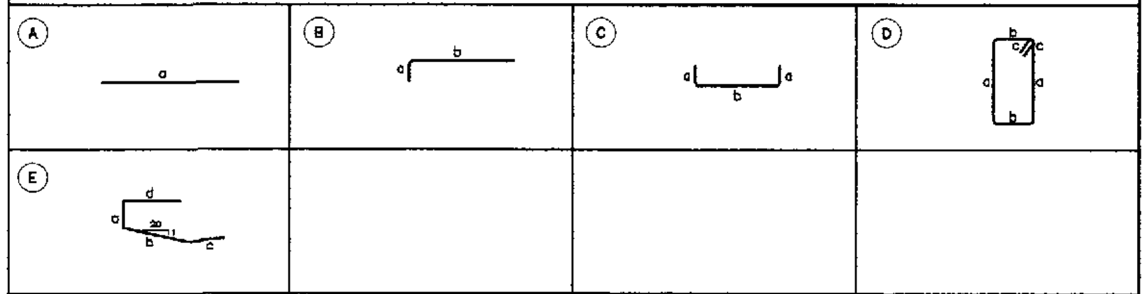


3 TYPICAL CROSS-SECTION
SCALE 1 : 50



2 LONGITUDINAL SECTION
SCALE 1 : 100

BAR BENDING DIAGRAM



ESTIMATED QUANTITIES OF SUPERSTRUCTURE

ITEM NO.	DESCRIPTION	UNIT	TOTAL
404(1)a	REINFORCING STEEL GRADE 40	kgs.	28745
	DECK SLAB	13913	
	DIAPHRAGM	475	
	GIRDER	10085	
	SIDEWALK, RAILING, & POST	2876	
	APPROACH SLAB	1396	
404(1)b	REINFORCING STEEL GRADE 60	kgs.	15503
	DECK SLAB	0	
	DIAPHRAGM	1802	
	GIRDER	8605	
	SIDEWALK, RAILING, & POST	708	
	APPROACH SLAB	4388	
405(1)	STRUCTURAL CONCRETE	cu. m.	308.22
	DECK SLAB	100.77	
	DIAPHRAGM	16.59	
	GIRDER	136.25	
	SIDEWALK, RAILING, & POST	19.26	
	APPROACH SLAB	35.45	

SCHEDULE OF REINFORCEMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT				LENGTH EACH BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT IN (kg)	REBAR RATIO (kg/m^3)
							a	b	c	d					
DECK SLAB	100.77	G1	16	20	AS SHOWN	(A)	35900	–	–	–	35900	718.00	1.579	1134	138.06
		S1	16	111	300	(C)	145	11100	145	–	11390	1264.29	1.579	1997	
		S1a	16	22	300	(C)	145	6150	145	–	6440	141.68	1.579	224	
		S2	16	222	300	(B)	145	1800	–	–	1945	431.79	1.579	682	
		S2a	16	333	300	(A)	1700	–	–	–	1700	566.10	1.579	894	
		S2b	16	444	300	(A)	1950	–	–	–	1950	865.80	1.579	1368	
		S3	16	111	300	(A)	11100	–	–	–	11100	1232.10	1.579	1946	
		S3a	16	22	300	(A)	6150	–	–	–	6150	135.30	1.579	214	
		S4	16	32	150	(A)	35900	–	–	–	35900	1148.80	1.579	1814	
		S5	16	32	150	(A)	35900	–	–	–	35900	1148.80	1.579	1814	
		S6	16	4	AS SHOWN	(A)	35900	–	–	–	35900	143.60	1.579	227	
		S7	16	2	AS SHOWN	(A)	35900				35900	71.80	1.579	114	
		S8	16	2	AS SHOWN	(A)	35900	–	–	–	35900	71.80	0.888	144	
		S9	16	4	AS SHOWN	(A)	35900	–	–	–	35900	143.60	0.888	227	
		S10	12	162	450	(E)	145	600	900	300	1945	315.09	0.888	280	
		S11	16	24	300	(A)	11500	–	–	–	11500	276.00	1.579	436	
		S12	16	44	300	(A)	6150	–	–	–	6150	270.60	1.579	428	
TOTAL	100.77	GRADE 40 TOTAL = 13,913 kgs.													

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

	DATE	SIGNATURE
DESIGNED	9/28/02	E. SALLAN
CHECKED	9/30/02	TAKAHASHI
SUBMITTED	10/6/02	M. IKUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

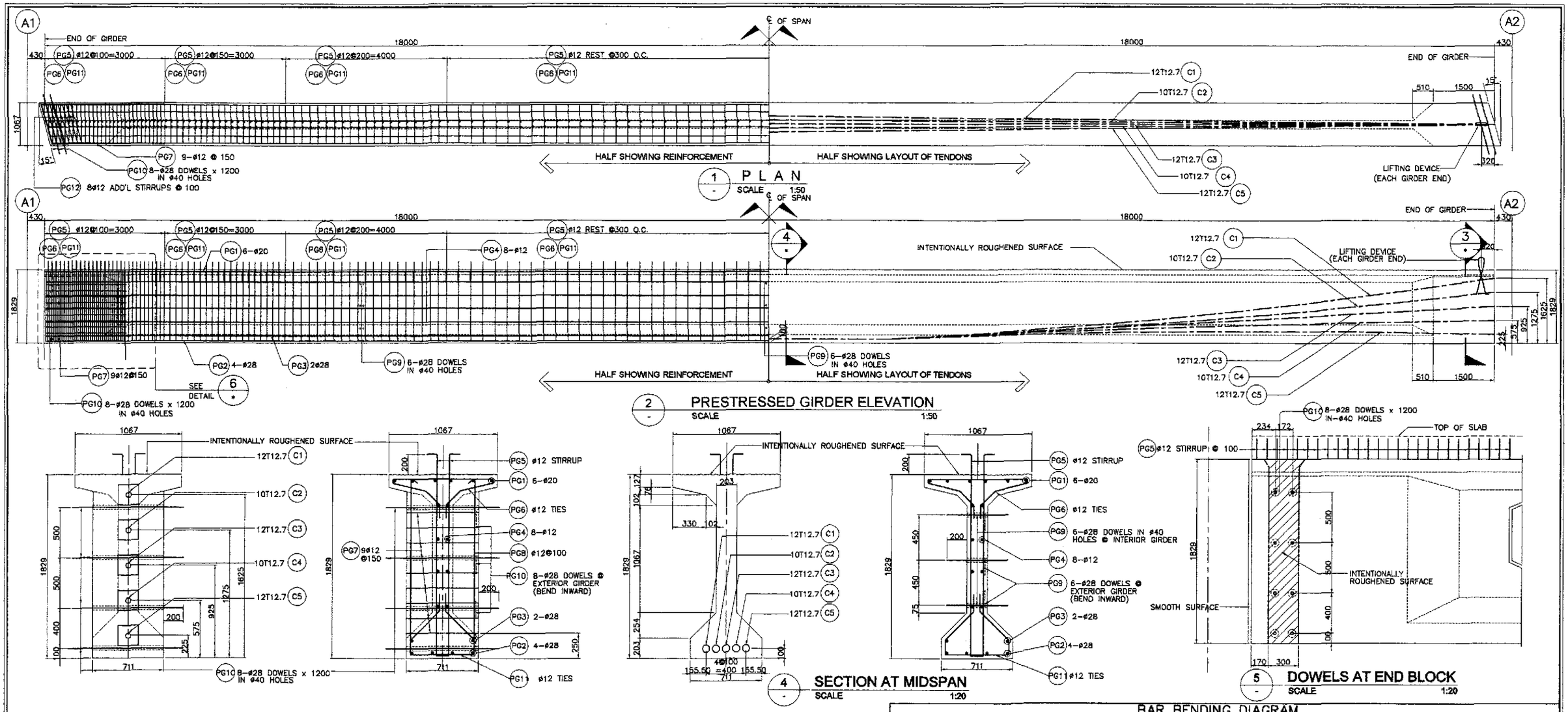
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
DECK FRAMING PLAN AND SECTION
(ULTIMATE STAGE)

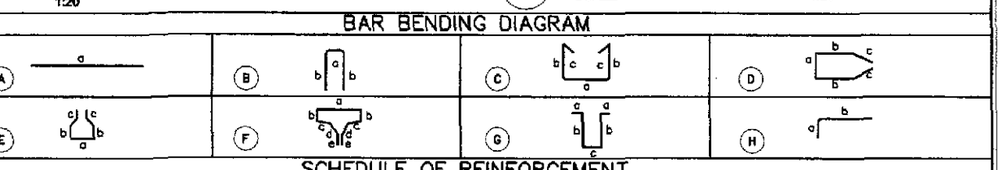
SHEET NO. : B10-03



NOTES ;

1.) SEE GENERAL NOTES, -2, FOR GIRDER DESIGN GUIDE.
2.) JACKING FORCE PER GIRDER, Pj = 7710 KN.
3.) JACKING WILL BE DONE AT BOTH ENDS.
4.) FINAL PRESTRESSING FORCE @ MIDSPAN, FNET = 5,537 KN.

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT

STRUCTURE COMPONENT	BAR MARK	SIZE (mm)	QTY.	SPACING	BAR SHAPE	DIMENSION(mm) a	b	c	d	e	LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONC. VOLUME (cu.m)	REBAR RATIO (kg/cu.m)	REMARKS
GIRDER	PG1	20	6	AS SHOWN	A	35920	–	–	–	–	35920	215.52	2.466	532	27.25	137.18	QUANTITIES ARE FOR ONE (1) GIRDER ONLY
	PG2	28	4	AS SHOWN	A	35920	–	–	–	–	35920	143.68	4.833	695			
	PG3	28	2	AS SHOWN	A	35920	–	–	–	–	35920	71.84	4.833	348			
	PG4	12	8	AS SHOWN	A	35920	–	–	–	–	35920	287.36	0.888	256			
	PG5	12	192	100	G	100	2000	103	–	–	4303	826.18	0.888	734			
	PG6	12	192	100	F	1000	50	340	200	150	2480	476.16	0.888	423			
	PG7	12	18	150	D	635	1450	550	–	–	4635	83.43	0.888	75			
	PG8	12	30	100	C	635	1750	150	–	–	4435	133.05	0.888	119			
	PG9	28	18	AS SHOWN	A	603	–	–	–	–	603	10.85	4.833	53			
	PG10	28	16	AS SHOWN	A	1200	–	–	–	–	1200	19.20	4.833	93			
	PG11	12	192	100	E	635	160	400	150	–	2055	394.56	0.888	351			
	PG12	12	16	100	B	635	1750	–	–	–	4135	66.16	0.888	59			

GRADE 40 TOTAL = 2,017 kgs.
GRADE 60 TOTAL = 1,721 kgs.

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

	DATE	SIGNATURE
DESIGNED	9/22/12	E. M. SALLAN
CHECKED	9/30/12	
SUBMITTED	10/16/12	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

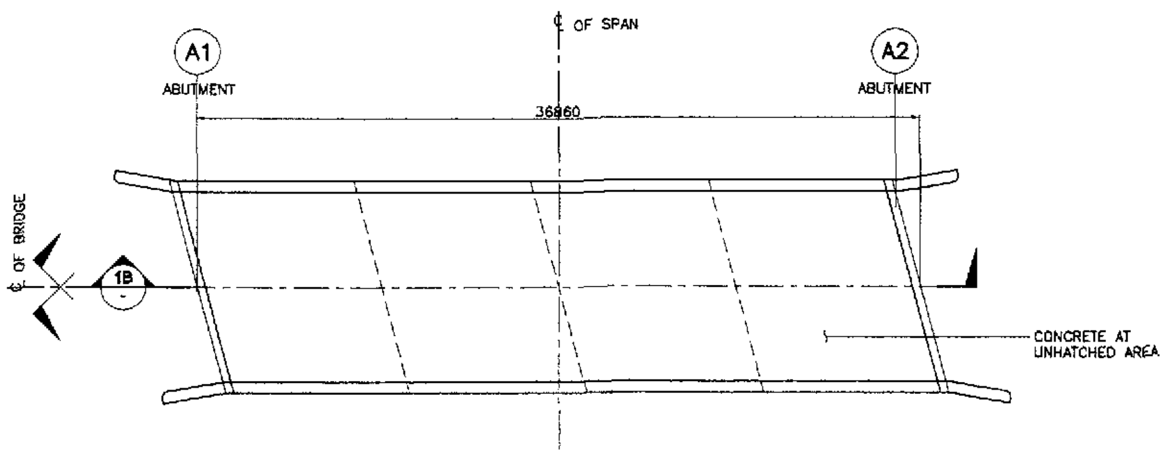
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	ADRIANO M. DOROY, Chief, Bridges Division	GILBERTO S. REYES, Director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

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

SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
AASHTO TYPE VI GIRDER
(ULTIMATE STAGE, LEFT & RIGHT FRONTAGE)

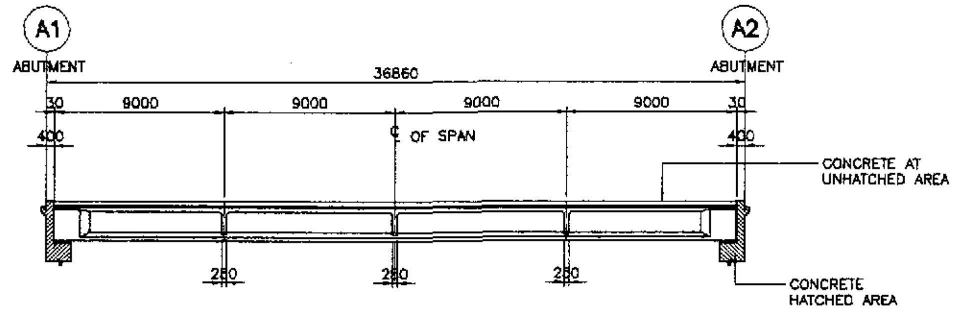
SHEET NO. : B10-04



NOTES:

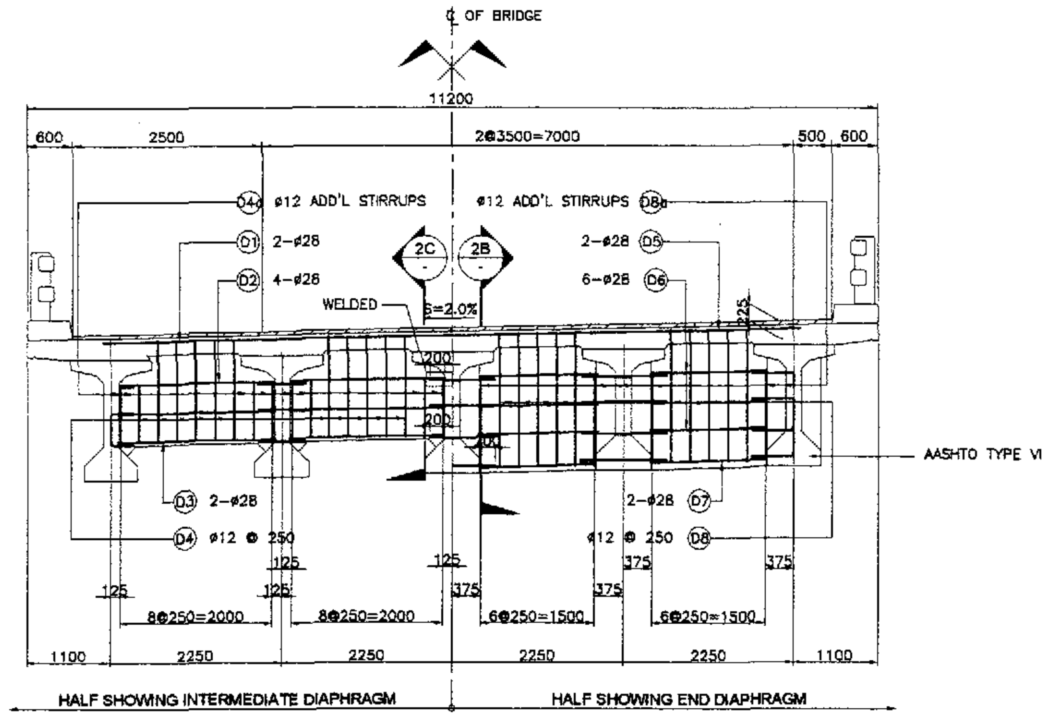
1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST TWENTY ONE (21) DAYS AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. REINFORCEMENT SHALL BE CONTINUOUS AT CONSTRUCTION JOINT.
3. SEE GIRDER DETAIL FOR SPACING OF ø28 DOWELS.

1A PLAN
SCALE 1:200

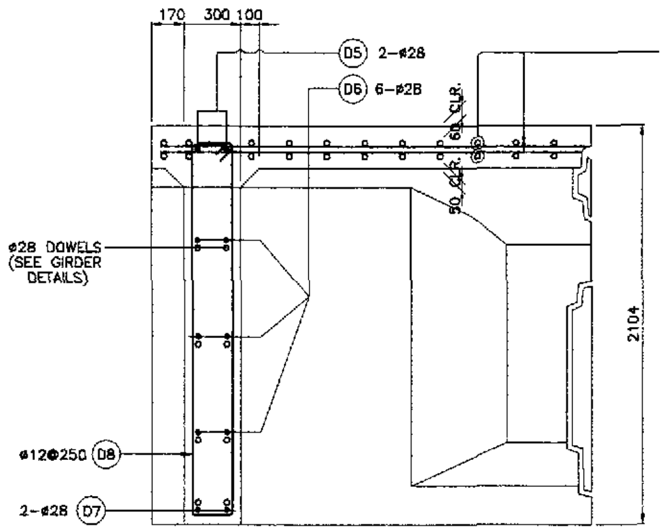


1B LONGITUDINAL SECTION
SCALE 1:200

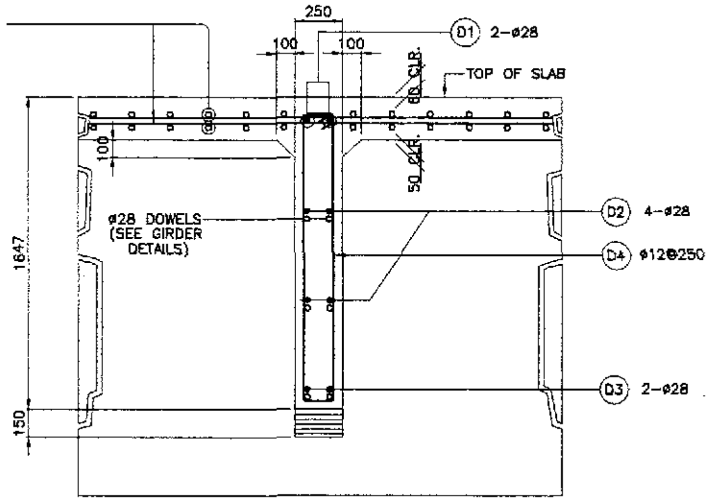
1 CONCRETE POURING SEQUENCE
SCALE 1 : 200



2A ELEVATION
SCALE 1 : 25



2B SECTION
SCALE 1:20

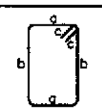


2C SECTION
SCALE 1:20

2 DETAIL OF END & INTERMEDIATE DIAPHRAGM
SCALE AS SHOWN

BAR BENDING DIAGRAM

A


B


SCHEDULE OF REINFORCEMENT

STRUCTURE COMPONENT	LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	TOTAL WEIGHT IN (kg)	REBAR RATIO (kg/m^3)	REMARKS
DIAPHRAGM	INTERMEDIATE DIAPHRAGM	9.65	D1	28	6	AS SHOWN	A	9400				9400	56.40	4.833	273	129.17	TOP BARS
			D2	28	48	AS SHOWN	A	2045				2045	98.16	4.833	475		DIST. BARS
			D3	28	24	AS SHOWN	A	2045				2045	49.08	4.833	238		BOTT. BARS
			D4	12	48	250	B	150	1500	150		3600	172.80	0.888	154		STIRRUPS
			D4a	12	48	200	B	150	950	150		2500	120.00	0.888	107		ADD'L. STIRRUPS
	END DIAPHRAGM	6.94	D5	28	4	AS SHOWN	A	9400				9400	37.60	4.833	182	148.41	TOP BARS
			D6	28	48	AS SHOWN	A	2045				2045	98.16	4.833	475		DIST. BARS
			D7	28	16	AS SHOWN	A	2045				2045	32.72	4.833	159		BOTT. BARS
			D8	12	40	250	B	200	1950	150		4600	184.00	0.888	164		STIRRUPS
			D8a	12	16	AS SHOWN	B	200	1400	150		3500	56.00	0.888	50		ADD'L. STIRRUPS
	TOTAL	16.59	GRADE 60 TOTAL = 1,802 KGS. GRADE 40 TOTAL = 475 KGS.														

JICA JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL YACHIYO ENGINEERING CO., LTD.	DESIGNED 9/28/02 E. N. SALLAN	CHECKED 9/30/02	SUBMITTED 10/16/02 M. KIUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

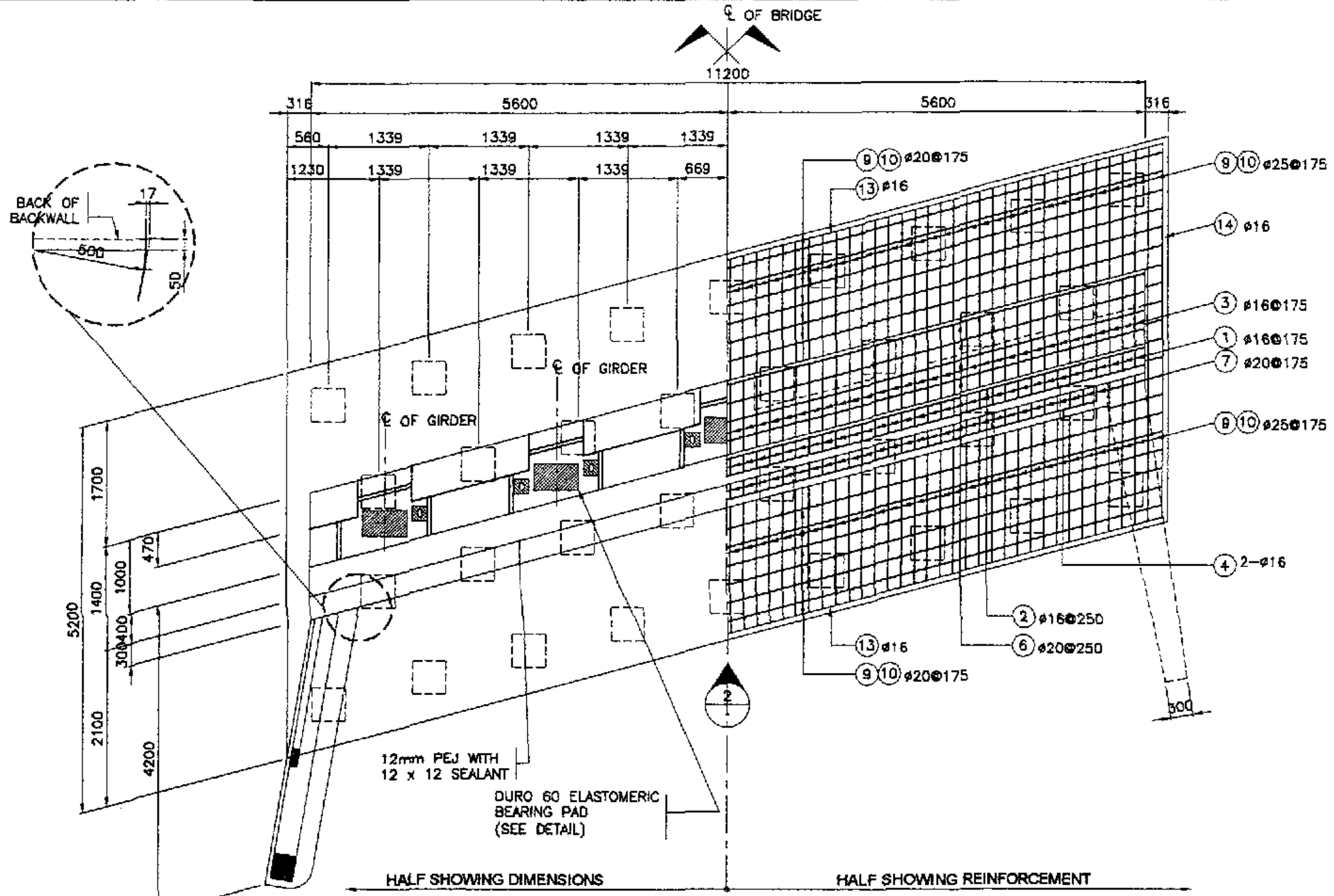
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

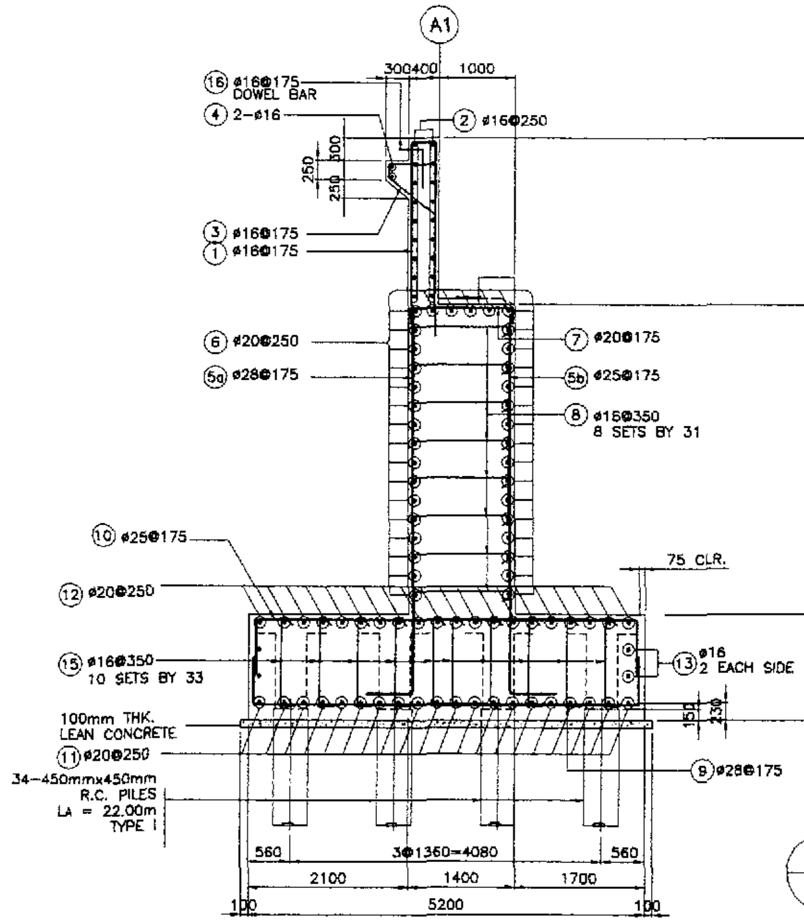
SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
CONCRETE POURING SEQUENCE AND DIAPHRAGM DETAILS (ULTIMATE STAGE)

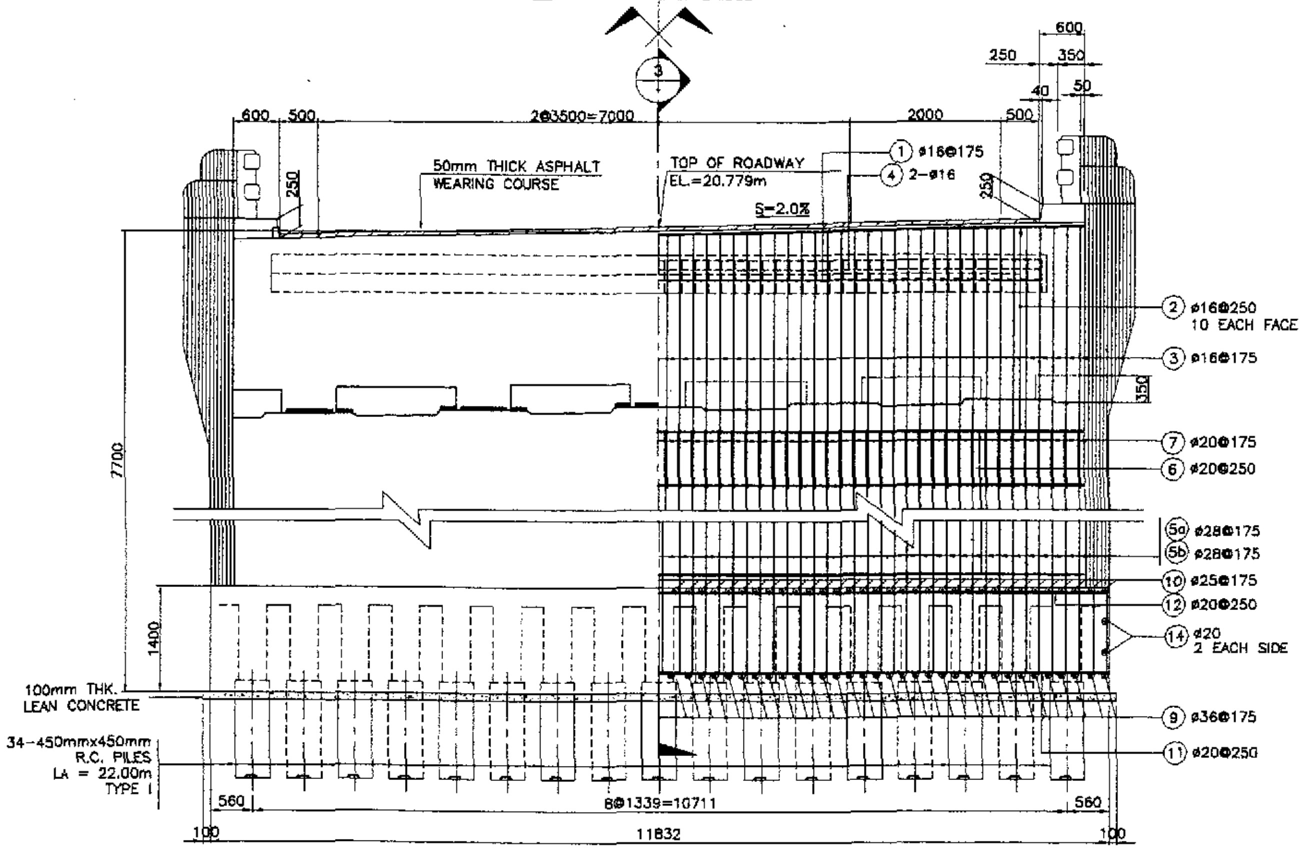
SHEET NO. : B10-05



1 PLAN
SCALE 1:50

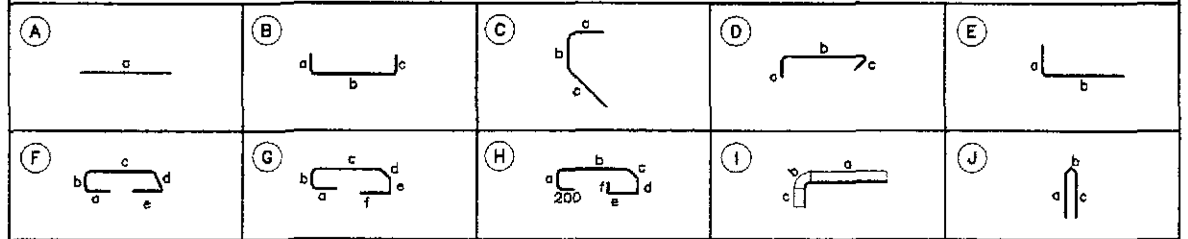


3 SECTION
SCALE 1:50



2 ELEVATION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
BACKWALL	11.00	1	16	65	175	B	2600	300	2600	–	–	–	5500	357.50	1.579	565	96.65
		2	16	18	250	A	11490	–	–	–	–	–	11490	206.82	1.579	327	
		3	16	58	175	C	600	150	750	–	–	–	1500	87.00	1.579	138	
		4	16	2	AS SHOWN	A	10250	–	–	–	–	–	10250	20.50	1.579	33	
MAINWALL	64.23	5a	28	65	175	E	600	5200	–	–	–	–	5800	377.00	4.3833	1823	82.38
		5b	25	65	175	E	600	5200	–	–	–	–	5800	377.00	3.854	1453	
		6	20	36	250	A	11490	–	–	–	–	–	11490	413.64	2.466	1021	
		7	20	65	175	B	250	1300	250	–	–	–	1800	117.00	2.466	289	
		8	16	248	350	D	250	1300	250	–	–	–	1800	446.40	1.579	705	
FOOTING	86.14	9	28	67	175	B	750	5050	750	–	–	–	6550	438.85	4.833	2121	72.27
		10	25	67	175	B	750	5050	750	–	–	–	6550	438.85	3.854	1692	
		11	20	21	250	B	750	12115	750	–	–	–	13615	285.92	2.466	706	
		12	20	21	250	B	750	12115	750	–	–	–	13615	285.92	2.466	706	
		13	16	4	AS SHOWN	A	12115	–	–	–	–	–	12115	48.46	1.579	77	
		14	20	4	AS SHOWN	A	5050	–	–	–	–	–	5050	20.20	2.466	50	
		15	16	330	350	D	250	1175	250				1675	552.75	1.579	873	
DOWEL		16	16	34	300	E	650	500	–	–	–	–	1150	39.10	1.579	62	
TOTAL	161.36	GRADE 40 TOTAL = 9,861 kgs. GRADE 60 TOTAL = 2,780 kgs.															

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

	DATE	SIGNATURE
DESIGNED	9/21/02	A.P. GONZALES
CHECKED	9/30/02	
SUBMITTED	10/16/02	M. KIUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

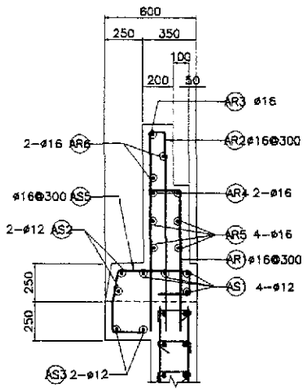
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

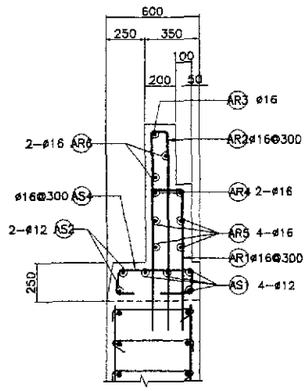
SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A1
MAINWALL REINFORCEMENT DETAILS
(ULTIMATE STAGE)

SHEET NO. : B10-06

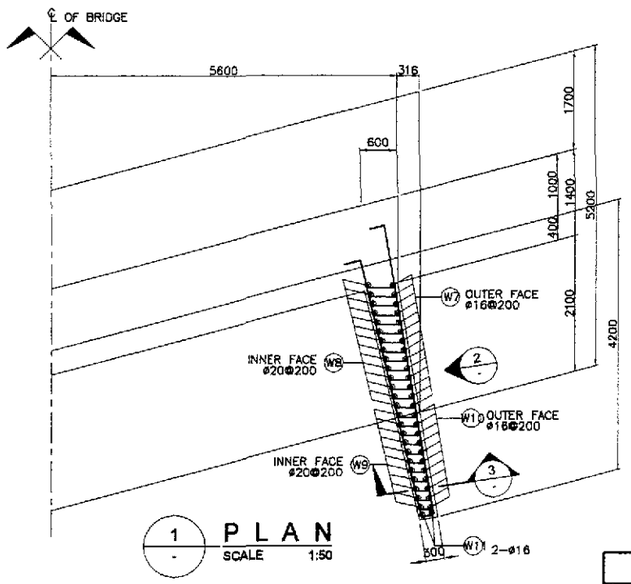


5A SECTION
SCALE 1:20

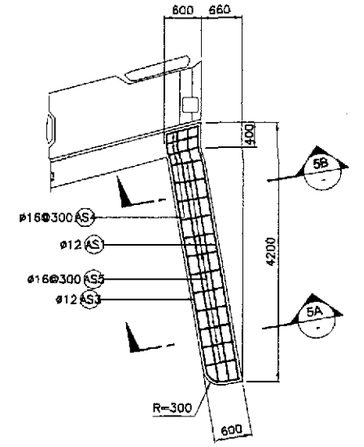


5B SECTION
SCALE 1:20

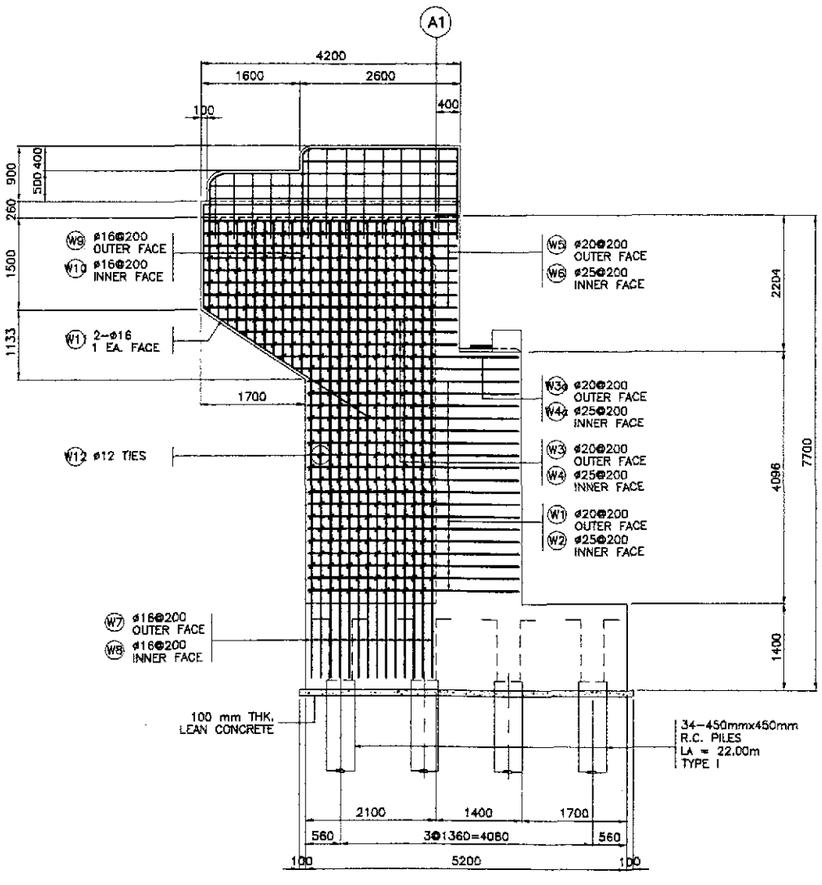
5 APPROACH RAIL DETAILS
SCALE 1:20



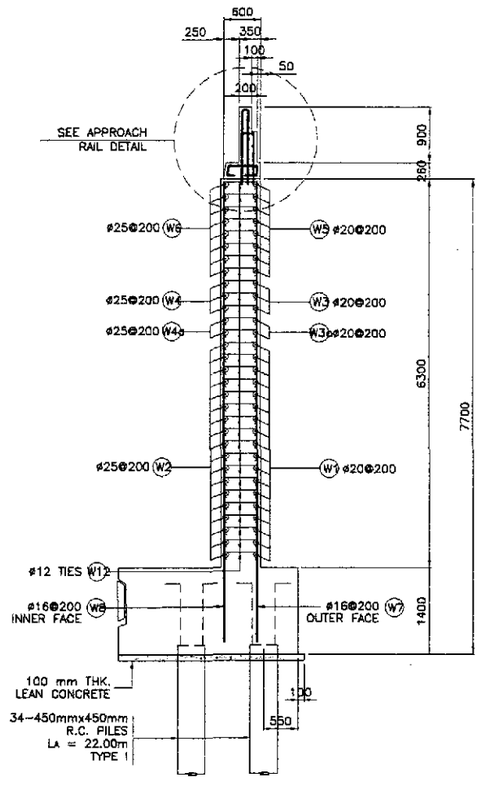
1 PLAN
SCALE 1:50



4 SIDEWALK DETAIL
SCALE 1:50

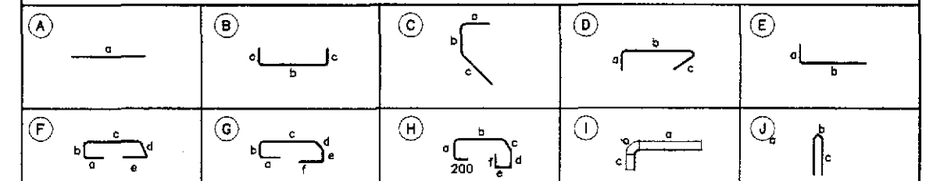


2 WINGWALL ELEVATION
SCALE 1:50



3 SECTION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
WINGWALL	15.07	W1	20	36	200	B	400	3400	150	–	–	–	3950	142.20	2.466	351	191.72
		W2	25	36	200	B	400	3400	150	–	–	–	3950	142.20	3.854	549	
		W3	20	4	200	B	400	3650	150	–	–	–	4200	16.80	2.466	42	
		W3a	20	6	200	B	400	3900	150	–	–	–	4450	26.70	2.466	66	
		W4	25	4	200	B	400	3650	150	–	–	–	4200	16.80	3.854	65	
		W4a	25	6	200	B	400	3900	150	–	–	–	4450	26.70	3.854	103	
		W5	20	16	200	B	400	4100	150	–	–	–	4650	74.40	2.466	184	
		W6	25	16	200	B	400	4100	150	–	–	–	4650	74.40	3.854	287	
		W7	16	28	200	E	250	7450	–	–	–	–	7700	215.60	1.579	341	
		W8	16	28	200	E	250	7450	–	–	–	–	7700	215.60	1.579	341	
		W9	16	22	250	E	250	2050	–	–	–	–	2300	50.60	1.579	80	
		W10	20	22	250	E	250	2050	–	–	–	–	2300	50.60	1.579	80	
		W11	16	4	AS SHOWN	C	250	1500	3200	–	–	–	4950	19.80	1.579	32	
		W12	12	524	AS SHOWN	D	170	450	170	–	–	–	790	413.96	0.888	368	
														GRADE 60 TOTAL = 1,647 kgs.			
														GRADE 40 TOTAL = 1,242 kgs.			
APPROACH RAILING AND SIDEWALK	3.54	AS	12	8	AS SHOWN	A	4100	–	–	–	–	–	4100	32.80	0.888	30	97.85
		AS2	12	4	AS SHOWN	A	4100	–	–	–	–	–	4100	16.40	0.888	15	
		AS3	16	4	AS SHOWN	A	4100	–	–	–	–	–	4100	16.40	1.579	26	
		AS4	16	6	300	F	200	170	480	200	200	–	1250	7.50	1.579	12	
		AS5	16	24	300	G	200	170	480	200	170	200	1420	38.08	1.579	57	
		AR1	16	10	300	E	200	900	–	–	–	–	1100	11.00	1.579	18	
		AR2	16	18	300	J	1300	120	1300	–	–	–	2720	48.96	1.579	78	
		AR3	16	2	AS SHOWN	I	2500	236	1300	–	–	–	4036	8.07	1.579	13	
		AR4	16	4	AS SHOWN	I	4000	236	900	–	–	–	5136	20.54	1.579	33	
		AR5	16	8	AS SHOWN	A	4000	–	–	–	–	–	4000	32.00	1.579	51	
		AR6	16	4	AS SHOWN	A	2500	–	–	–	–	–	2500	10.00	1.579	16	
														GRADE 40 TOTAL =346 kgs.			
TOTAL	18.61													GRADE 60 TOTAL = 1,847 kgs. GRADE 40 TOTAL = 1,588 kgs.			

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

	DATE	SIGNATURE
DESIGNED		P. GONZALES
CHECKED		
SUBMITTED		TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

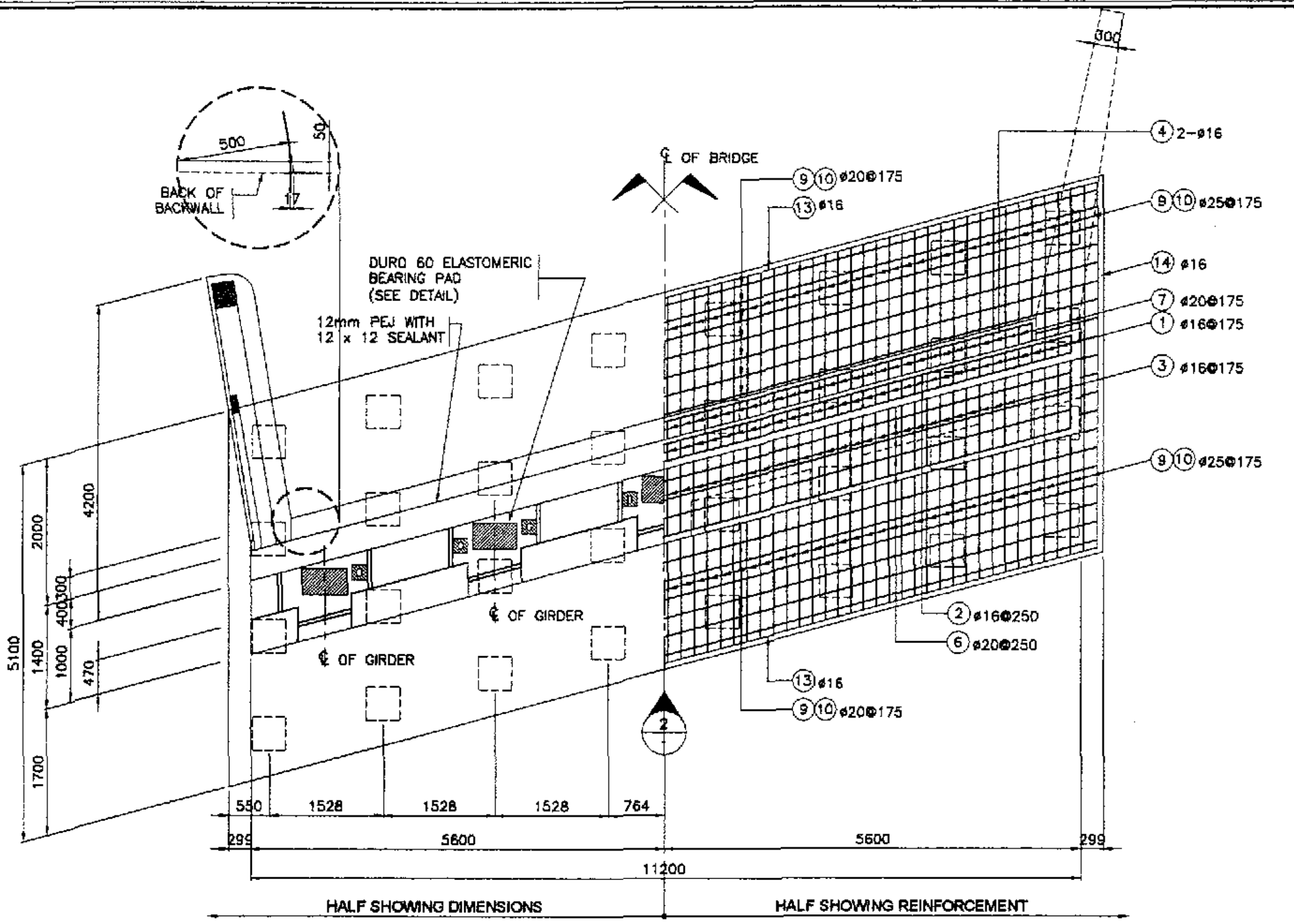
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

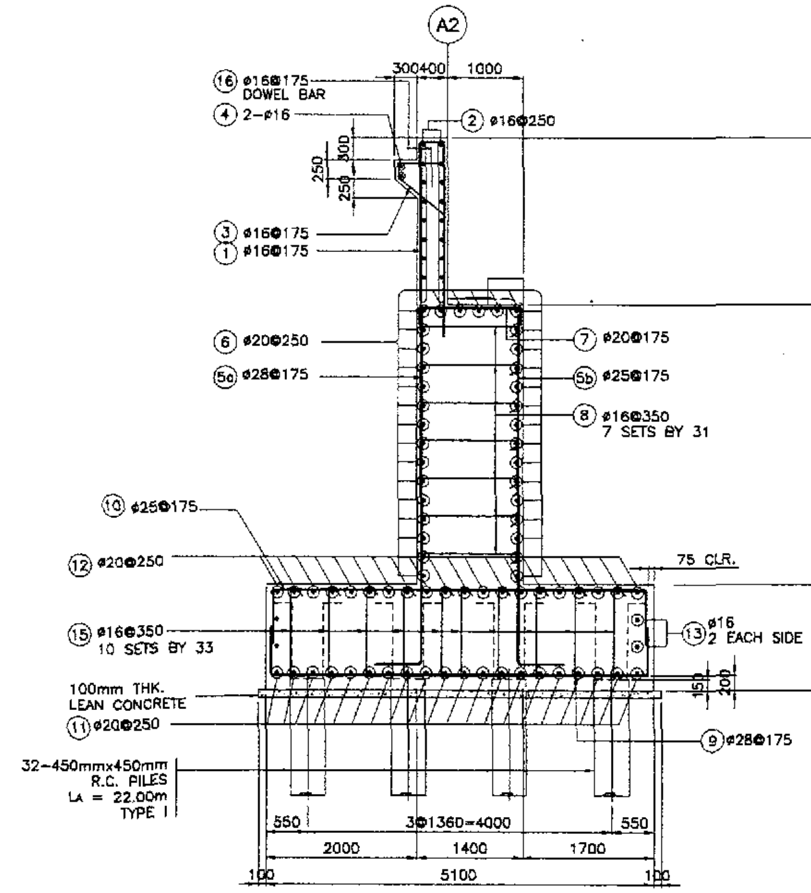
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A1
WINGWALL REINFORCEMENT DETAILS
(ULTIMATE STAGE)

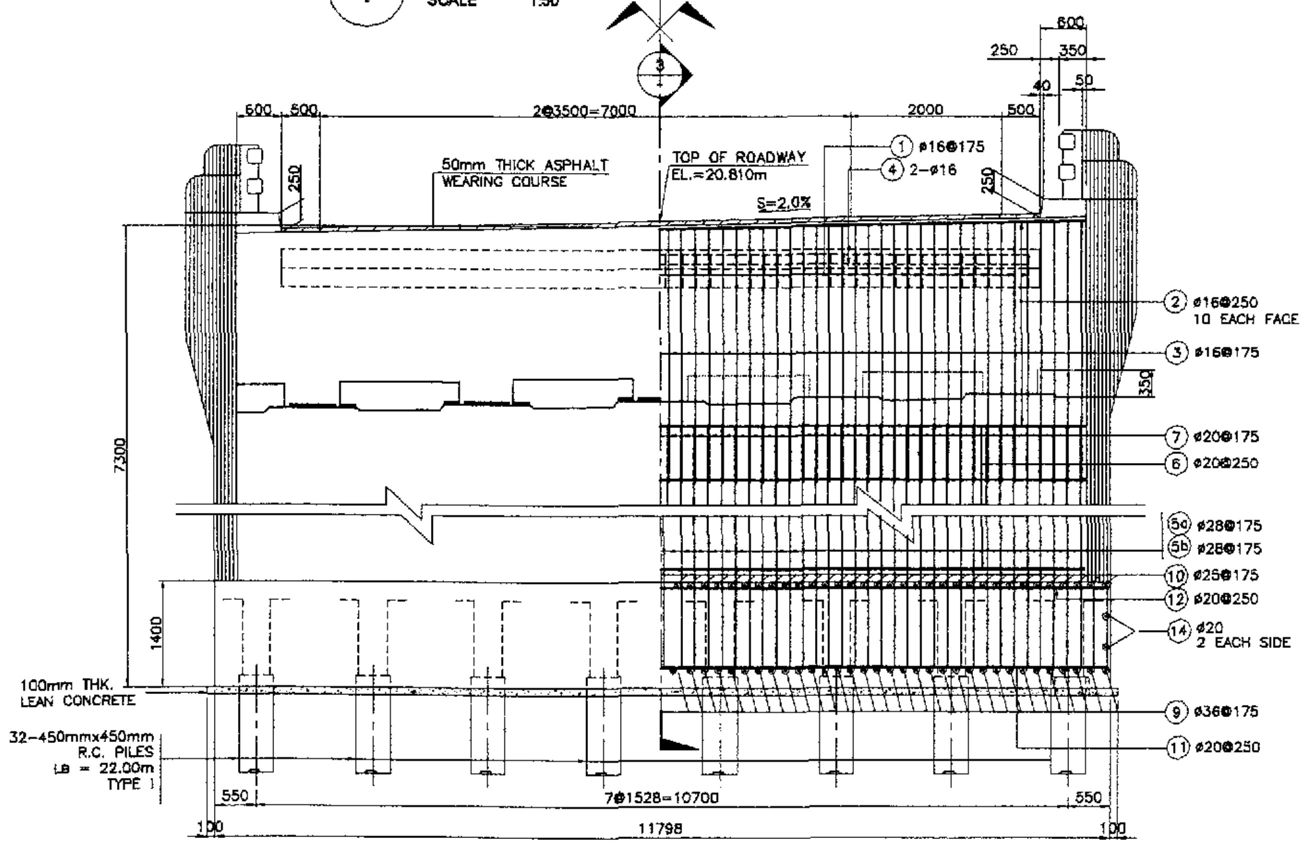
SHEET NO. :
B10-07



1 PLAN
SCALE 1:50

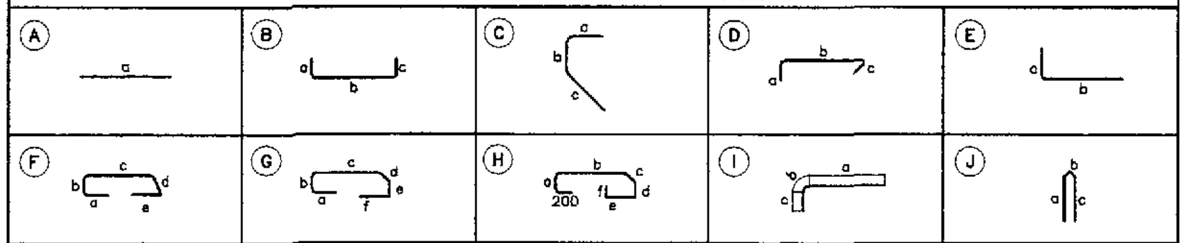


3 SECTION
SCALE 1:50



2 ELEVATION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
BACKWALL	11.00	(1)	16	65	175	(B)	2600	300	2600	–	–	–	5500	357.50	1.579	565	96.65
		(2)	16	18	250	(A)	11490	–	–	–	–	–	11490	206.82	1.579	327	
		(3)	16	58	175	(C)	600	150	750	–	–	–	1500	87.00	1.579	138	
		(4)	16	2	AS SHOWN	(A)	10250	–	–	–	–	–	10250	20.50	1.579	33	
MAINWALL	57.95	(5a)	28	65	175	(E)	600	4800	–	–	–	–	5400	351.00	4.833	1697	84.90
		(5b)	25	65	175	(E)	600	4800	–	–	–	–	5400	351.00	3.854	1353	
		(6)	20	34	250	(A)	11490	–	–	–	–	–	11490	390.66	2.466	964	
		(7)	20	65	175	(B)	250	1300	250	–	–	–	1800	117.00	2.466	289	
		(8)	16	217	350	(D)	250	1300	250	–	–	–	1800	390.60	1.579	617	
FOOTING	84.24	(9)	28	68	175	(B)	700	4950	700	–	–	–	6350	431.80	4.833	2087	73.32
		(10)	25	68	175	(B)	700	4950	700	–	–	–	6350	431.80	3.854	1665	
		(11)	20	21	250	(B)	700	10250	700	–	–	–	13460	283.66	2.466	698	
		(12)	20	21	250	(B)	700	10250	700	–	–	–	13460	283.66	2.466	698	
		(13)	20	4	AS SHOWN	(A)	10250	–	–	–	–	–	10250	48.24	2.466	119	
		(14)	20	4	AS SHOWN	(A)	4950	–	–	–	–	–	4950	19.80	2.466	49	
		(15)	16	330	350	(D)	250	1150	250				1650	544.50	1.579	860	
DOWEL		(16)	16	34	300	(E)	650	500	–	–	–	–	1150	39.10	1.579	62	
TOTAL	153.19	GRADE 40 TOTAL = 9,619 kgs. GRADE 60 TOTAL = 2,602 kgs.															

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

	DATE	SIGNATURE
DESIGNED	9/28/02	A. P. GONZALES
CHECKED	9/30/02	K. KASHIMA
SUBMITTED	10/16/02	M. KINOSHITA TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

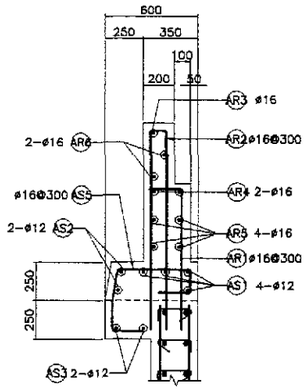
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

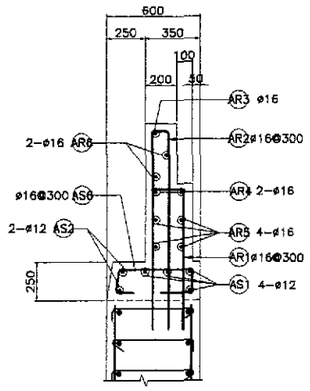
SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A2
MAINWALL REINFORCEMENT DETAILS
(ULTIMATE STAGE)

SHEET NO. : B10-08

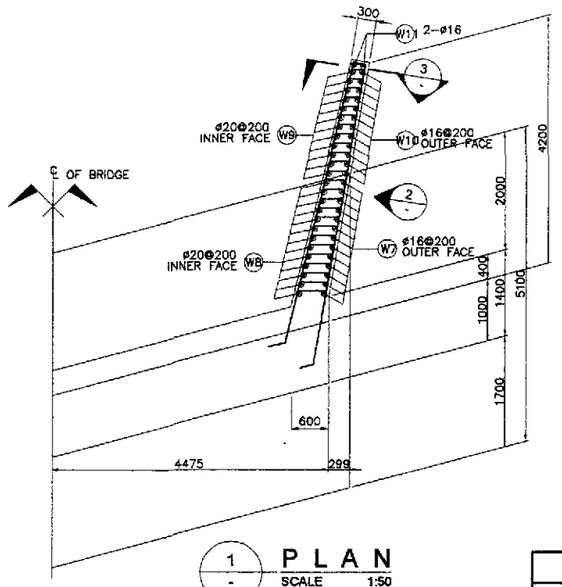


5A — SECTION
SCALE 1:20

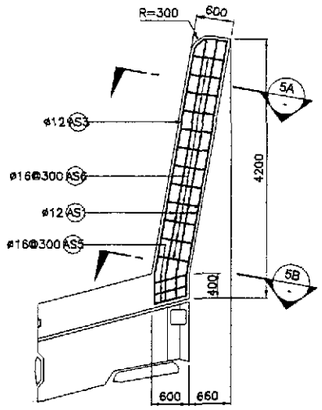


5B — SECTION
SCALE 1:20

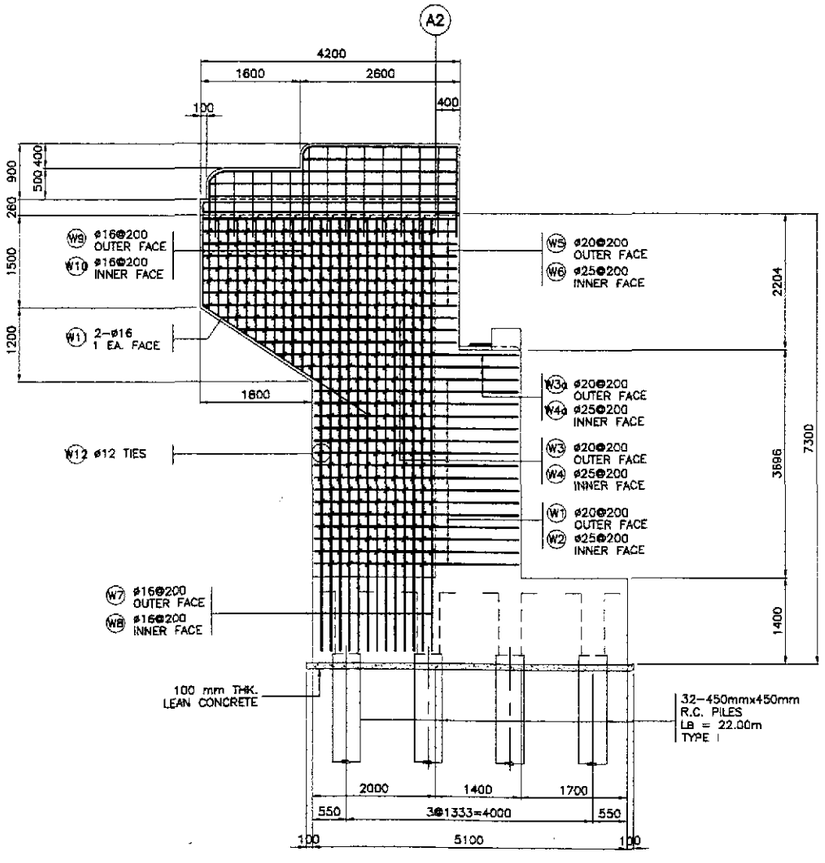
5 — APPROACH RAIL DETAILS
SCALE 1:20



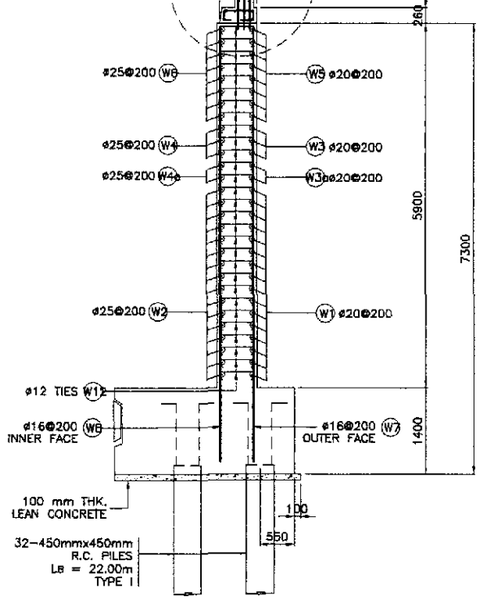
1 — PLAN
SCALE 1:50



4 — SIDEWALK DETAIL
SCALE 1:50

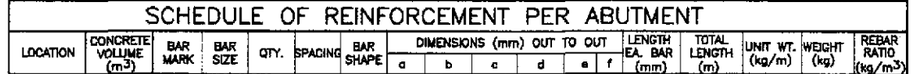


2 — WINGWALL ELEVATION
SCALE 1:50



3 — SECTION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
WINGWALL	11.68	W1	20	32	200	B	400	3300	150	–	–	–	3850	123.20	2.466	304	192.20
		W2	25	32	200	B	400	3300	150	–	–	–	3850	123.20	3.854	475	
		W3	20	4	200	B	400	3650	150	–	–	–	4200	16.80	2.466	42	
		W3a	20	6	200	B	400	3900	150	–	–	–	4450	26.70	2.466	66	
		W4	25	4	200	B	400	3650	150	–	–	–	4200	16.80	3.854	65	
		W4a	25	6	200	B	400	3900	150	–	–	–	4450	26.70	3.854	103	
		W5	20	16	200	B	400	4100	150	–	–	–	4650	74.40	2.466	184	
		W6	25	16	200	B	400	4100	150	–	–	–	4650	74.40	3.854	287	
		W7	16	26	200	E	250	7100	–	–	–	–	7350	191.10	1.579	302	
		W8	16	26	200	E	250	7100	–	–	–	–	7350	191.10	1.579	302	
		W9	16	24	200	E	250	2100	–	–	–	–	2350	56.40	1.579	90	
		W10	16	24	200	E	250	2100	–	–	–	–	2350	56.40	1.579	90	
		W11	16	4	AS SHOWN	C	250	1500	3200	–	–	–	4950	19.80	1.579	32	
		W12	12	502	AS SHOWN	D	170	450	170	–	–	–	790	396.58	0.888	353	
														GRADE 60 TOTAL = 1,526 kgs.			
														GRADE 40 TOTAL = 1,169 kgs.			
APPROACH RAILING AND SIDEWALK	3.54	AS	12	8	AS SHOWN	A	4100	–	–	–	–	–	4100	32.80	0.888	30	83.14
		AS2	12	4	AS SHOWN	A	4100	–	–	–	–	–	4100	16.40	0.888	15	
		AS3	12	2	AS SHOWN	A	4100	–	–	–	–	–	4100	8.40	0.888	8	
		AS4	16	6	300	G	200	170	480	200	170	200	1420	8.52	1.579	14	
		AS5	16	24	300	F	200	170	480	200	200	–	1250	30.00	1.579	48	
		AR	16	10	300	E	200	900	–	–	–	–	1100	11.00	1.579	18	
		AR2	16	18	300	J	1300	120	1300	–	–	–	2720	48.96	1.579	78	
		AR3	16	2	AS SHOWN	I	2500	236	1300	–	–	–	4036	8.07	1.579	13	
		AR4	16	4	AS SHOWN	I	4000	236	900	–	–	–	5136	20.54	1.579	33	
		AR5	16	8	AS SHOWN	A	4100	–	–	–	–	–	4100	32.80	1.579	52	
		AR6	16	4	AS SHOWN	A	2500	–	–	–	–	–	2500	10.00	1.579	16	
														GRADE 40 TOTAL= 325 kgs.			
TOTAL	17.56													GRADE 60 TOTAL = 1,526 kgs. GRADE 40 TOTAL = 1,494 kgs.			

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

	DATE	SIGNATURE
DESIGNED		P. GONZALES
CHECKED		
SUBMITTED		TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

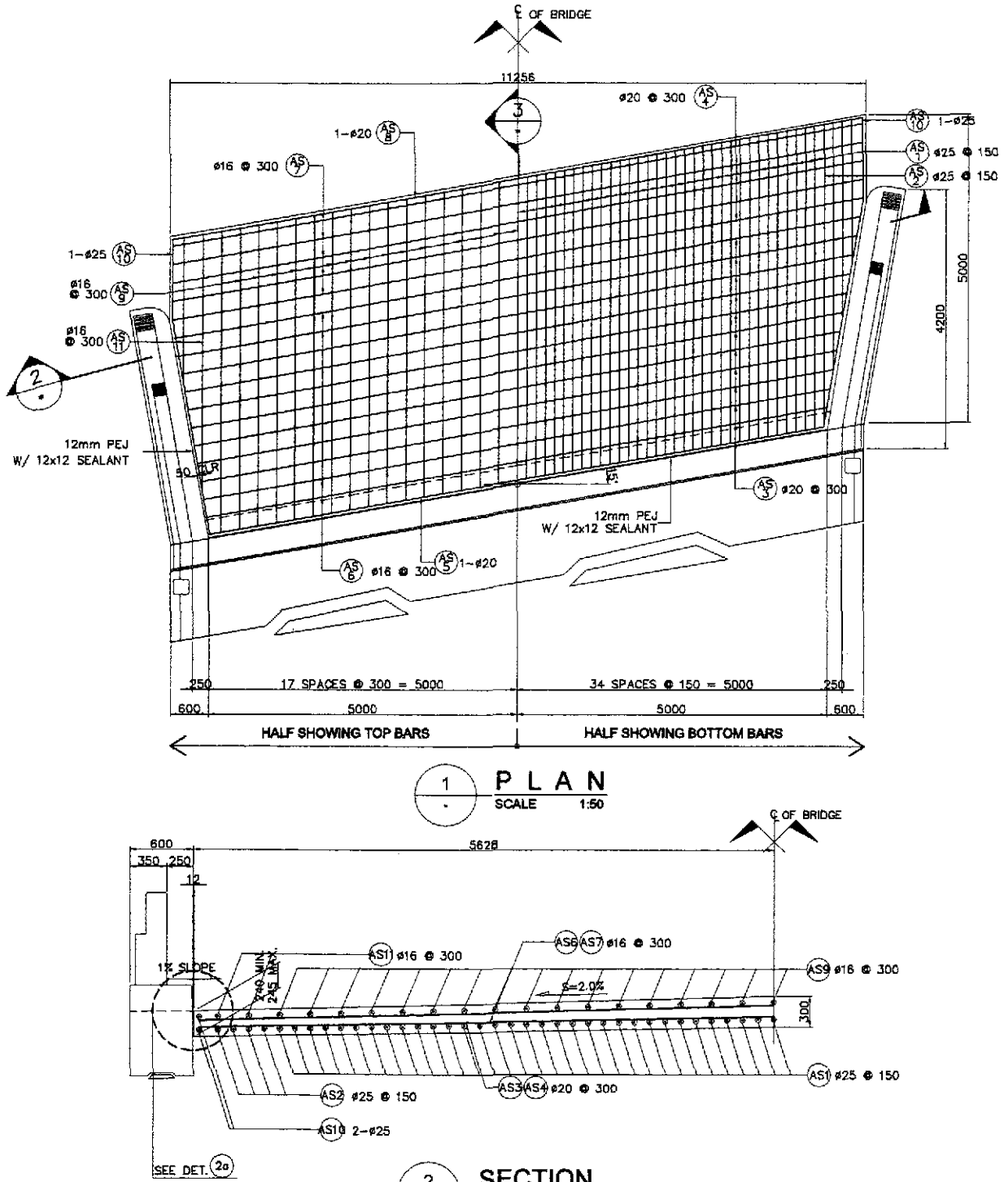
PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

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

SCALE :
AS SHOWN
FULL SIZE A1

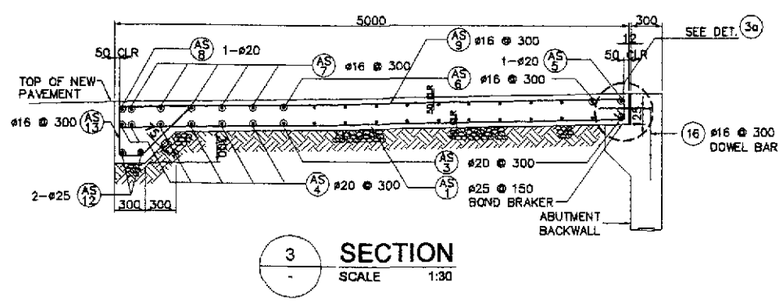
SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A2
WINGWALL REINFORCEMENT DETAILS
(ULTIMATE STAGE)

SHEET NO. :
B10-09

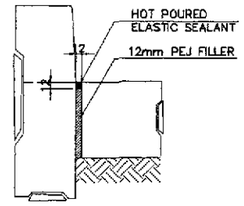


1 - PLAN
SCALE 1:50

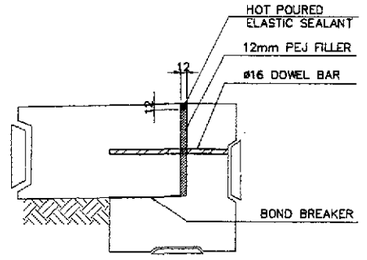
2 - SECTION
SCALE 1:30



3 - SECTION
SCALE 1:30

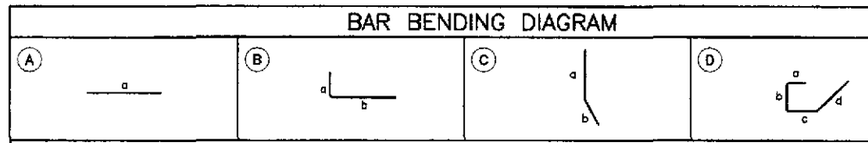


2a - DETAIL
SCALE 1:10



3a - DETAIL
SCALE 1:10

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER APPROACH SLAB

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/cu.m)
APPROACH SLAB	17.73	AS1	25	68	150	B	4900	200	–	–	–	–	5100	346.80	3.854	1337	161.29
		AS2	25	8	150	B	3550	200	–	–	–	–	3750	30.00	3.854	116	
		AS3	20	12	300	A	11290	–	–	–	–	–	11290	135.48	2.466	335	
		AS4	20	6	300	A	11960	–	–	–	–	–	11960	71.76	2.466	177	
		AS5	20	1	AS SHOWN	A	10600	–	–	–	–	–	10600	10.60	2.466	27	
		AS6	16	11	300	A	11370	–	–	–	–	–	11370	125.07	1.579	198	
		AS7	16	5	300	A	11960	–	–	–	–	–	11960	59.80	1.579	95	
		AS8	20	1	AS SHOWN	A	11960	–	–	–	–	–	11960	11.96	2.466	30	
		AS9	16	34	300	B	4900	200	–	–	–	–	5100	173.40	1.579	274	
		AS10	25	4	AS SHOWN	C	1400	3700	–	–	–	–	5100	20.40	3.854	79	
		AS11	16	4	300	B	3200	200	700	–	–	–	3400	13.60	1.579	22	
		AS12	25	2	AS SHOWN	A	11960	–	–	–	–	–	11960	23.92	3.854	93	
		AS13	16	38	300	D	400	500	200	700	–	–	1800	68.40	1.579	109	
TOTAL	17.73	GRADE 40 TOTAL = 698 kgs. GRADE 60 TOTAL = 2,194 kgs.															

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

	DATE	SIGNATURE
DESIGNED	9/28/02	E. A. SALLAN
CHECKED	9/30/02	
SUBMITTED	10/16/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

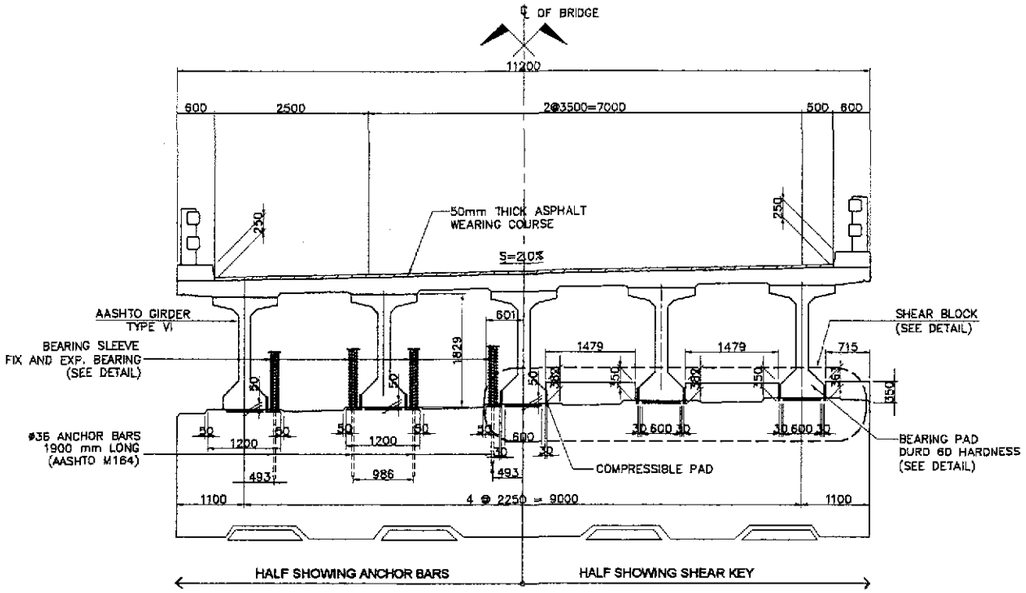
FUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

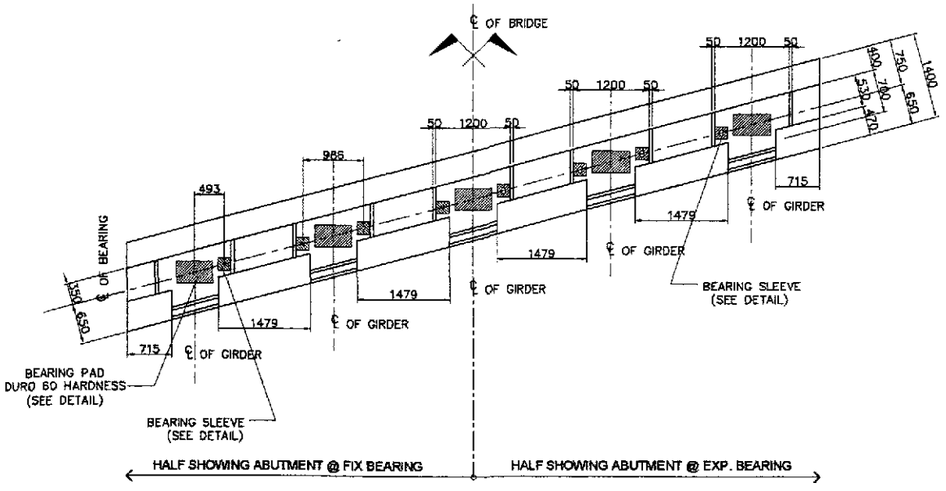
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
APPROACH SLAB PLAN,
SECTIONS AND DETAILS
(ULTIMATE STAGE)

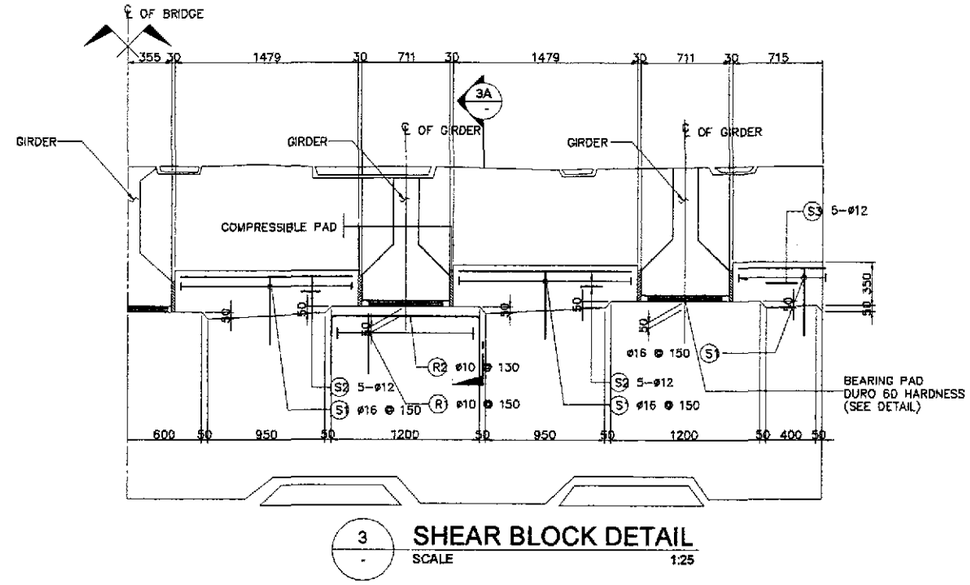
SHEET NO. :
B10-10



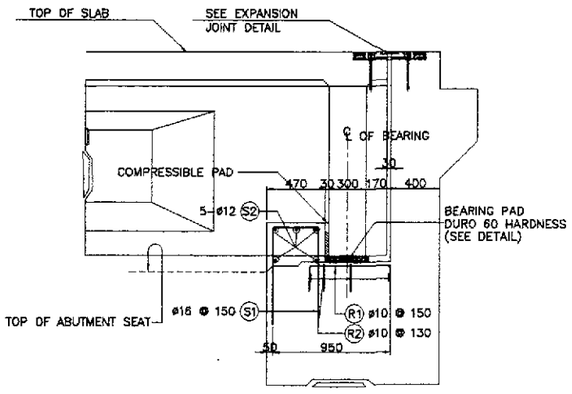
1 / - SECTION AT ABUTMENT SEAT
SCALE 1:50



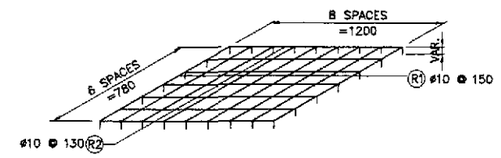
2 / - PLAN AT ABUTMENT SEAT
SCALE 1:50



3 / - SHEAR BLOCK DETAIL
SCALE 1:25



3A / - SECTION
SCALE 1:25



4 / - RISER REINFORCEMENT
NOT TO SCALE

BAR BENDING DIAGRAM

(A) a

(B) a b c

SCHEDULE OF REINFORCEMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSION(mm) OUT TO OUT a	b	c	d	e	LENGTH EACH BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
SHEAR KEY & RISER	1.78	S1	16	50	150	(B)	560	390	560			1510	75.50	1.579	120	141.54
		S2	12	20	AS SHOWN	(A)	1450					1450	29.00	0.888	26	
		S3	12	10	AS SHOWN	(A)	660					660	6.60	0.888	6	
		R1	10	45	150	(B)	500	810	500			1810	81.45	0.616	51	
		R2	10	35	130	(B)	500	1250	500			2250	78.75	0.616	49	
TOTAL	1.78	GRADE 40 TOTAL = 252 kgs.														

THE REINFORCEMENT SHOWN ON THIS TABLE IS FOR REFERENCE ONLY. THE CONTRACTOR SHOULD CHECKED AND VERIFY ALL DIMENSIONS, SIZES AND QUANTITIES OF REINFORCEMENT.

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

	DATE	SIGNATURE
DESIGNED	9/20/01	E. PASCUAL
CHECKED	9/20/01	
SUBMITTED	10/16/02	M. KUMA TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

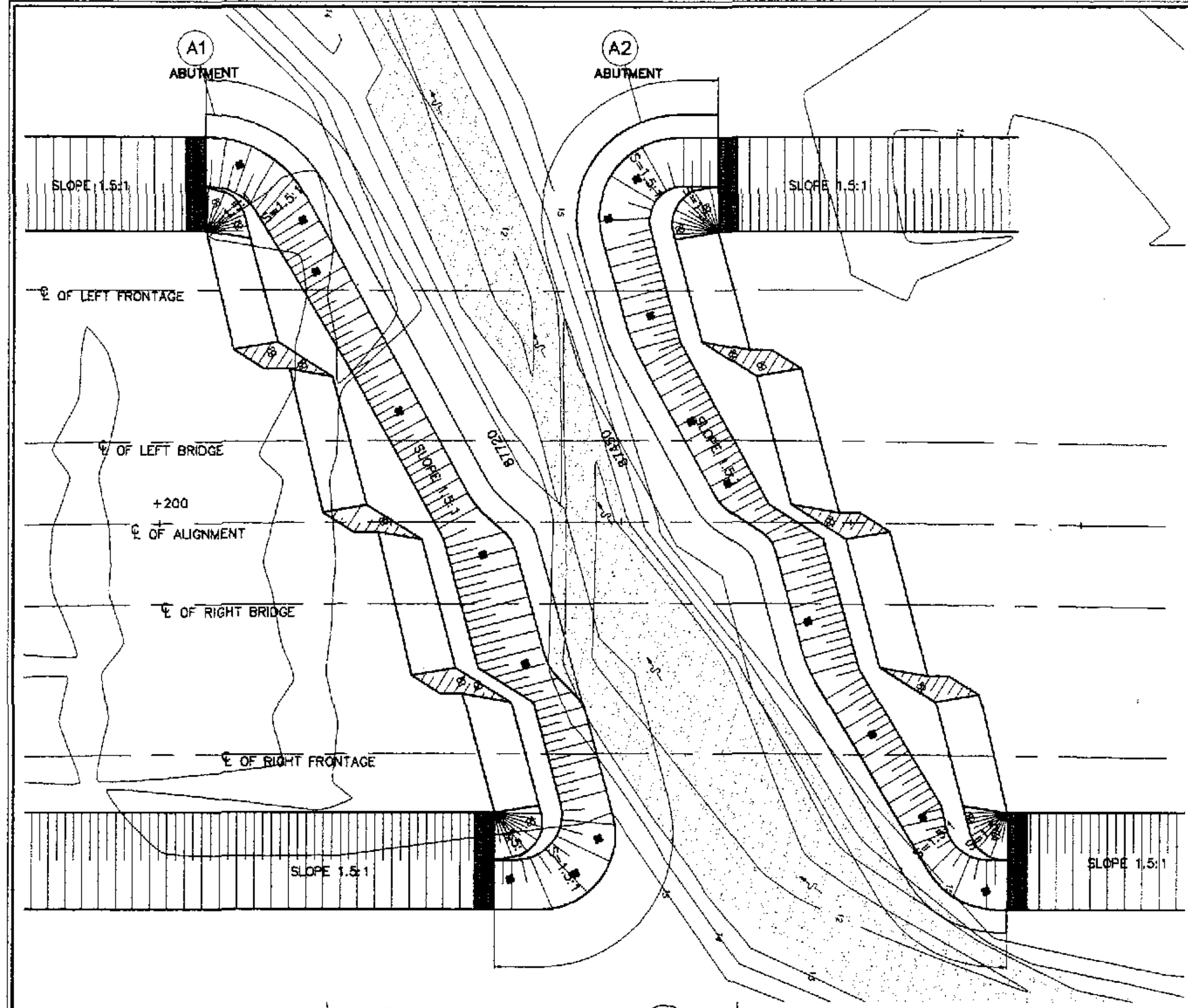
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DORDY	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director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

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

SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
SHEARKEY AND RISER DETAILS (ULTIMATE STAGE)

SHEET NO. : B10-11



1A PLAN
SCALE 1:300

GENERAL NOTES:

1. GROUTED RIPRAP (250mm–300mmDIA.) SHALL BE USED FOR THE FACING AND SHALL BE CAREFULLY HANDLAID WITH THE LONGEST DIMENSIONS PERPENDICULAR TO THE SLOPE AND FIRMLY BEDDED INTO THE SLOPE AND ADJACENT TO THE ADJOINING BOULDERS SPACED BETWEEN THE BOULDERS. THE SPACE BETWEEN THE BOULDERS SHALL BE COMPLETELY FILLED WITH MORTAR. THE OUTSIDE SURFACE OF THE BOULDERS SHALL BE LEFT EXPOSED AND THE SURFACE OF THE MORTAR SHALL BE SWEPT WITH A STIFF BROOM.

2. GEOTEXTILE
   THE FOLLOWING SPECIFICATIONS ARE REQUIRED:
   1. POLYESTER OR POLYPROPELINE – 100%
   2. MECHANICALLY BONDED/HEAT BONDED
   3. NON–WOVEN
   4. EFFECTIVE OPENING SIZE – 110 MICRONS (MAX.)
   5. THICKNESS UNDER PRESSURE – 0.80mm (MIN.)
   6. WEIGHT – 200g/sq. m. (MIN.)
   7. CBR PUNCTURE STRENGTH – 400N (MIN.)
   8. MULTI–DIRECTIONAL TENSILE STRENGTH – 13KN/m

3. GRAVEL FILTER SHALL BE COARSE AGGREGATES MATERIALS WHICH SATISFY THE REQUIREMENTS FOR ITEM 405, STRUCTURAL CONCRETE, GRADING B OF TABLE 405.1 AS REVISED.

4. HAND–LAID ROCK SHALL BE MORE THAN 0.015cu.m. IN VOLUME AND SHALL CONSISTS OF HARD AND DURABLE STONES. ALL SHALL BE LAID FLAT AND SECURELY PLACED WITH LARGER STONES GENERALLY LOCATED IN THE LOWER PART OF THE STRUCTURE.

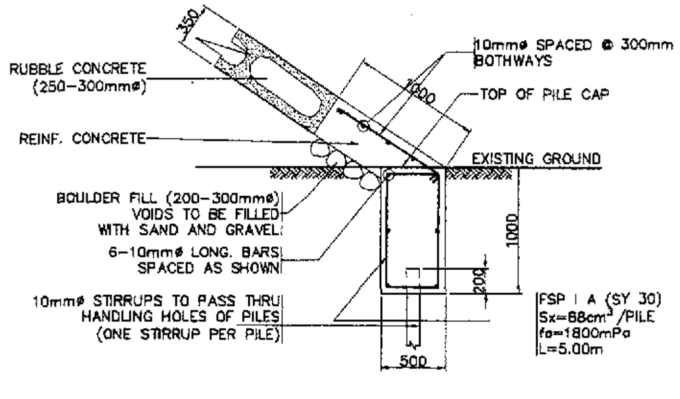
5. RUBBLE CONCRETE SHALL BE CLASS "B" (1:2.5:5) MIX CONCRETE WITH BOULDERS EMBEDDED THEREIN. BOULDERS 250–300mmø SHALL BE CAREFULLY HAND–LAID WITHIN THE CONCRETE SECTION. THE BOULDERS SHALL BE THOROUGHLY INCORPORATED INTO THE CONCRETE MASS WITH A COVER OF 30mm AND NOT LESS THAN 30mm APART. THE RUBBLE CONCRETE SHALL BE COMPOSED OF 40% CLASS "B" CONCRETE 60% BOULDERS.

6. FOR THE LOOSE BOULDER APRON, BOULDERS 350–450mmø SHALL BE HAND–LAID, CLOSE TOGETHER AND SHALL BE FIRMLY BEDDED. ALL VOIDS BETWEEN BOULDERS SHALL BEFILLED WITH GRAVEL AND THE JOINTS FILLED WITH TIGHTLY DRIVEN SPALLS.

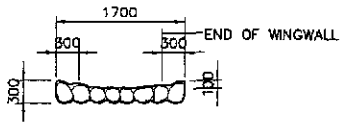
7. CURTAIN WALLS SHALL BE USED AT BOTH ENDS OF THE LOOSE BOULDER APRON BANK PROTECTION WORKS. BOULDERS SHALL BE CAREFULLY HAND–LAID AND EMBEDDED INTO THE CONCRETE SECTION.

8. NO CONCRETING UNDER WATER SHALL BE PERMITTED.

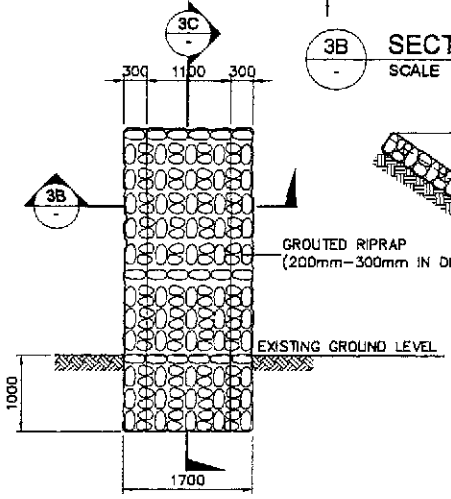
9. PROVIDE 1.0 m. BERM WHEN HEIGHT (H) IS > 4.0 m.



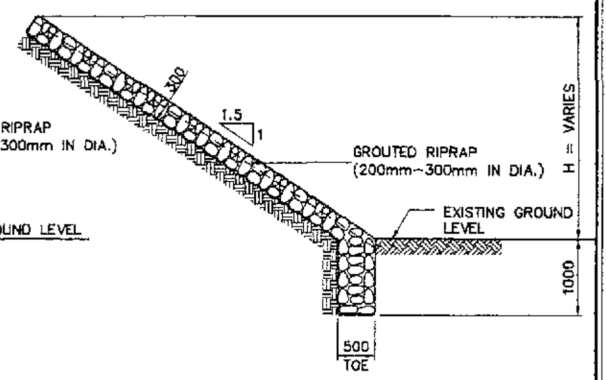
2 CAPPING AND SHEET PILE CONNECTIONS
SCALE 1:30



3B SECTION
SCALE 1:50



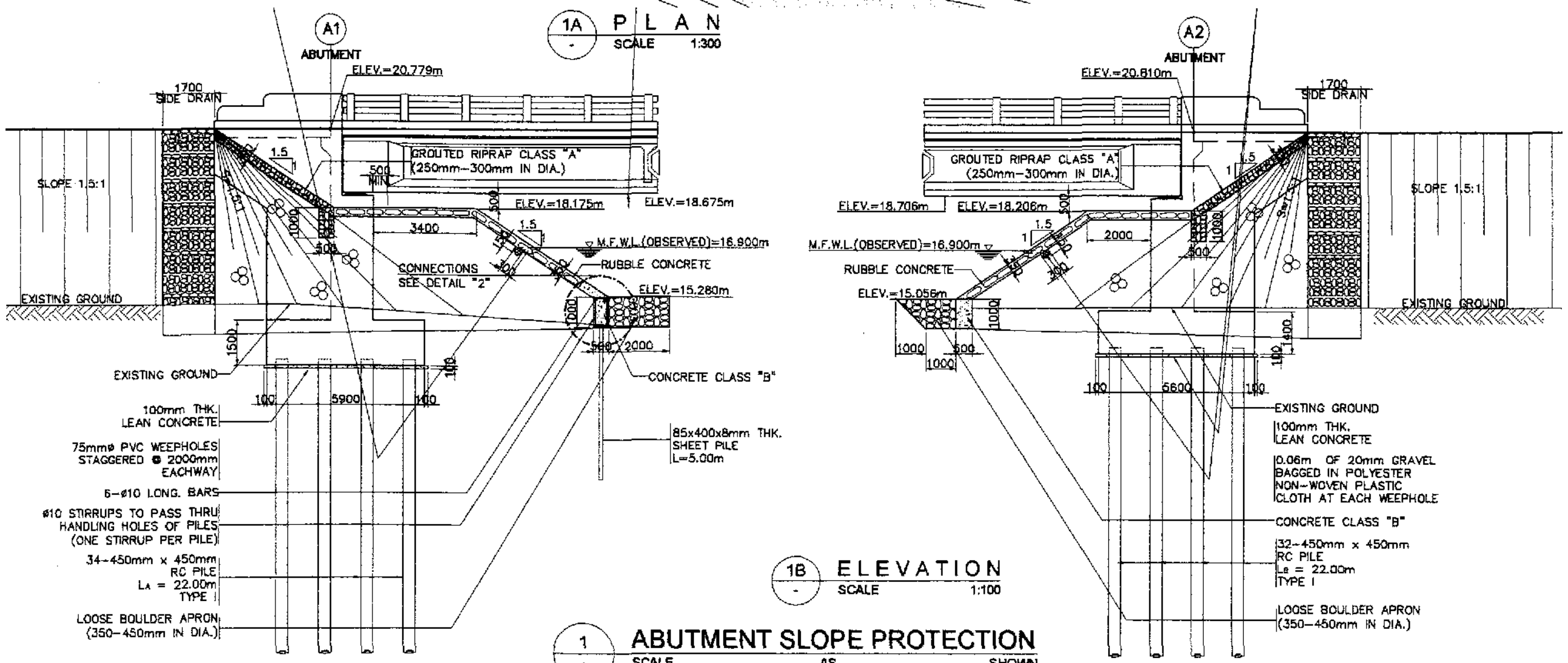
3A ELEVATION
SCALE 1:50



3C SECTION
SCALE 1:50

3 TYPICAL SIDE DRAIN DETAIL
SCALE AS SHOWN

VELOCITY (m/sec)	ROCK SIZE (mm)	
	VERY TURBULENT FLOW	SMOOTH FLOW
1.00	40	–
1.50	135	–
2.00	170	–
2.50	255	137
3.00	370	197
3.50	515	270
4.00	690	350
4.50	825	425
5.00	>900	590



1B ELEVATION
SCALE 1:100

1 ABUTMENT SLOPE PROTECTION
SCALE AS SHOWN

PER ABUTMENT

LOCATION	SIZES	QUANTITY	
		ABUT. A1	ABUT. A2
CONC. CLASS "B"	1000 x 500 x LENGTH	33.82 cu. m.	38.66 cu. m.
REBAR	ø10, GRADE 40	334.00 kgs.	0
BOULDER APRON	350mm–450mm IN DIA.	35.81 cu. m.	100.97 cu. m.
RUBBLE CONCRETE	250mm–300mm IN DIA.	135.75 cu. m.	132.95 cu. m.
SHEET PILE	85 x 400 x 8mm THK.	96.00 pcs.	0
SIDE DRAIN	200mm–300mm IN DIA.	11.88 cu. m.	11.88 cu. m.
GROUTED RIPRAP	250mm–300mm IN DIA.	36.86 cu. m.	36.86 cu. m.

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

	DATE	SIGNATURE
DESIGNED	9/28/02	P. GONZALES
CHECKED	9/30/02	N. KOBAYASHI
SUBMITTED	10/16/02	M. KIKUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

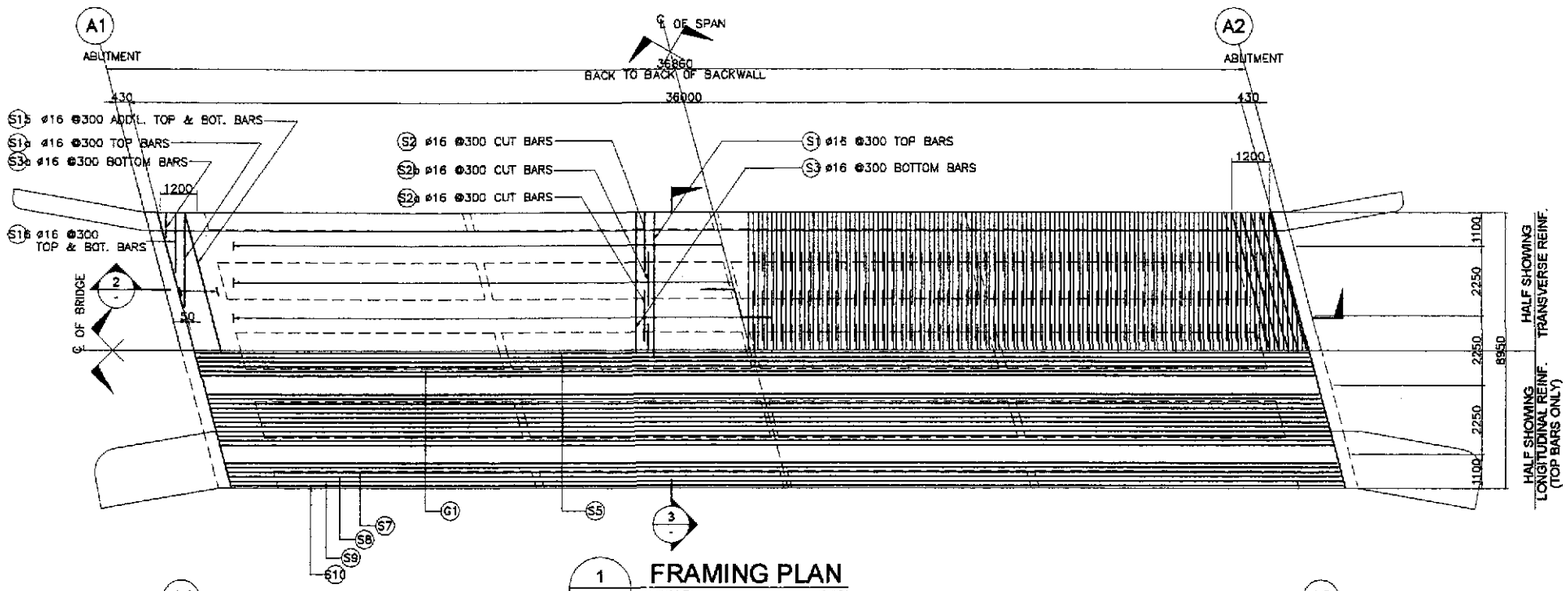
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	PERFECTO L. ZAPLAN JR. Chief, Hydraulics Division (OIC)	GILBERTO S.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

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

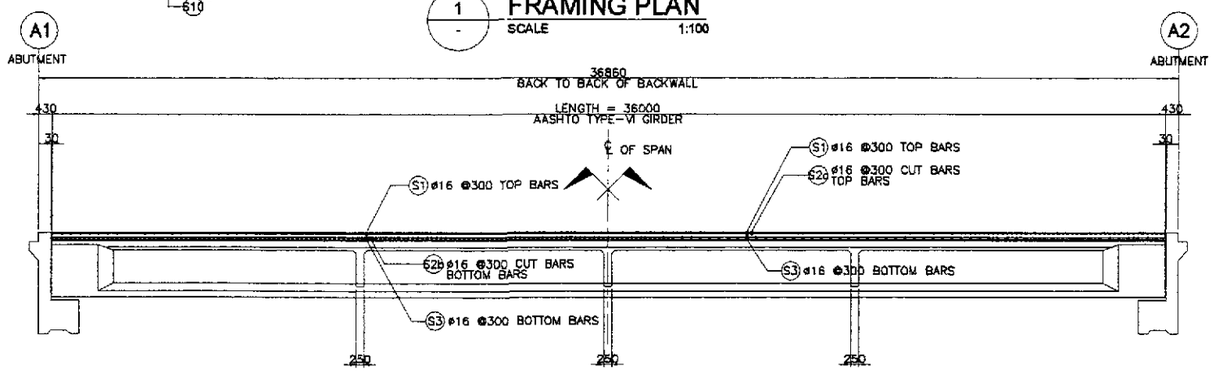
SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT PROTECTION
AND SIDE DRAIN DETAILS
(ULTIMATE STAGE)

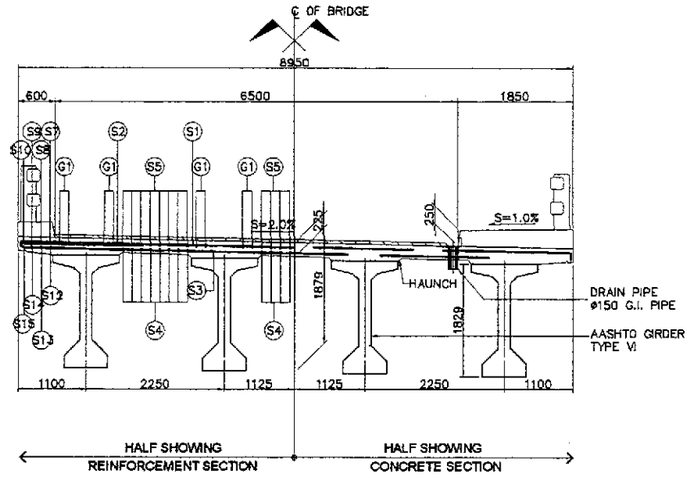
SHEET NO. : B10-12



1 / - FRAMING PLAN
SCALE 1:100



2 / - LONGITUDINAL SECTION
SCALE 1:100

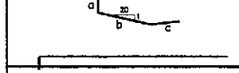


3 / - TYPICAL CROSS SECTION
SCALE 1:50

ESTIMATED QUANTITIES OF SUPERSTRUCTURE

ITEM NO.	DESCRIPTION	UNIT	TOTAL
404(1)a	REINFORCING STEEL GRADE 40	kgs.	24870
	DECK SLAB	11285	
	DIAPHRAGM	417	
	GIRDER	8068	
	SIDEWALK, RAILING, & POST	4154	
	APPROACH SLAB	932	
404(1)b	REINFORCING STEEL GRADE 60	kgs.	11884
	DECK SLAB	0	
	DIAPHRAGM	1336	
	GIRDER	6884	
	SIDEWALK, RAILING, & POST	708	
	APPROACH SLAB	2956	
405(1)	STRUCTURAL CONCRETE	cu. m.	258.66
	DECK SLAB	80.54	
	DIAPHRAGM	13.71	
	GIRDER	109.00	
	SIDEWALK, RAILING, & POST	31.26	
	APPROACH SLAB	24.15	

(A) (B) (C) (D) (E)



SCHEDULE OF REINFORCEMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	LENGTH EACH BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT IN (kg)	REBAR RATIO (kg/m^3)	REMARKS
DECK SLAB	80.54	G1	16	16	AS SHOWN	(A)	35900	–	–	–	35900	574.40	1.579	907	140.12	
		S1	16	113	300	(C)	145	8850	145	–	9140	1032.82	1.579	1631		
		S1a	16	18	300	(C)	145	5030	145	–	5320	95.76	1.579	152		
		S2	16	226	300	(B)	145	1800	–	–	1945	439.57	1.579	695		
		S2a	16	226	300	(A)	1700	–	–	–	1700	384.20	1.579	607		
		S2b	16	339	300	(A)	1950	–	–	–	1950	661.05	1.579	1044		
		S3	16	113	300	(C)	8850	–	–	–	8850	1000.05	1.579	1580		
		S3a	16	18	300	(A)	5030	–	–	–	5030	90.54	1.579	143		
		S4	16	24	150	(A)	35900	–	–	–	35900	861.60	1.579	1361		
		S5	16	24	150	(A)	35900	–	–	–	35900	861.60	1.579	1361		
		S6	16	2	AS SHOWN	(A)	35900	–	–	–	35900	71.80	1.579	114		
		S7	16	2	AS SHOWN	(A)	35900	–	–	–	35900	71.80	1.579	114		
		S8	16	2	AS SHOWN	(A)	35900	–	–	–	35900	71.80	1.579	114		
		S9	16	2	AS SHOWN	(A)	35900	–	–	–	35900	71.80	1.579	114		
		S10	16	2	AS SHOWN	(A)	35900	–	–	–	35900	71.80	1.579	114		
		S11	16	2	AS SHOWN	(A)	35900	–	–	–	35900	71.80	1.579	114		
		S12	16	2	AS SHOWN	(E)	35900	–	–	–	35900	71.80	0.888	114		
		S13	16	2	AS SHOWN	(A)	35900	–	–	–	35900	71.80	1.579	114		
		S14	12	182	400	(E)	145	600	900	300	1945	353.99	0.888	315		
		S15	16	20	300	(A)	9200	–	–	–	9200	184.00	1.579	291		
		S16	16	36	300	(A)	5030	–	–	–	5030	181.08	1.579	286		
TOTAL	80.54													GRADE 40 TOTAL = 11,285 kgs.		

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KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/28/02	E.N. SALLAN
CHECKED	9/30/02	
SUBMITTED	10/16/02	M. KUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

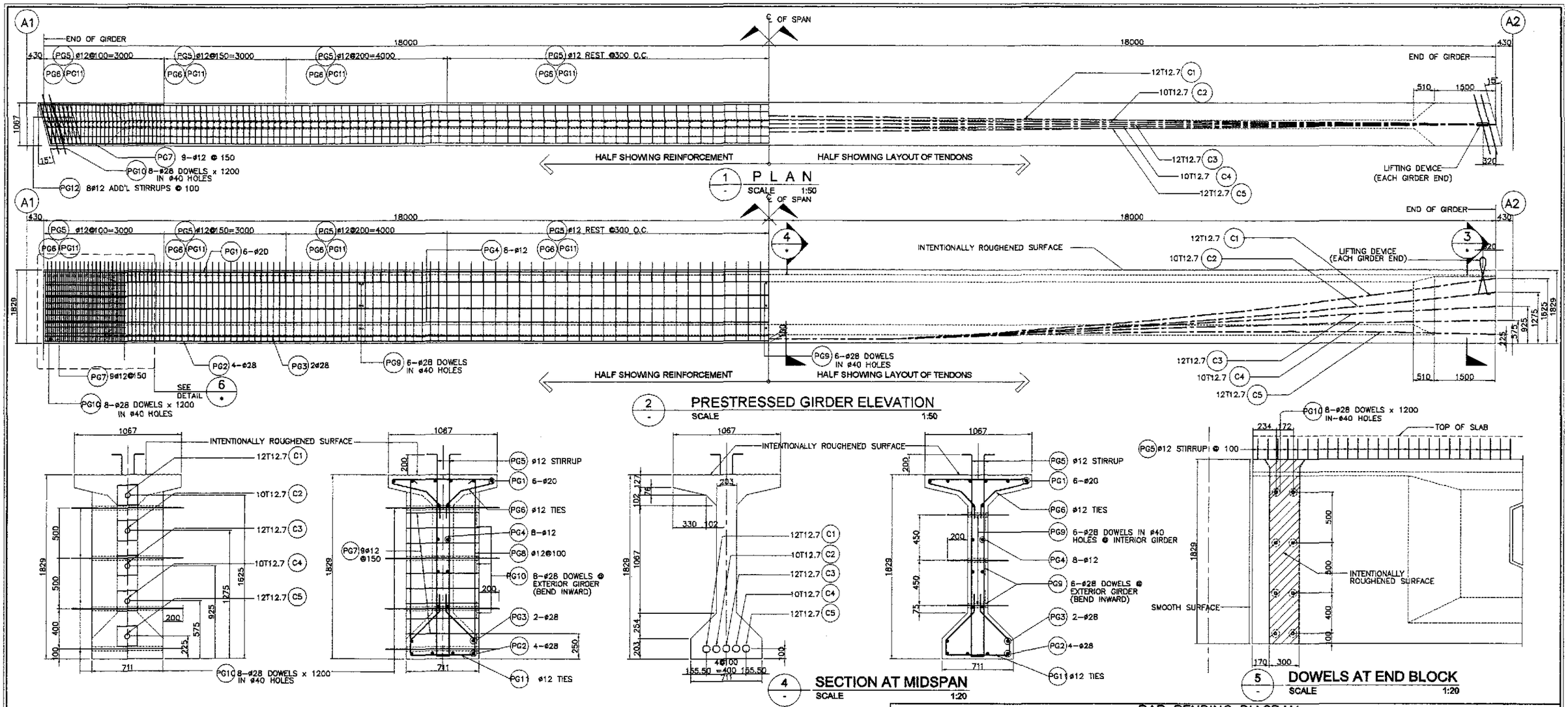
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL N. BONOAN	SIMEON A. DATUMANONG
Project Director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

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

SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
DECK FRAMING PLAN AND SECTION
(RIGHT FRONTAGE)

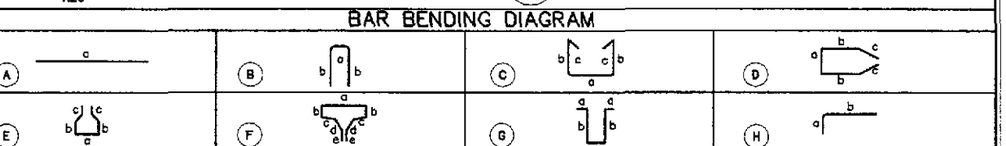
SHEET NO. :
B10-13



NOTES :

1.) SEE GENERAL NOTES, -2, FOR GIRDER DESIGN GUIDE.
2.) JACKING FORCE PER GIRDER, PJ = 7710 KN.
3.) JACKING WILL BE DONE AT BOTH ENDS.
4.) FINAL PRESTRESSING FORCE @ MIDSPAN, FNET = 5,537 KN.

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT

STRUCTURE COMPONENT	BAR MARK	SIZE (mm)	QTY.	SPACING	BAR SHAPE	DIMENSION(mm) a	b	c	d	e	LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONC. VOLUME (cu.m)	REBAR RATIO (kg/cu.m)	REMARKS
GIRDER	PG1	20	6	AS SHOWN	A	35920	–	–	–	–	35920	215.52	2.466	532	27.25	137.18	QUANTITIES ARE FOR ONE (1) GIRDER ONLY
	PG2	28	4	AS SHOWN	A	35920	–	–	–	–	35920	143.68	4.833	695			
	PG3	28	2	AS SHOWN	A	35920	–	–	–	–	35920	71.84	4.833	348			
	PG4	12	8	AS SHOWN	A	35920	–	–	–	–	35920	287.36	0.888	256			
	PG5	12	192	100	G	100	2000	103	–	–	4303	826.18	0.888	734			
	PG6	12	192	100	F	1000	50	340	200	150	2480	476.16	0.888	423			
	PG7	12	18	150	D	635	1450	550	–	–	4635	83.43	0.888	75			
	PG8	12	30	100	C	635	1750	150	–	–	4435	133.05	0.888	119			
	PG9	28	18	AS SHOWN	A	603	–	–	–	–	603	10.85	4.833	53			
	PG10	28	16	AS SHOWN	A	1200	–	–	–	–	1200	19.20	4.833	93			
	PG11	12	192	100	E	635	160	400	150	–	2055	394.56	0.888	351			
	PG12	12	16	100	B	635	1750	–	–	–	4135	66.16	0.888	59			

GRADE 40 TOTAL = 2,017 kgs.
GRADE 60 TOTAL = 1,721 kgs.

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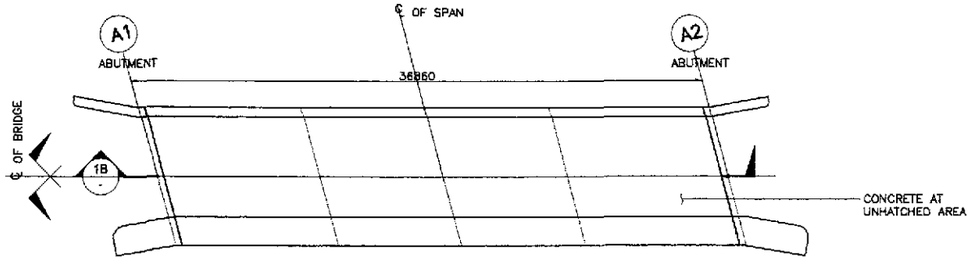
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEO YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/20/02	E. N. SALLAN
CHECKED	9/30/02	
SUBMITTED	10/16/02	TEAM LEADER

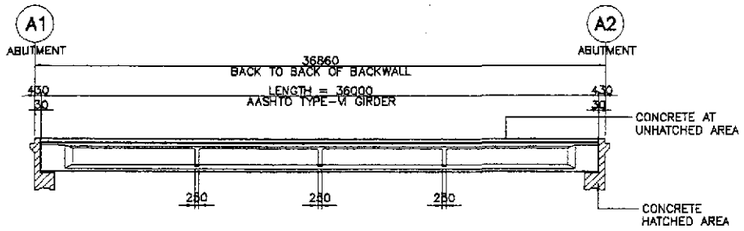
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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	ADRIANO M. DOROY, Chief, Bridges Division	GILBERTO S. REYES, Director IV (OIC)	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)	AS SHOWN	BRIDGE NO. 10 AASHTO TYPE VI GIRDER (RIGHT FRONTAGE)	B10-14
PLARIDEL BYPASS - CONTRACT PACKAGE IV	FULL SIZE A1		



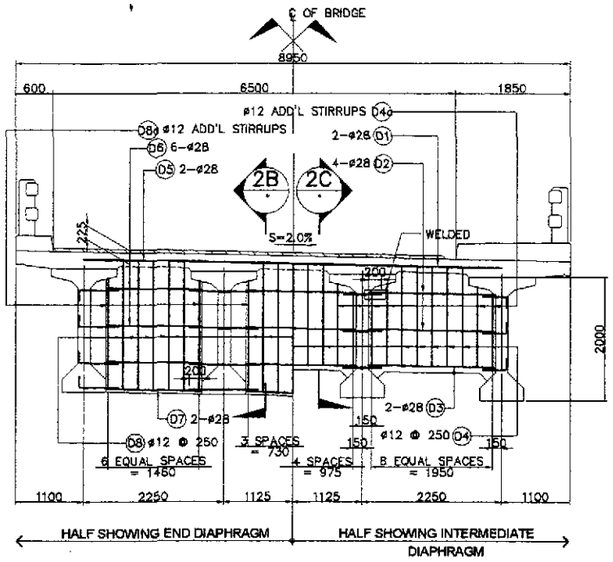
1A / - PLAN
SCALE 1:200



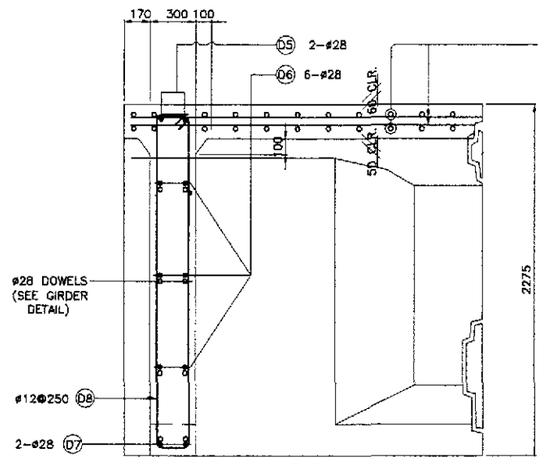
1B / - LONGITUDINAL SECTION
SCALE 1:200

1 / - CONCRETE POURING SEQUENCE
SCALE AS SHOWN

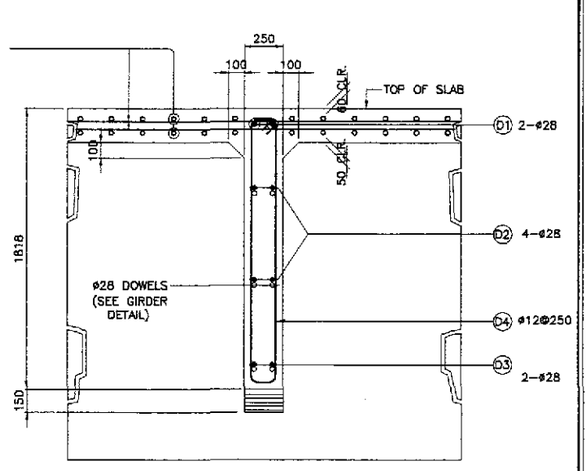
NOTES:
1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST TWENTY ONE (21) DAYS AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. REINFORCEMENT SHALL BE CONTINUOUS AT CONSTRUCTION JOINTS.
3. SEE GIRDER DETAIL FOR SPACING OF ø28 DOWELS.



2A / - ELEVATION
SCALE 1:25



2B / - SECTION
SCALE 1:20



2C / - SECTION
SCALE 1:20

BAR BENDING DIAGRAM

(A) —— a

(B) 

SCHEDULE OF REINFORCEMENT

STRUCTURE COMPONENT	LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	TOTAL WEIGHT IN (kg)	REBAR RATIO (kg/m^3)	REMARKS
DIAPHRAGM	INTERMEDIATE DIAPHRAGM	8.03	D1	28	6	AS SHOWN	A	6750				6750	40.50	4.833	98	120.95	TOP BARS
			D2	28	36	AS SHOWN	A	2045				2045	73.62	4.833	356		DIST. BARS
			D3	28	18	AS SHOWN	A	2045				2045	36.81	4.833	178		BOTT. BARS
			D4	12	45	250	B	150	1690	150		3980	179.10	0.888	160		STIRRUPS
			D4a	12	36	AS SHOWN	B	150	980	150		2520	90.72	0.888	81		ADD'L. STIRRUPS
	END DIAPHRAGM	5.68	D5	28	4	AS SHOWN	A	6750				6750	27.00	4.833	131	137.70	TOP BARS
			D6	28	36	AS SHOWN	A	2045				2045	73.62	4.833	356		DIST. BARS
			D7	28	12	AS SHOWN	A	2045				2045	24.54	4.833	119		BOTT. BARS
			D8	12	30	250	B	200	2150	150		5000	150.00	0.888	134		STIRRUPS
			D8a	12	12	AS SHOWN	B	200	1600	150		3900	46.80	0.888	42		ADD'L. STIRRUPS
	TOTAL	13.71											GRADE 60 TOTAL =		1,336	kgs	
													GRADE 40 TOTAL =		417	kgs	

2 / - DETAIL OF END & INTERMEDIATE DIAPHRAGM
SCALE AS SHOWN

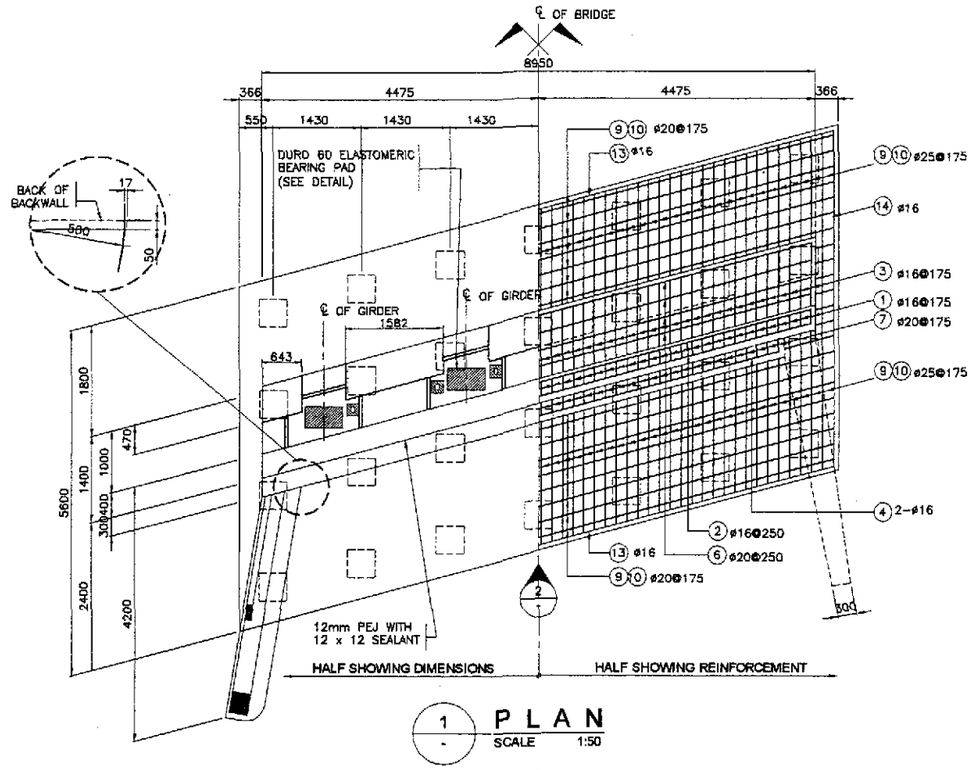
JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEO YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	7/18/02	E. ANY SALLAN
CHECKED	7/18/02	M. [illegible]
SUBMITTED	10/16/02	M.A. BUCAYU, TEAM LEADER

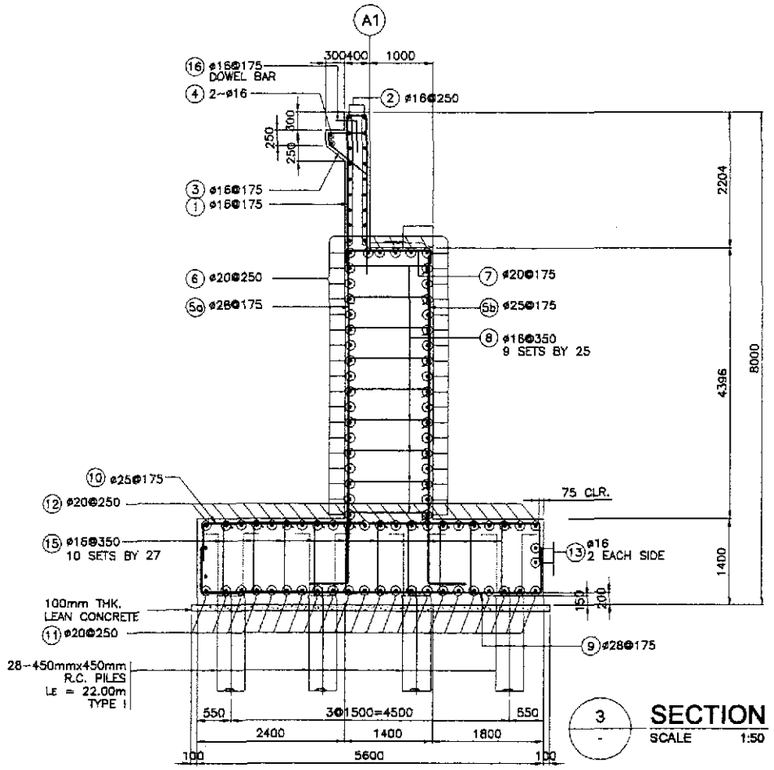
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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	ADRIANO M. DORCY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director	Chief, Bridges Division	Director IV (OIC)	Undersecretary	Secretary

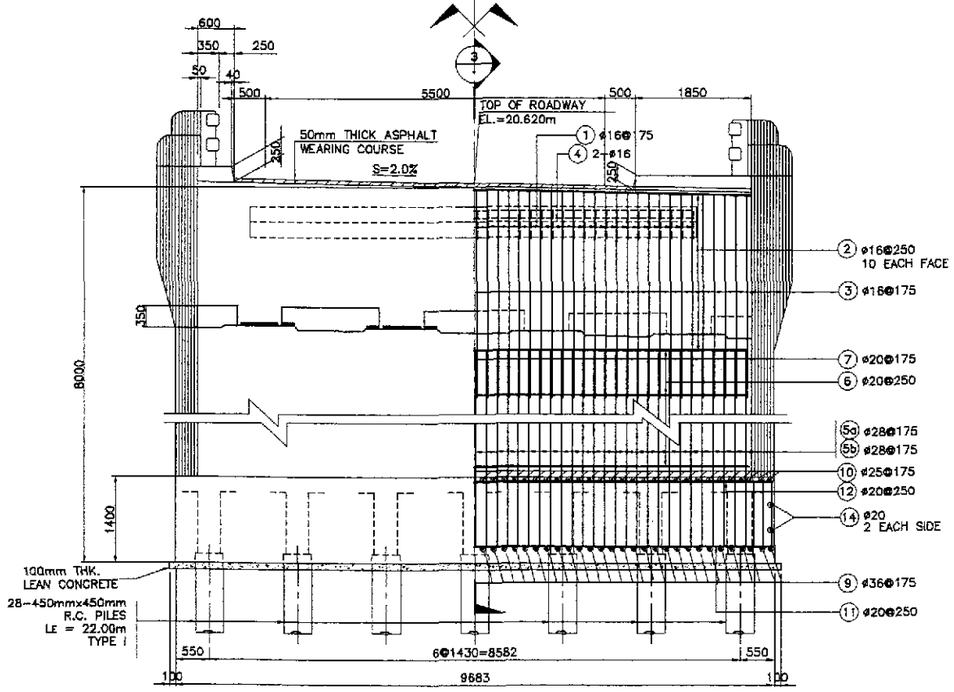
PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	AS SHOWN	BRIDGE NO. 10 CONCRETE POURING SEQUENCE AND DIAPHRAGM DETAILS (RIGHT FRONTAGE)	B10-15
PLARIDEL BYPASS - CONTRACT PACKAGE IV	FULL SIZE A1		



1 - PLAN
SCALE 1:50

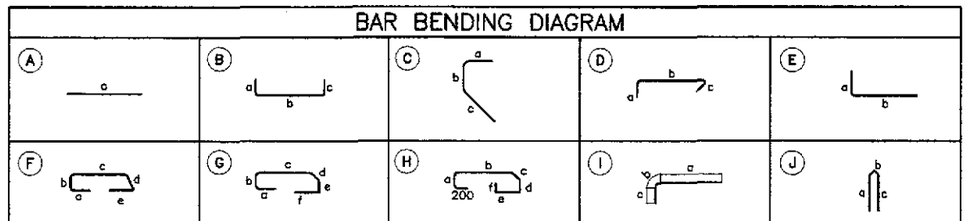


3 - SECTION
SCALE 1:50



2 - ELEVATION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
BACKWALL	8.62	①	16	52	175	B	2600	300	2600	–	–	–	5500	286.00	1.579	452	95.81
		②	16	18	250	A	9165	–	–	–	–	–	9165	164.97	1.579	261	
		③	16	38	175	C	600	150	750	–	–	–	1500	57.00	1.579	91	
		④	16	2	AS SHOWN	A	6650	–	–	–	–	–	6650	13.30	1.579	22	
MAINWALL	55.08	5a	28	52	175	E	600	5500	–	–	–	–	6100	317.20	4.833	1534	81.46
		5b	25	52	175	E	600	5500	–	–	–	–	6100	317.20	3.854	1223	
		⑥	20	38	250	A	9165	–	–	–	–	–	9165	348.27	2.466	859	
		⑦	20	52	175	B	250	1300	250	–	–	–	1800	93.60	2.466	231	
		⑧	16	225	350	D	250	1300	250	–	–	–	1800	405.00	1.579	640	
FOOTING	75.91	⑨	28	56	175	B	750	5450	750	–	–	–	6950	389.20	4.833	1882	72.98
		⑩	25	56	175	B	750	5450	750	–	–	–	6850	389.20	3.854	1500	
		⑪	20	23	250	B	750	9890	750	–	–	–	11390	261.97	2.466	647	
		⑫	20	23	250	B	750	9890	750	–	–	–	11390	261.97	2.466	647	
		⑬	16	4	AS SHOWN	A	9890	–	–	–	–	–	9890	39.56	1.579	63	
		⑭	16	4	AS SHOWN	A	5450	–	–	–	–	–	5450	21.80	1.579	54	
		⑮	16	270	350	D	250	1250	250				1750	472.50	1.579	747	
DOWEL		⑯	16	38	175	E	650	500	–	–	–	–	1150	43.70	1.579	70	
TOTAL	139.61															GRADE 40 TOTAL = 8,577 kgs. GRADE 60 TOTAL = 2,348 kgs.	

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

	DATE	SIGNATURE
DESIGNED		A. P. GONZALES
CHECKED		
SUBMITTED	10/14/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

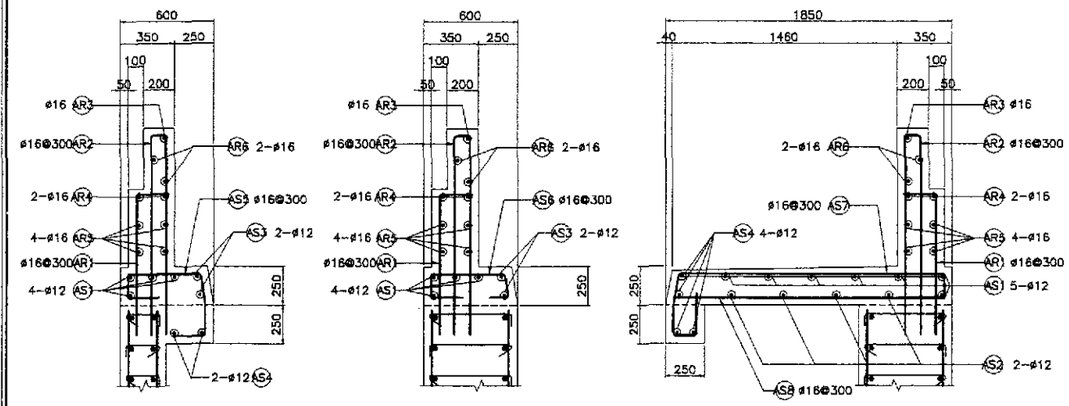
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DORDY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

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

SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A1
MAINWALL REINFORCEMENT DETAILS (RIGHT FRONTAGE)

SHEET NO. :
B10-16

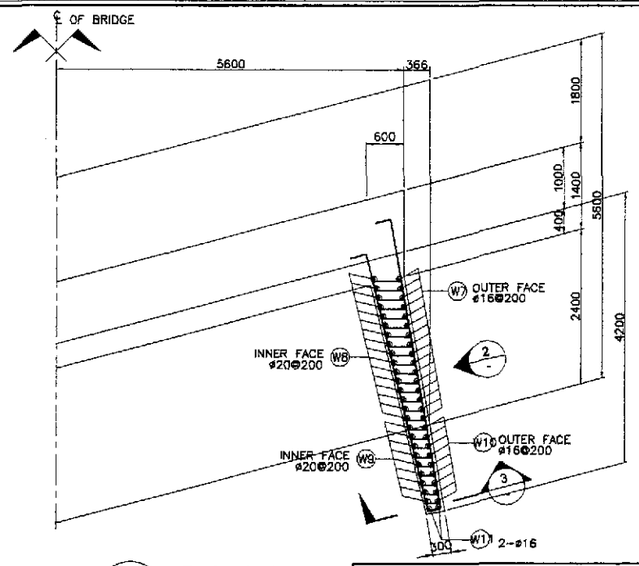


5A SECTION — SCALE 1:20

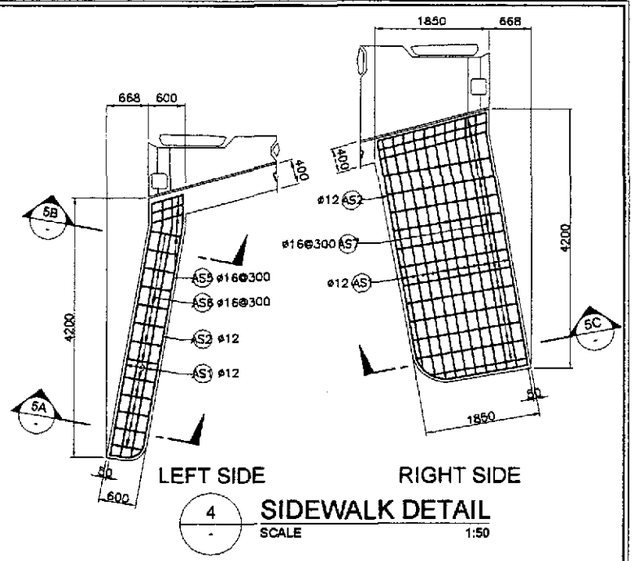
5B SECTION — SCALE 1:20

5C SECTION — SCALE 1:20

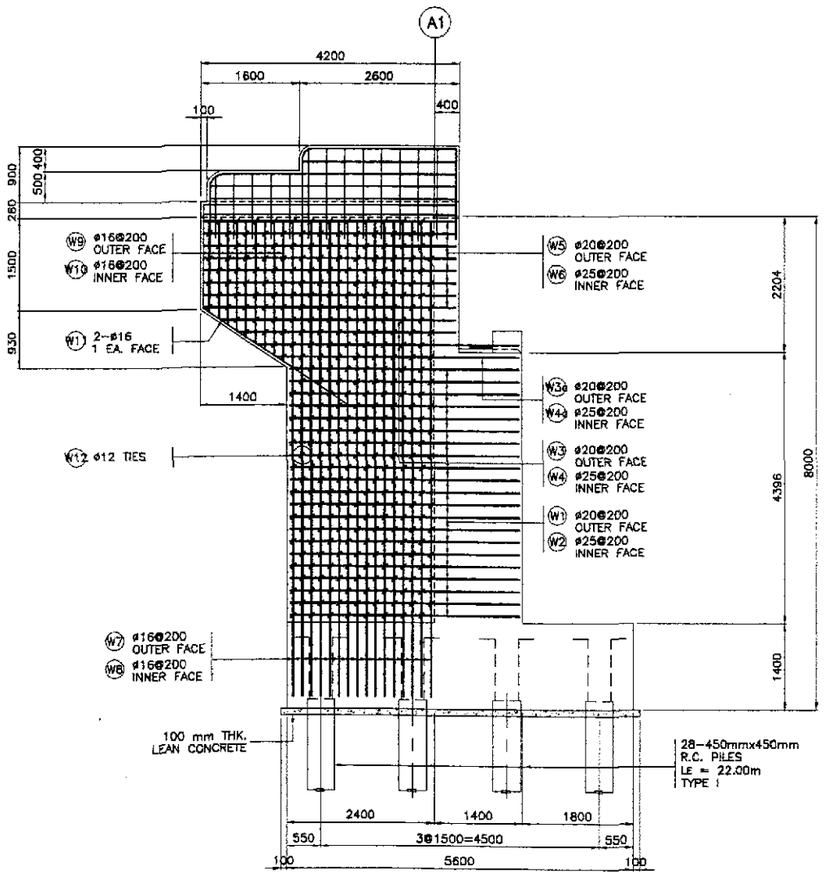
5 APPROACH RAIL DETAILS — SCALE 1:20



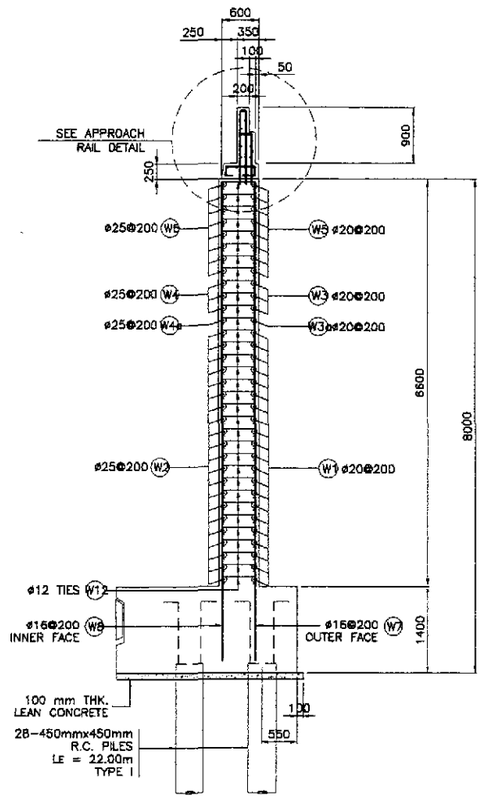
1 PLAN — SCALE 1:50



4 SIDEWALK DETAIL — SCALE 1:50

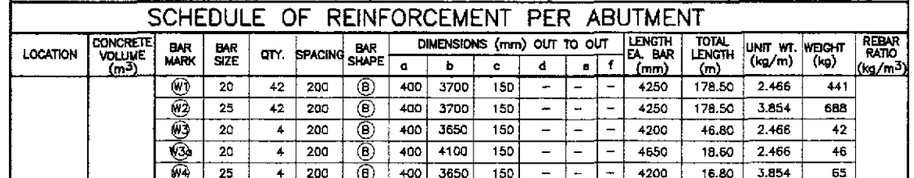


2 WINGWALL ELEVATION — SCALE 1:50



3 SECTION — SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
WINGWALL	16.73	W1	20	42	200	B	400	3700	150	–	–	–	4250	178.50	2.466	441	192.15
		W2	25	42	200	B	400	3700	150	–	–	–	4250	178.50	3.854	688	
		W3	20	4	200	B	400	3650	150	–	–	–	4200	46.80	2.466	42	
		W3a	20	4	200	B	400	4100	150	–	–	–	4650	18.60	2.466	46	
		W4	25	4	200	B	400	3650	150	–	–	–	4200	16.80	3.854	65	
		W4a	25	4	200	B	400	4100	150	–	–	–	4650	18.60	3.854	72	
		W5	20	16	200	B	400	4100	150	–	–	–	4650	74.40	2.466	184	
		W6	25	16	200	B	400	4100	150	–	–	–	4650	74.40	3.854	287	
		W7	16	32	200	E	250	7750	–	–	–	–	8000	256.00	1.579	405	
		W8	16	32	200	E	250	7750	–	–	–	–	8000	256.00	1.579	405	
		W9	16	18	200	E	250	1850	–	–	–	–	2100	37.80	1.579	60	
		W10	16	18	200	E	250	1850	–	–	–	–	2100	37.80	1.579	60	
		W11	16	4	AS SHOWN	C	250	1500	2800	–	–	–	4450	18.20	1.579	29	
		W12	12	614	AS SHOWN	D	170	450	170	–	–	–	790	485.06	0.888	431	
														GRADE 60 TOTAL =1,825 kgs.			
														GRADE 40 TOTAL =1,390 kgs.			
APPROACH RAILING AND SIDEWALK	5.01	AS1	12	12	AS SHOWN	A	4100	–	–	–	–	–	4100	49.20	0.888	44	86.70
		AS2	12	5	AS SHOWN	A	4100	–	–	–	–	–	4100	20.50	0.888	19	
		AS3	12	2	AS SHOWN	A	4100	–	–	–	–	–	4100	8.20	0.888	8	
		AS4	12	4	AS SHOWN	A	4100	–	–	–	–	–	4100	16.40	0.888	15	
		AS5	16	3	300	F	200	170	480	200	170	200	1420	4.26	1.579	7	
		AS6	16	12	300	G	200	170	480	200	200		1250	15.00	1.579	24	
		AS7	16	14	300	H	200	170	1730	200	170	200	2870	40.18	1.579	64	
		AS8	16	14	300	E	200	1770	–	–	–	–	1970	27.58	1.579	44	
		AR1	16	10	300	E	200	900	–	–	–	–	1100	11.00	1.579	18	
		AR2	16	18	300	J	1300	120	1300	–	–	–	2720	48.96	1.579	78	
		AR3	16	2	AS SHOWN	I	2500	236	1300	–	–	–	4036	8.07	1.579	13	
		AR4	16	4	AS SHOWN	I	4000	236	900	–	–	–	5136	20.54	1.579	33	
		AR5	16	8	AS SHOWN	A	4000	–	–	–	–	–	4000	32.00	1.579	51	
		AR6	16	4	AS SHOWN	A	2500	–	–	–	–	–	2500	10.00	1.579	16	
														GRADE 40 TOTAL= 434 kgs.			
TOTAL	21.74													GRADE 60 TOTAL = 1,825 kgs. GRADE 40 TOTAL = 1,824 kgs.			

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

	DATE	SIGNATURE
DESIGNED	9/28/07	V. P. GONZALES
CHECKED	9/30/07	[illegible]
SUBMITTED	10/16/07	[illegible] TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

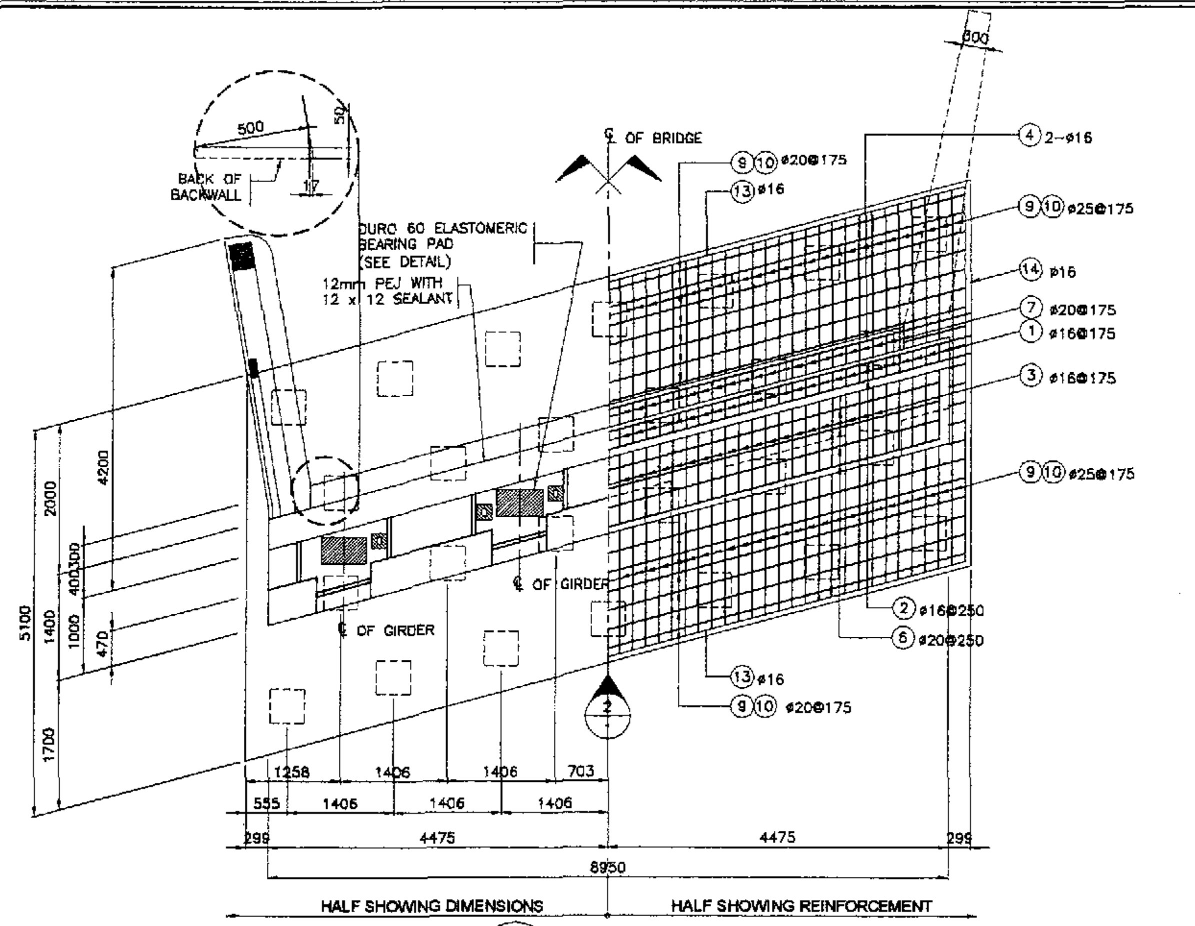
PUHL – PNO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DORDY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

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

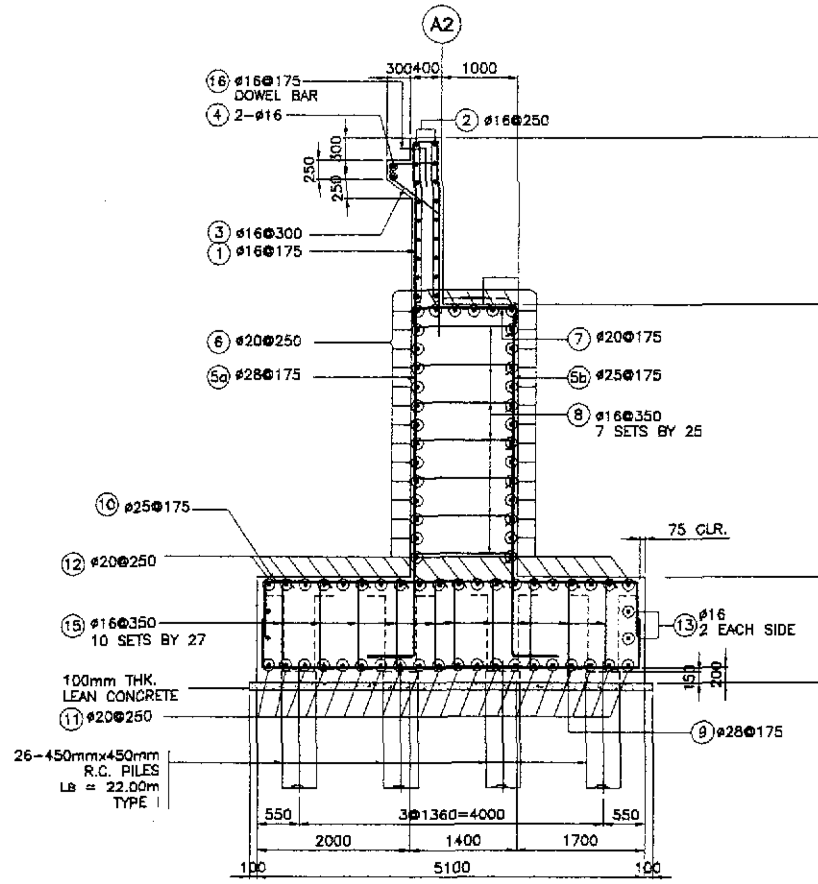
SCALE : AS SHOWN — FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A1
WINGWALL REINFORCEMENT DETAILS
(RIGHT FRONTAGE)

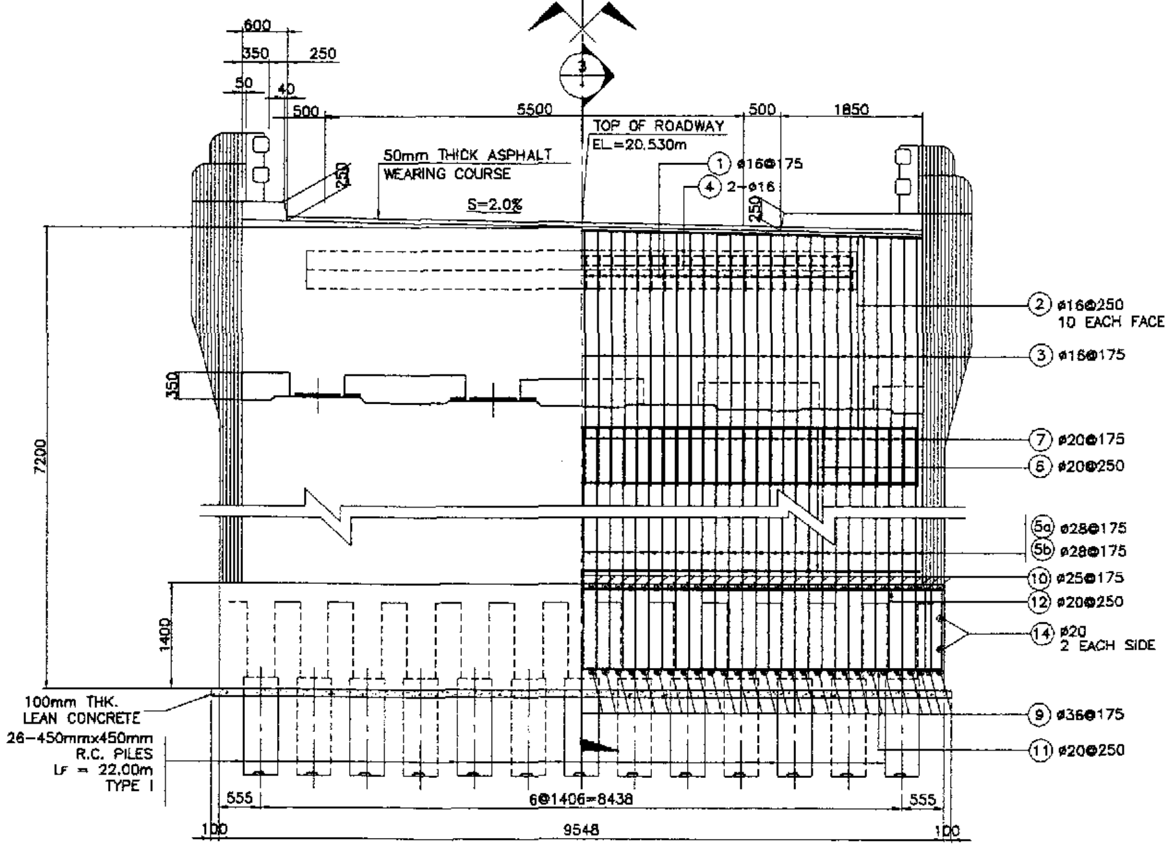
SHEET NO. : B10-17



1 PLAN
SCALE 1:50

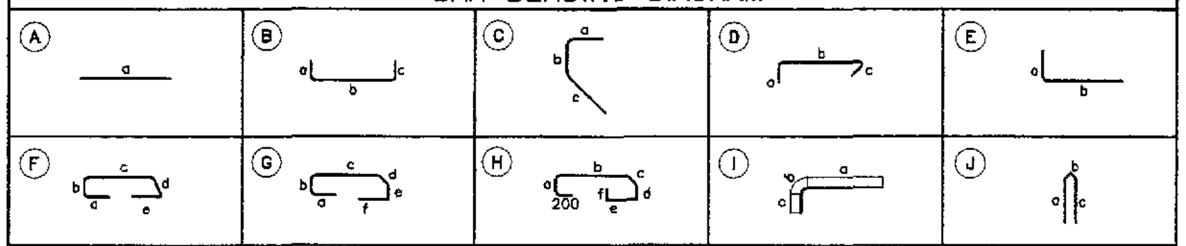


3 SECTION
SCALE 1:50



2 ELEVATION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
BACKWALL	8.62	①	16	52	175	(B)	2600	300	2600	–	–	–	5500	286.00	1.579	452	95.81
		②	16	18	250	(A)	9165	–	–	–	–	–	9165	164.97	1.579	261	
		③	16	38	175	(C)	600	150	750	–	–	–	1500	57.00	1.579	91	
		④	16	2	AS SHOWN	(A)	6650	–	–	–	–	–	6650	13.30	1.579	22	
MAINWALL	45.06	⑤a	28	52	175	(E)	600	4700	–	–	–	–	5300	275.60	4.833	1332	85.40
		⑤b	25	52	175	(E)	600	4700	–	–	–	–	5300	275.60	3.854	1063	
		⑥	20	32	250	(A)	9165	–	–	–	–	–	9165	293.18	2.466	724	
		⑦	20	52	175	(B)	250	1300	250	–	–	–	1800	93.60	2.466	231	
		⑧	16	175	350	(D)	250	1300	250	–	–	–	1800	315.00	1.579	498	
FOOTING	68.17	⑨	28	55	175	(B)	700	4950	700	–	–	–	6350	349.25	4.833	1688	73.43
		⑩	25	55	175	(B)	700	4950	700	–	–	–	6350	349.25	3.854	1347	
		⑪	20	21	250	(B)	700	9750	700	–	–	–	11150	234.15	2.466	578	
		⑫	20	21	250	(B)	700	9750	700	–	–	–	11150	234.15	2.466	578	
		⑬	16	4	AS SHOWN	(A)	9750	–	–	–	–	–	9750	39.00	1.579	62	
		⑭	20	4	AS SHOWN	(A)	4950	–	–	–	–	–	4950	19.80	2.466	49	
		⑮	16	270	350	(D)	250	1150	250				1650	445.50	1.579	704	
DOWEL		⑯	16	38	175	(E)	650	500	–	–	–	–	1150	43.70	1.579	70	
TOTAL	121.85	GRADE 40 TOTAL = 7,590 kgs. GRADE 60 TOTAL = 2,160 kgs.															

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

	DATE	SIGNATURE
DESIGNED	9/28/02	A.P. GONZALES
CHECKED	9/30/02	N. KAWASHI
SUBMITTED	10/16/02	M. KIKUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

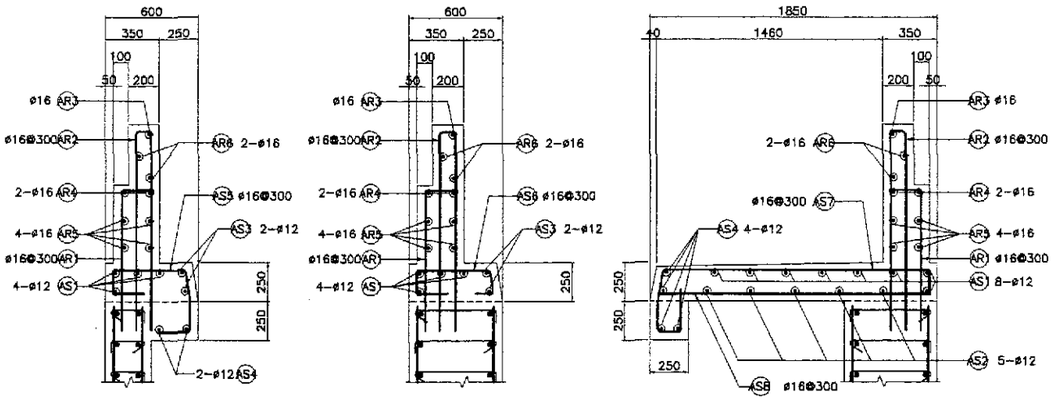
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A2
MAINWALL REINFORCEMENT DETAILS
(RIGHT FRONTAGE)

SHEET NO. : B10-18

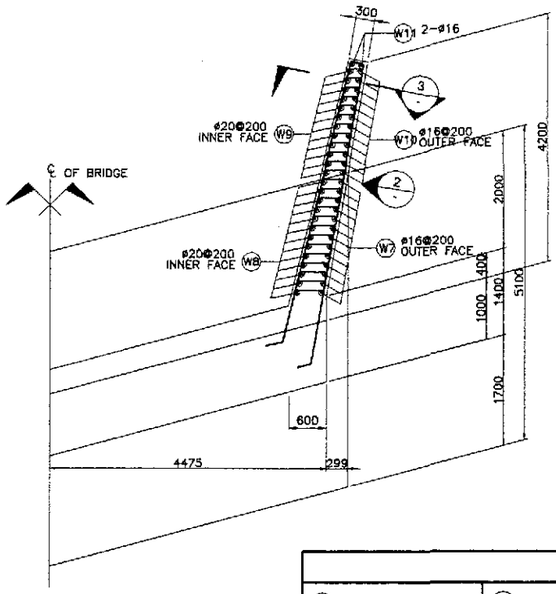


5A SECTION SCALE 1:20

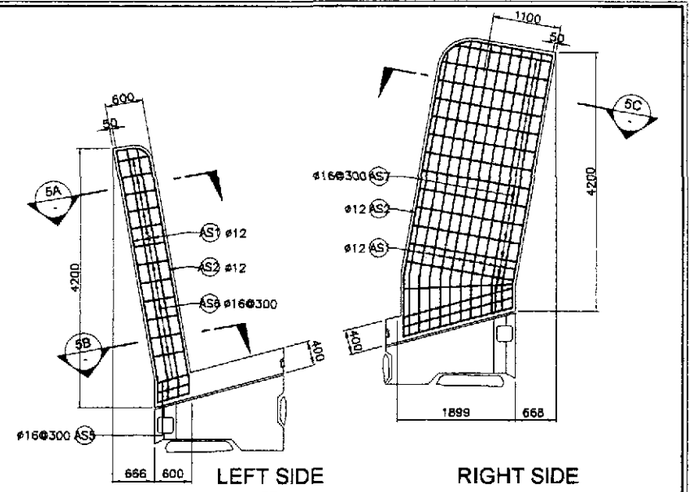
5B SECTION SCALE 1:20

5C SECTION SCALE 1:20

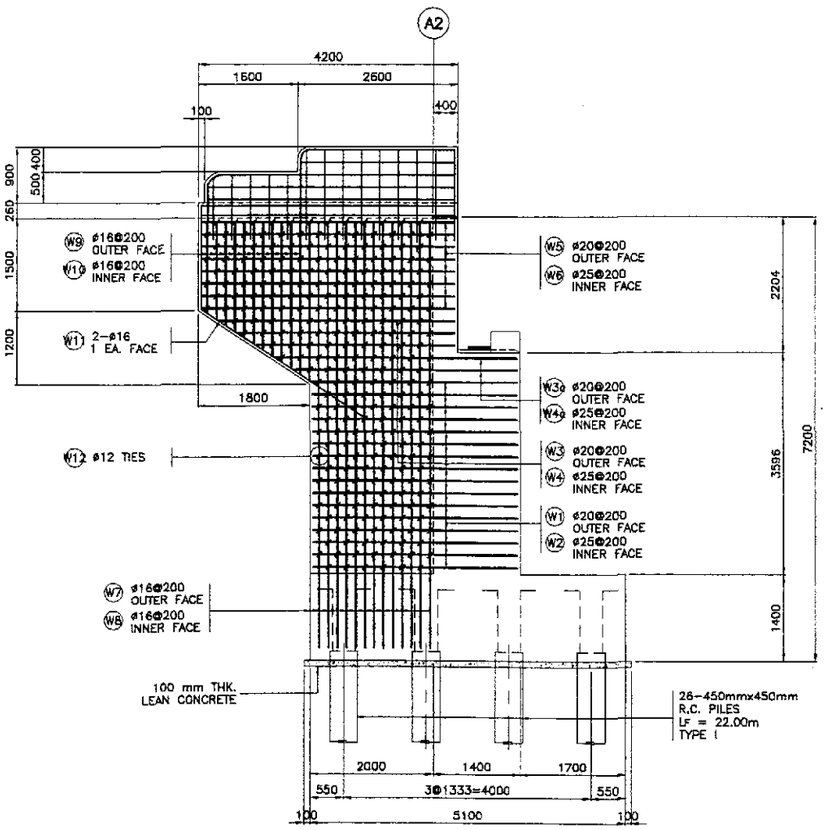
5 APPROACH RAIL DETAILS SCALE 1:20



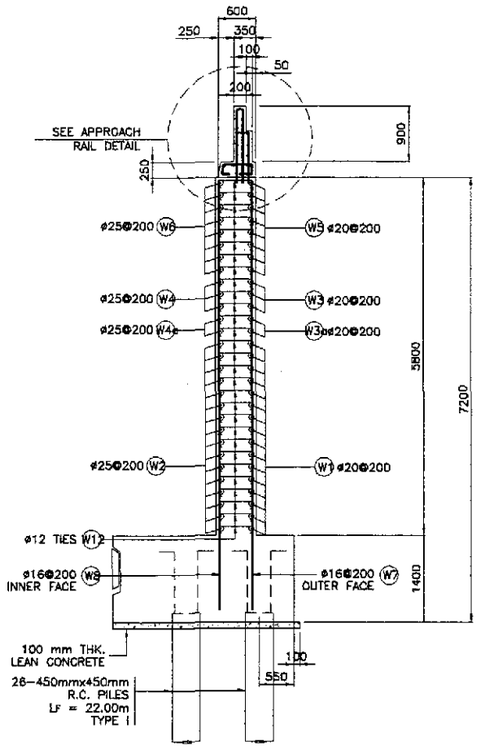
1 PLAN SCALE 1:50



4 SIDEWALK DETAIL SCALE 1:50

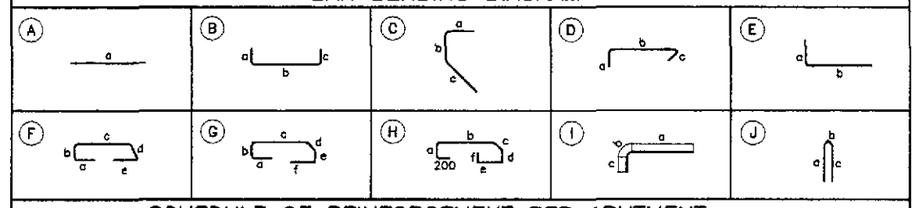


2 WINGWALL ELEVATION SCALE 1:50



3 SECTION SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
WINGWALL	13.85	W1	20	32	200	B	400	3300	150	–	–	–	3850	123.20	2.466	304	193.54
		W2	25	32	200	B	400	3300	150	–	–	–	3850	123.20	3.854	475	
		W3	20	4	200	B	400	3800	150	–	–	–	4650	17.40	2.466	43	
		W3a	20	6	200	B	400	3950	150	–	–	–	4500	27.00	2.466	67	
		W4	25	4	200	B	400	3800	150	–	–	–	4350	17.40	3.854	68	
		W4a	25	6	200	B	400	3950	150	–	–	–	4500	27.00	3.854	105	
		W5	20	16	200	B	400	4100	150	–	–	–	4650	74.40	2.466	184	
		W6	25	16	200	B	400	4100	150	–	–	–	4650	74.40	3.854	287	
		W7	16	26	200	E	250	6950	–	–	–	–	7200	187.20	1.579	296	
		W8	16	26	200	E	250	6950	–	–	–	–	7200	187.20	1.579	296	
		W9	16	24	200	E	250	2050	–	–	–	–	2300	55.20	1.579	88	
		W10	16	24	200	E	250	2050	–	–	–	–	2300	55.20	1.579	88	
		W11	16	4	AS SHOWN	C	250	1500	2100	–	–	–	3850	15.40	1.579	25	
		W12	12	502	AS SHOWN	D	170	450	170	–	–	–	790	396.58	0.888	353	
														GRADE 60 TOTAL=1,533 kgs			
														GRADE 40 TOTAL=1,146 kgs			
APPROACH RAILING AND SIDEWALK	5.01	AS1	12	12	AS SHOWN	A	4100	–	–	–	–	–	4100	49.20	0.888	44	86.70
		AS2	12	5	AS SHOWN	A	4100	–	–	–	–	–	4100	20.50	0.888	19	
		AS3	12	2	AS SHOWN	A	4100	–	–	–	–	–	4100	8.20	0.888	8	
		AS4	12	4	AS SHOWN	A	4100	–	–	–	–	–	4100	16.40	0.888	15	
		AS5	16	3	300	F	200	170	480	200	170	200	1420	4.26	1.579	7	
		AS6	16	12	300	G	200	170	480	200	20	–	1250	15.00	1.579	24	
		AS7	16	14	300	H	200	170	1730	200	170	200	2870	40.18	1.579	64	
		AS8	16	14	300	E	200	1770	–	–	–	–	1970	27.58	1.579	44	
		AR1	16	10	300	E	200	900	–	–	–	–	1100	11.00	1.579	18	
		AR2	16	18	300	J	1300	120	1300	–	–	–	2720	48.96	1.579	78	
		AR3	16	2	AS SHOWN	I	2500	236	1300	–	–	–	4036	8.07	1.579	13	
		AR4	16	4	AS SHOWN	I	4000	236	900	–	–	–	5136	20.54	1.579	33	
		AR5	16	8	AS SHOWN	A	4000	–	–	–	–	–	4000	32.00	1.579	51	
		AR6	16	4	AS SHOWN	A	2500	–	–	–	–	–	2500	10.00	1.579	16	
														GRADE 40 TOTAL= 434 kgs			
TOTAL	18.86													GRADE 60 TOTAL = 1,533 kgs. GRADE 40 TOTAL = 1,580 kgs.			

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	9/29/01	A. GONZALES
CHECKED	9/30/01	M. [illegible]
SUBMITTED	10/16/01	M. [illegible] TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

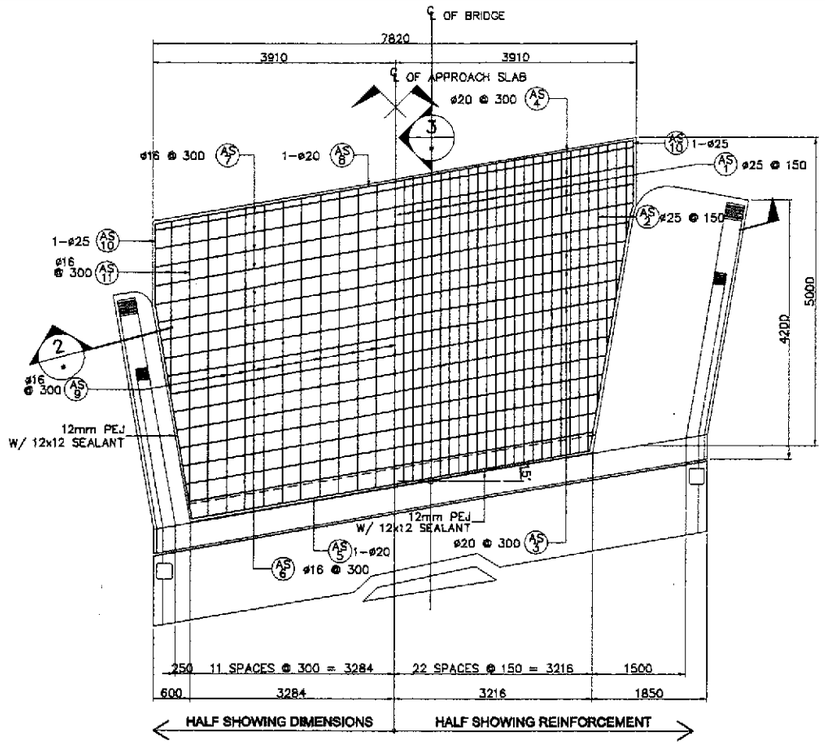
PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

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

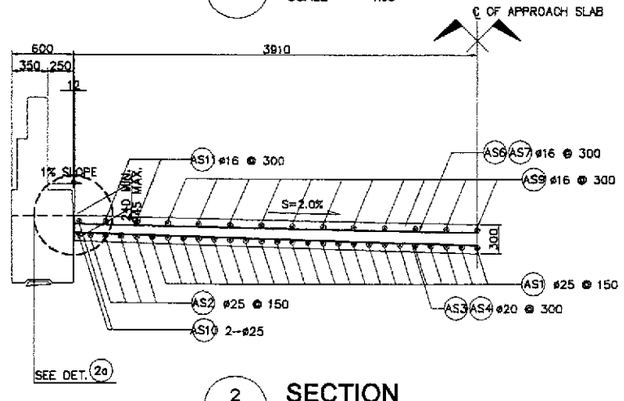
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A2
WINGWALL REINFORCEMENT DETAILS
(RIGHT FRONTAGE)

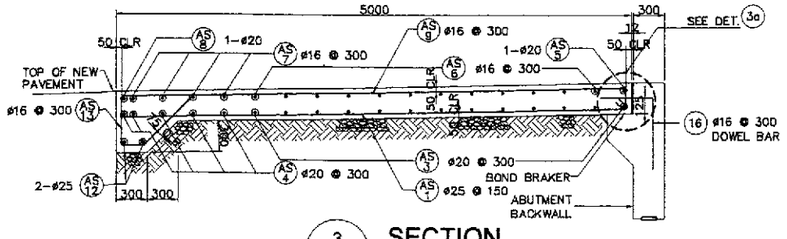
SHEET NO. :
B10-19



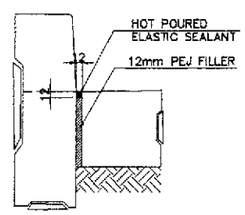
1 - PLAN
SCALE 1:50



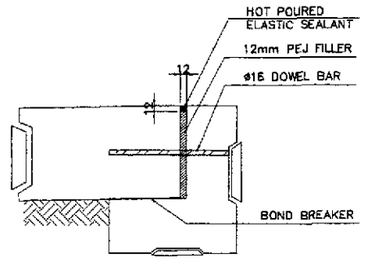
2 - SECTION
SCALE 1:30



3 - SECTION
SCALE 1:30

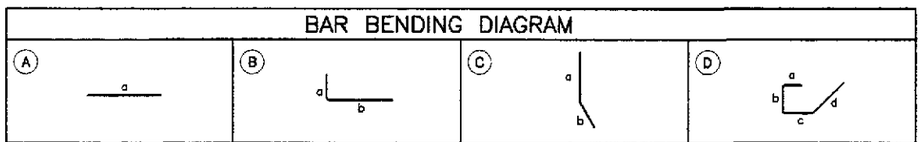


2a - DETAIL
SCALE 1:10



3a - DETAIL
SCALE 1:10

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER APPROACH SLAB

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/cu.m)
APPROACH SLAB	12.07	AS1	25	44	150	B	4900	200	–	–	–	–	5100	224.40	3.854	865	161.60
		AS2	25	8	150	B	2900	200	–	–	–	–	3100	24.80	3.854	96	
		AS3	20	13	300	A	7400	–	–	–	–	–	7400	96.30	2.466	238	
		AS4	20	5	300	A	8050	–	–	–	–	–	8050	40.25	2.466	100	
		AS5	20	1	AS SHOWN	A	6750	–	–	–	–	–	6750	6.75	2.466	17	
		AS6	16	12	300	A	7450	–	–	–	–	–	7450	89.90	1.579	142	
		AS7	16	4	300	A	8050	–	–	–	–	–	8050	32.30	1.579	51	
		AS8	20	1	AS SHOWN	A	8050	–	–	–	–	–	8050	8.05	2.466	20	
		AS9	16	22	300	B	4900	200	–	–	–	–	5100	112.20	1.579	178	
		AS10	25	4	AS SHOWN	C	1100	4000	–	–	–	–	5100	20.40	3.854	79	
		AS11	16	4	300	B	3700	200	–	–	–	–	3900	15.60	1.579	25.00	
		AS12	25	2	AS SHOWN	A	8050	–	–	–	–	–	8050	16.10	3.854	63	
		AS13	16	27	300	D	400	500	200	700	–	–	1800	48.60	1.579	77	
TOTAL	12.07															GRADE 40 TOTAL = 473 kgs. GRADE 60 TOTAL = 1,478 kgs.	

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/16/01	E. AN SALLAN
CHECKED	9/16/01	
SUBMITTED	9/16/01	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

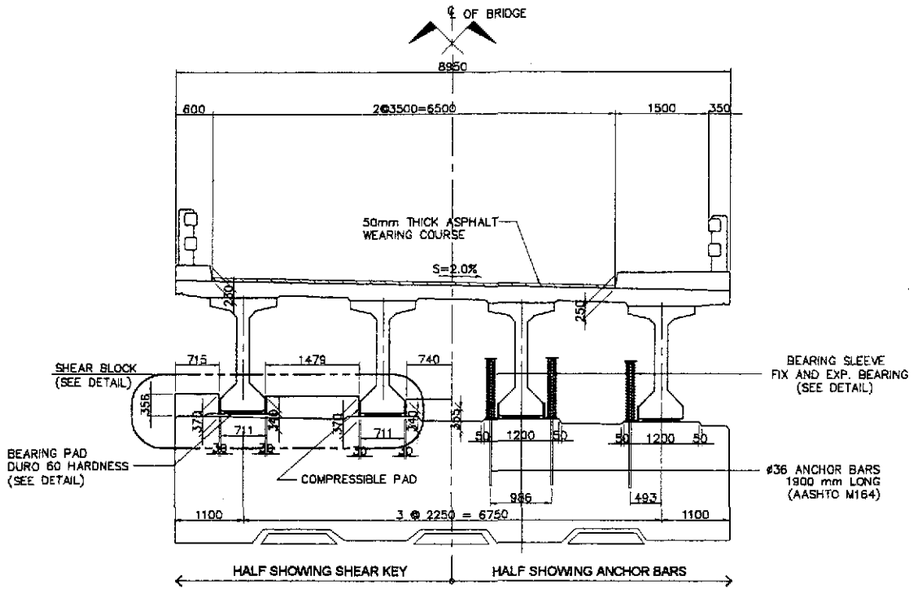
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

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

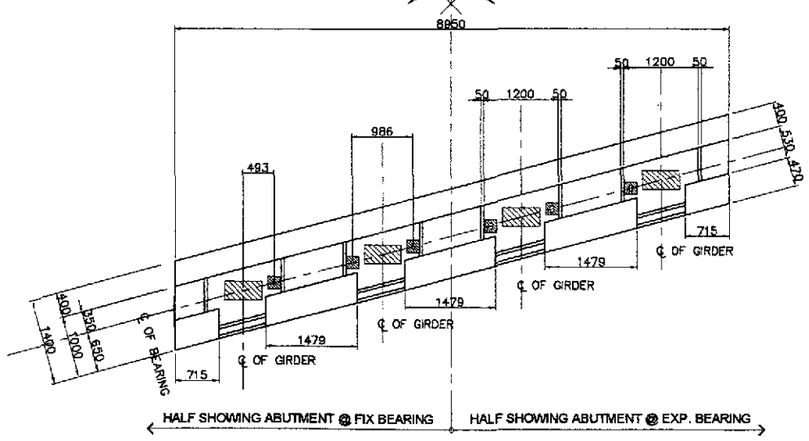
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
APPROACH SLAB PLAN,
SECTIONS AND DETAILS
(RIGHT FRONTAGE)

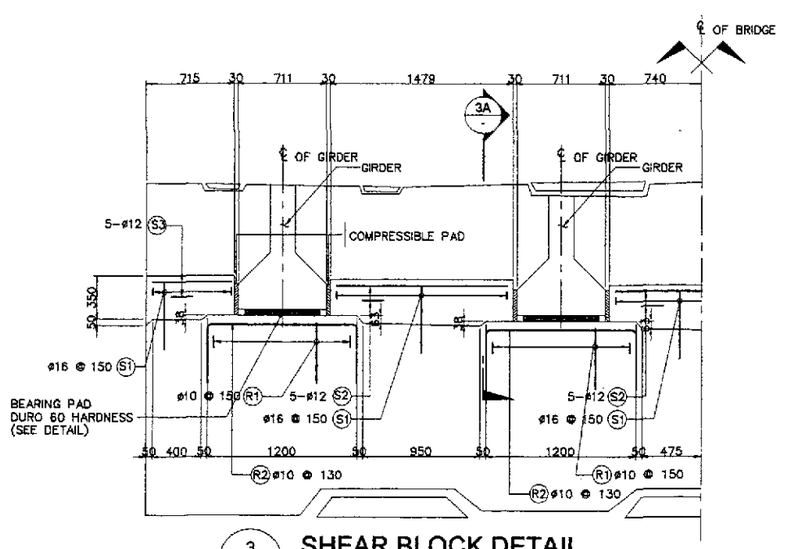
SHEET NO. :
B10-20



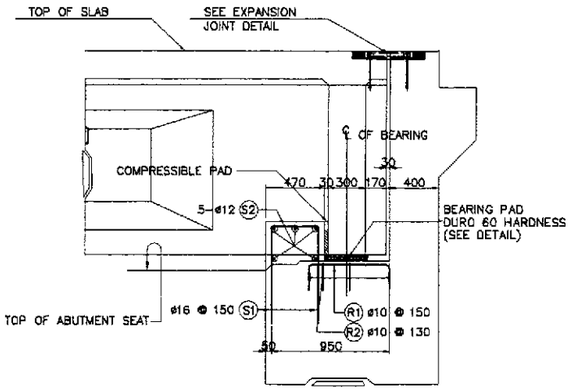
1 / - **SECTION AT ABUTMENT SEAT**
SCALE 1:50



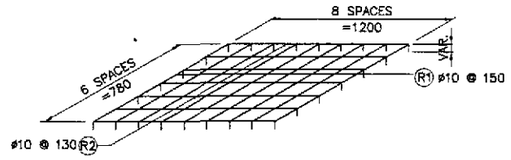
2 / - **PLAN AT ABUTMENT SEAT**
SCALE 1:50



3 / - **SHEAR BLOCK DETAIL**
SCALE 1:25



3A / - **SECTION**
SCALE 1:25



4 / - **RISER REINFORCEMENT**
NOT TO SCALE

BAR BENDING DIAGRAM

(A) a

(B) a b c

SCHEDULE OF REINFORCEMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSION(mm) OUT TO OUT a	b	c	d	e	LENGTH EACH BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
SHEAR KEY & RISER	1.42	S1	16	40	150	B	560	390	560			1510	60.40	1.578	96	142.68
		S2	12	15	AS SHOWN	A	1450					1450	21.75	0.888	20	
		S3	12	10	AS SHOWN	A	685					685	6.85	0.888	7	
		R1	10	36	150	B	500	810	500			1810	65.16	0.616	41	
		R2	10	28	130	B	500	1250	500			2250	63.00	0.616	39	
TOTAL	1.42	GRADE 40 TOTAL = 2,030 kgs.														

THE REINFORCEMENT SHOWN ON THIS TABLE IS FOR REFERENCE ONLY. THE CONTRACTOR SHOULD CHECKED AND VERIFY ALL DIMENSIONS, SIZES AND QUANTITIES OF REINFORCEMENT.

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

	DATE	SIGNATURE
DESIGNED	9/28/02	E. AN. SALLAN
CHECKED	9/30/02	
SUBMITTED	10/16/02	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	ADRIANO M. DORCY, Chief, Bridges Division	GILBERTO S. REYES, Director IV (OIC)	MANUEL M. BONOAN, Undersecretary	SIMEON A. DATUMANONG, Secretary

PROJECT AND LOCATION :
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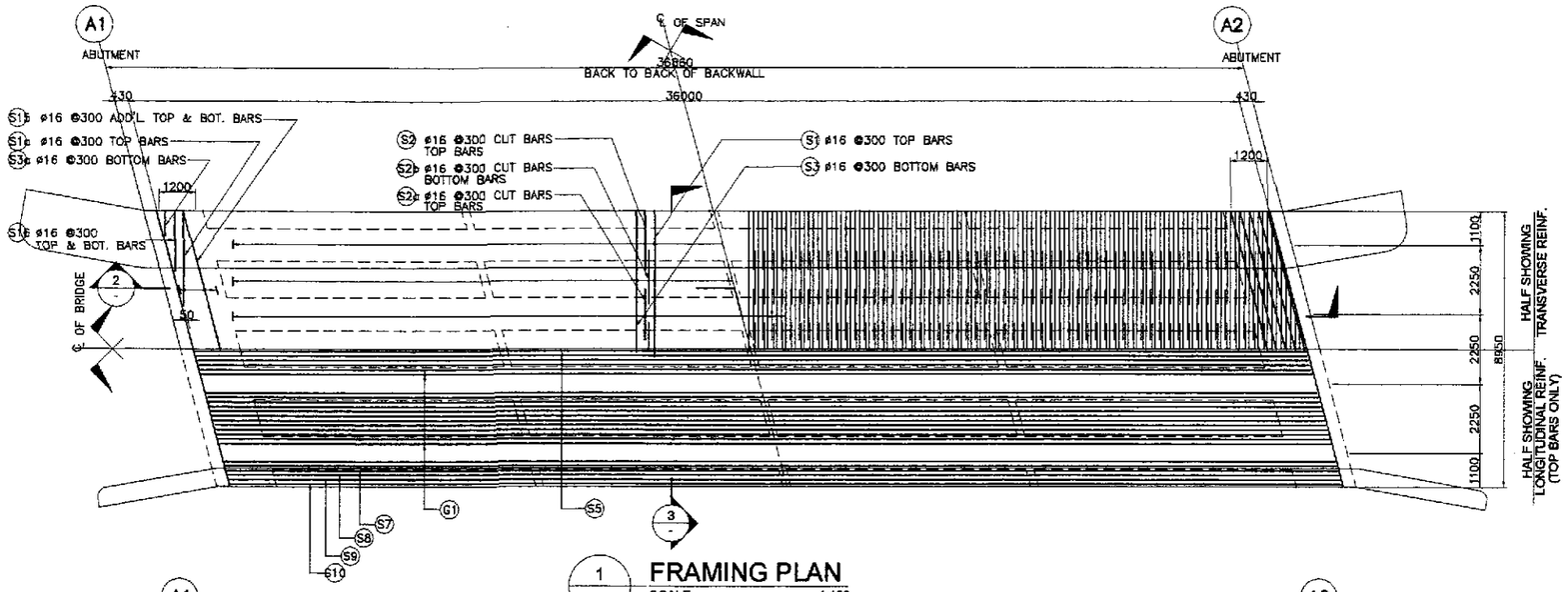
PLARIDEL BYPASS - CONTRACT PACKAGE IV

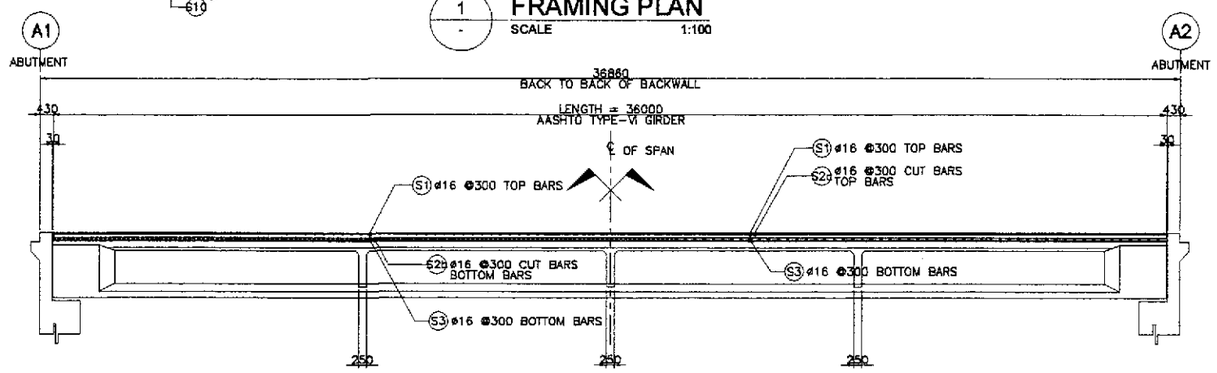
SCALE : AS SHOWN — FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
SHEARKEY AND RISER DETAILS (RIGHT FRONTAGE)

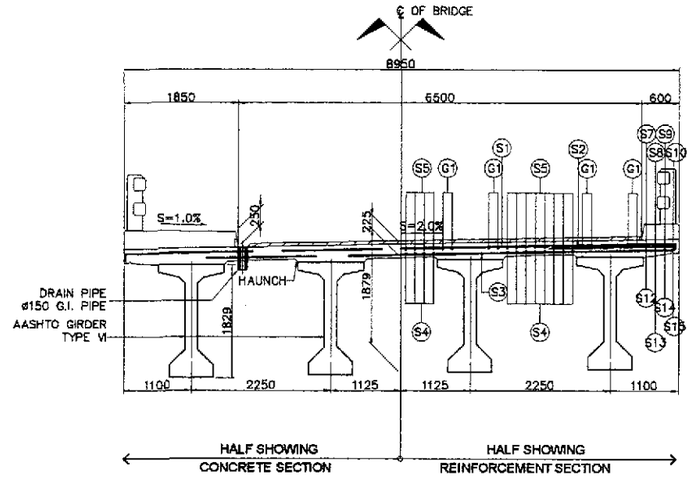
SHEET NO. : B10-21



1 - FRAMING PLAN
SCALE 1:100



2 - LONGITUDINAL SECTION
SCALE 1:100

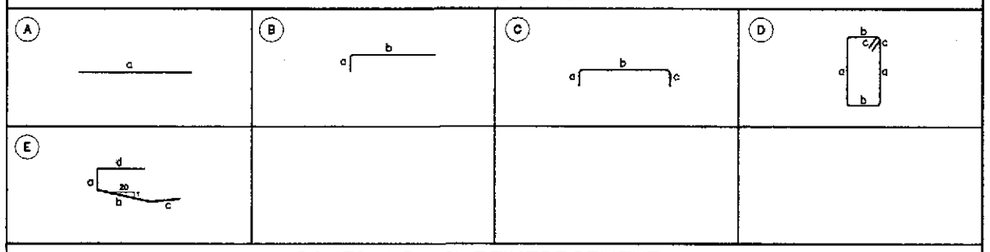


3 - TYPICAL CROSS SECTION
SCALE 1:50

ESTIMATED QUANTITIES OF SUPERSTRUCTURE

ITEM NO.	DESCRIPTION	UNIT	TOTAL
404(1)a	REINFORCING STEEL GRADE 40	kgs.	24856
	DECK SLAB	11285	
	DIAPHRAGM	417	
	GIRDER	8068	
	SIDEWALK, RAILING, & POST	4140	
	APPROACH SLAB	946	
404(1)b	REINFORCING STEEL GRADE 60	kgs.	11884
	DECK SLAB	0	
	DIAPHRAGM	1336	
	GIRDER	6884	
	SIDEWALK, RAILING, & POST	708	
	APPROACH SLAB	2956	
405(1)	STRUCTURAL CONCRETE	cu. m.	258.66
	DECK SLAB	80.54	
	DIAPHRAGM	13.71	
	GIRDER	109.00	
	SIDEWALK, RAILING, & POST	31.26	
	APPROACH SLAB	24.15	

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	LENGTH EACH BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT IN (kg)	REBAR RATIO (kg/m^3)	REMARKS
DECK SLAB	80.54	G1	16	16	AS SHOWN	A	35900	–	–	–	35900	574.40	1.579	907	140.12	
		S1	16	113	300	C	145	8850	145	–	9140	1032.82	1.579	1631		
		S1a	16	18	300	C	145	5030	145	–	5320	95.76	1.579	152		
		S2	16	226	300	B	145	1800	–	–	1945	439.57	1.579	695		
		S2a	16	226	300	A	1700	–	–	–	1700	384.20	1.579	607		
		S2b	16	339	300	A	1950	–	–	–	1950	661.05	1.579	1044		
		S3	16	113	300	C	8850	–	–	–	8850	1000.05	1.579	1580		
		S3a	16	18	300	C	5030	–	–	–	5030	90.54	1.579	143		
		S4	16	24	150	A	35900	–	–	–	35900	861.60	1.579	1361		
		S5	16	24	150	A	35900	–	–	–	35900	861.60	1.579	1361		
		S6	16	2	AS SHOWN	A	35900	–	–	–	35900	71.80	1.579	114		
		S7	16	2	AS SHOWN	A	35900	–	–	–	35900	71.80	1.579	114		
		S8	16	2	AS SHOWN	A	35900	–	–	–	35900	71.80	1.579	114		
		S9	16	2	AS SHOWN	A	35900	–	–	–	35900	71.80	1.579	114		
		S10	16	2	AS SHOWN	A	35900	–	–	–	35900	71.80	1.579	114		
		S11	16	2	AS SHOWN	A	35900	–	–	–	35900	71.80	1.579	114		
		S12	16	2	AS SHOWN	E	35900	–	–	–	35900	71.80	0.888	114		
		S13	16	2	AS SHOWN	A	35900	–	–	–	35900	71.80	1.579	114		
		S14	12	182	400	E	145	600	900	300	1945	353.99	0.888	315		
		S15	16	20	300	A	9200	–	–	–	9200	184.00	1.579	291		
		S16	16	36	300	A	5030	–	–	–	5030	181.08	1.579	286		
TOTAL	80.54													GRADE 40 Total = 11,285 kgs.		

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

KEI KATAHIRA & ENGINEERS INTERNATIONAL

YEC YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/20/02	E. M. SALLAN
CHECKED	9/20/02	N. KOBAYASHI
SUBMITTED	10/16/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

FPJHL – 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	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director	Chief, Bridges Division	Director IV (OIC)	Undersecretary	Secretary

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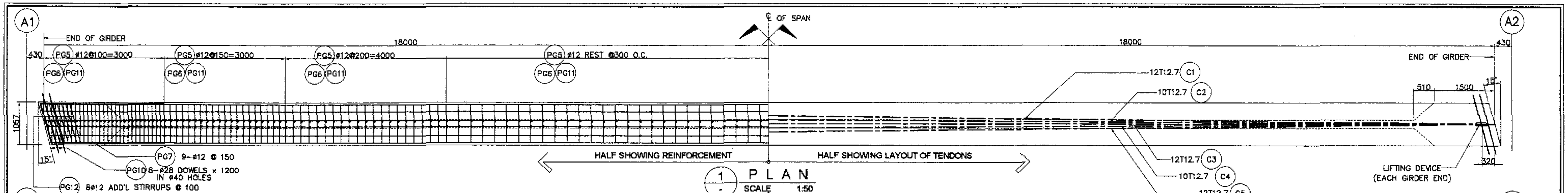
UPGRADING INTER-URBAN HIGHWAY SYSTEM
ALONG THE PAN-PHILIPPINE HIGHWAY
(Plaridel, Cabanatuan and San Jose Bypasses)
PLARIDEL BYPASS - CONTRACT PACKAGE IV

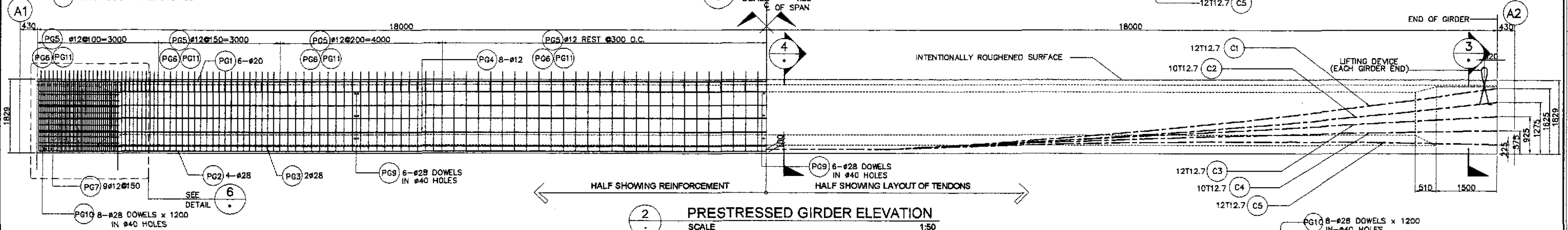
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
DECK FRAMING PLAN AND SECTION
(LEFT FRONTAGE)

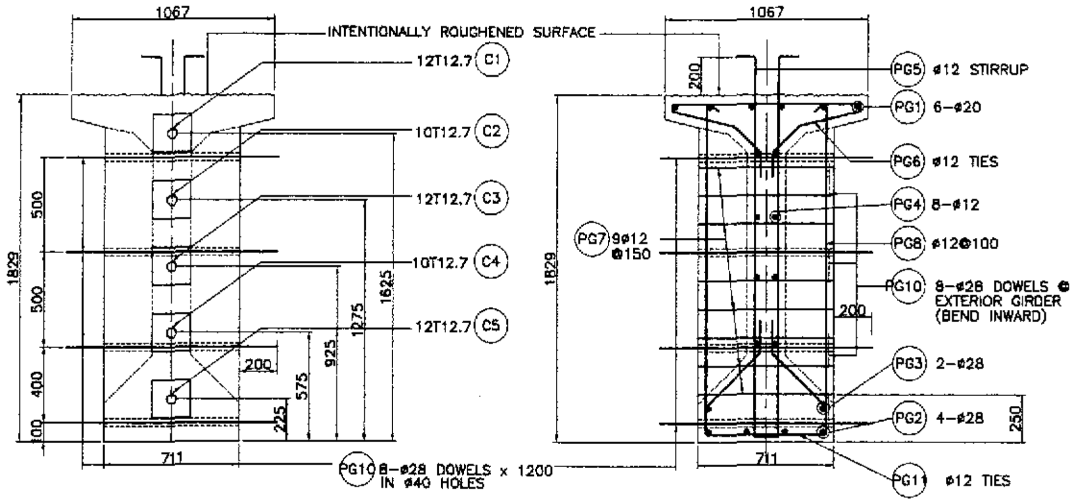
SHEET NO. :
B10-22



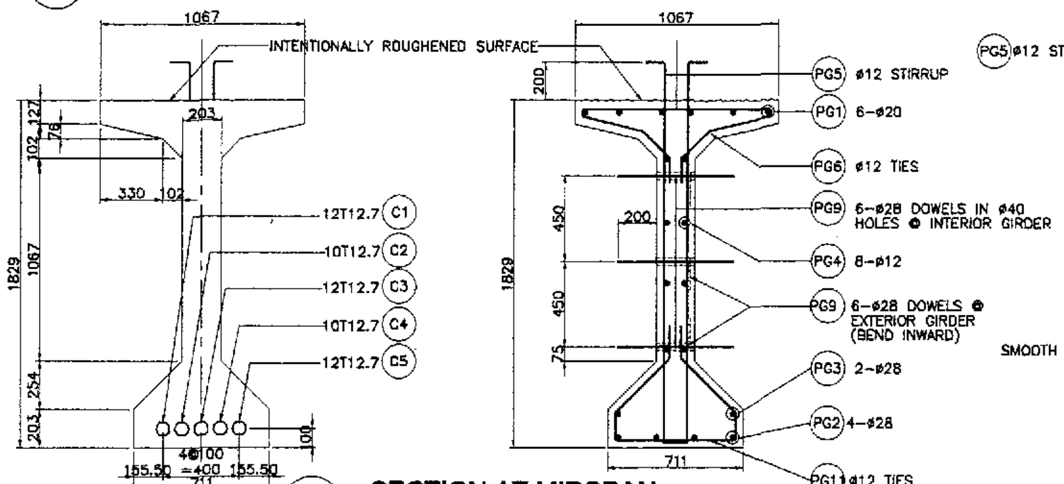
1 PLAN
SCALE 1:50



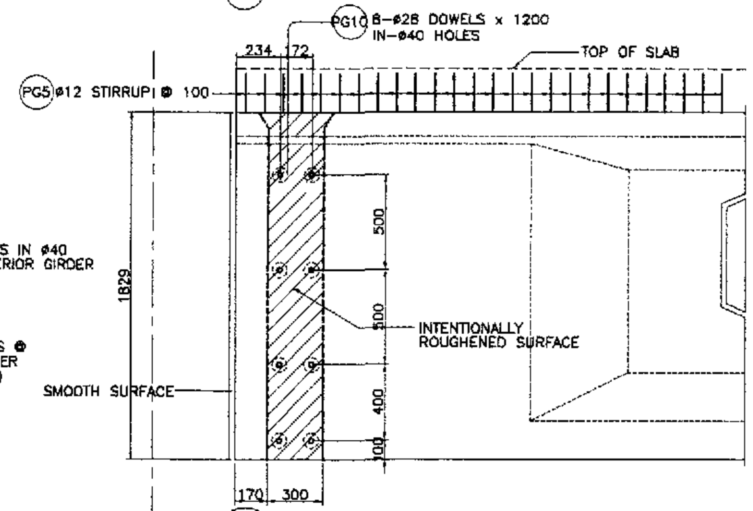
2 PRESTRESSED GIRDER ELEVATION
SCALE 1:50



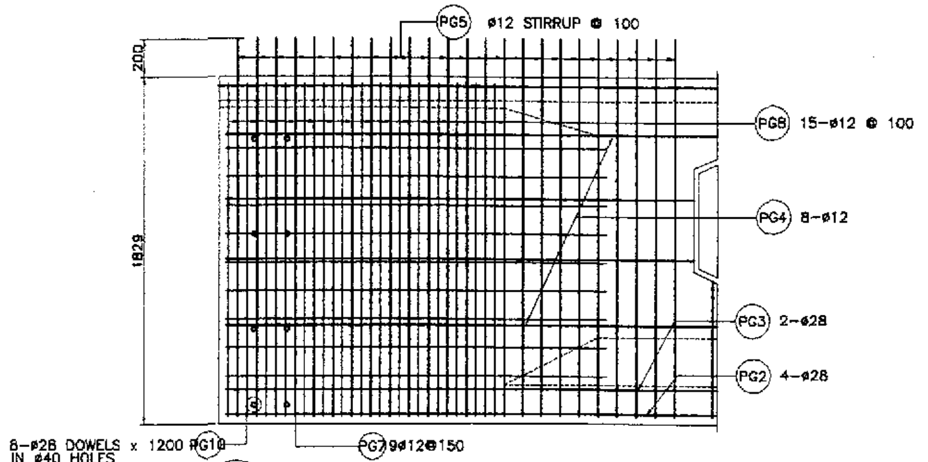
3 SECTION AT END
SCALE 1:20



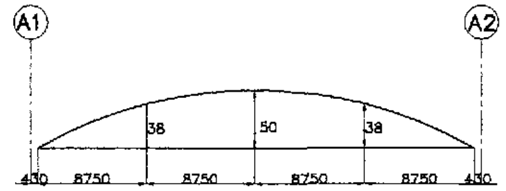
4 SECTION AT MIDSPAN
SCALE 1:20



5 DOWELS AT END BLOCK
SCALE 1:20



6 END BLOCK REINF. DETAIL
SCALE 1:20

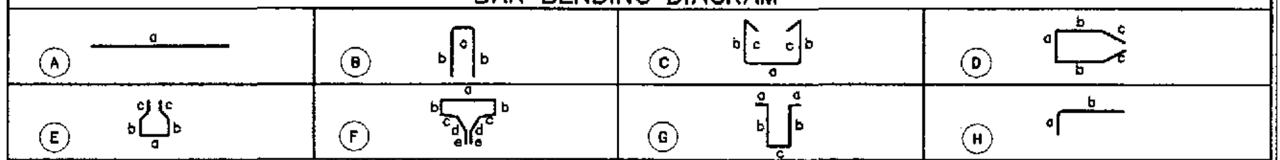


7 CAMBER DIAGRAM
NOT TO SCALE

NOTES ;

1.) SEE GENERAL NOTES, -2, FOR GIRDER DESIGN GUIDE.
2.) JACKING FORCE PER GIRDER, Pj = 7710 KN.
3.) JACKING WILL BE DONE AT BOTH ENDS.
4.) FINAL PRESTRESSING FORCE @ MIDSPAN, F_{NET} =5,537 KN.

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT

STRUCTURE COMPONENT	BAR MARK	SIZE (mm)	QTY.	SPACING	BAR SHAPE	DIMENSION(mm) a	b	c	d	e	LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONC. VOLUME (cu.m)	REBAR RATIO (kg/cu.m)	REMARKS
GIRDER	PG1	20	6	AS SHOWN	A	35920	–	–	–	–	35920	215.52	2.466	532	27.25	137.18	QUANTITIES ARE FOR ONE (1) GIRDER ONLY
	PG2	28	4	AS SHOWN	A	35920	–	–	–	–	35920	143.68	4.833	695			
	PG3	28	2	AS SHOWN	A	35920	–	–	–	–	35920	71.84	4.833	348			
	PG4	12	8	AS SHOWN	A	35920	–	–	–	–	35920	287.36	0.888	256			
	PG5	12	192	100	G	100	2000	103	–	–	4303	826.18	0.888	734			
	PG6	12	192	100	F	1000	50	340	200	150	2480	476.16	0.888	423			
	PG7	12	18	150	D	635	1450	550	–	–	4635	83.43	0.888	75			
	PG8	12	30	100	C	635	1750	150	–	–	4435	133.05	0.888	119			
	PG9	28	18	AS SHOWN	A	603	–	–	–	–	603	10.85	4.833	53			
	PG10	28	16	AS SHOWN	A	1200	–	–	–	–	1200	19.20	4.833	93			
	PG11	12	192	100	E	635	180	400	150	–	2055	394.56	0.888	351			
	PG12	12	16	100	B	635	1750	–	–	–	4135	66.16	0.888	59			

GRADE 40 TOTAL = 2,017 kgs
GRADE 60 TOTAL = 1,721 kgs

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

	DATE	SIGNATURE
DESIGNED	9/28/02	E.M. SALLAN
CHECKED	9/30/02	
SUBMITTED	10/16/02	M. KIKUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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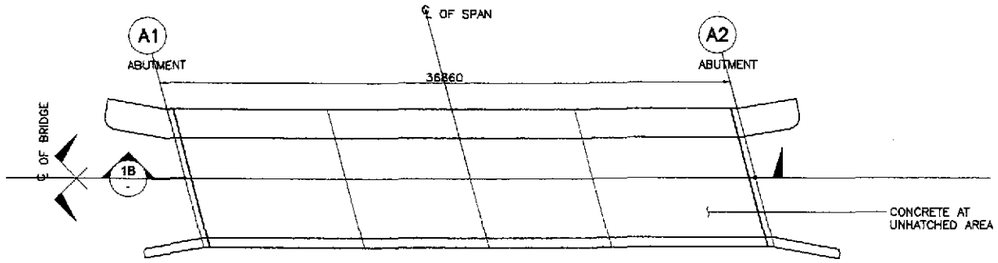
PLARIDEL BYPASS - CONTRACT PACKAGE IV

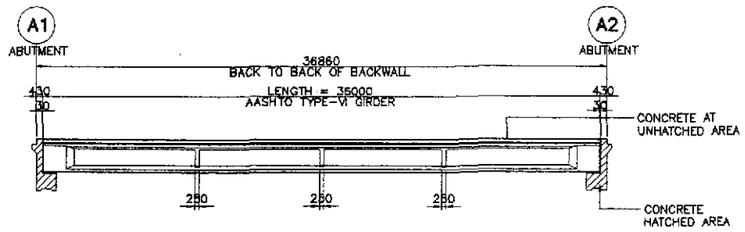
SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
AASHTO TYPE VI GIRDER (LEFT FRONTAGE)

SHEET NO. : B10-23



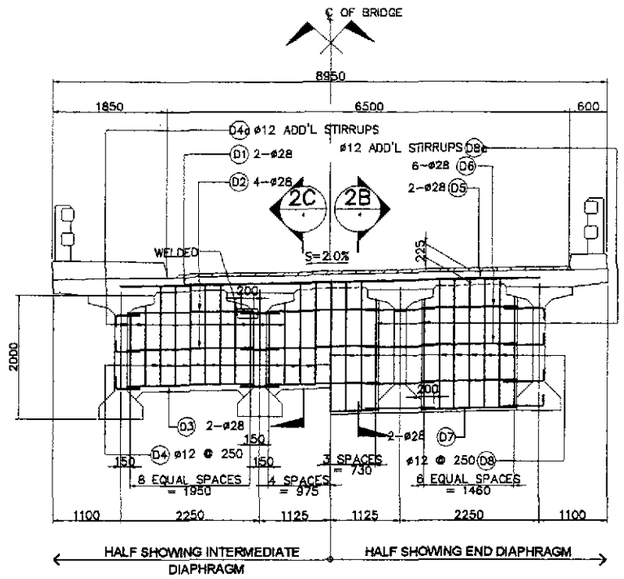
1A — PLAN
SCALE 1:200



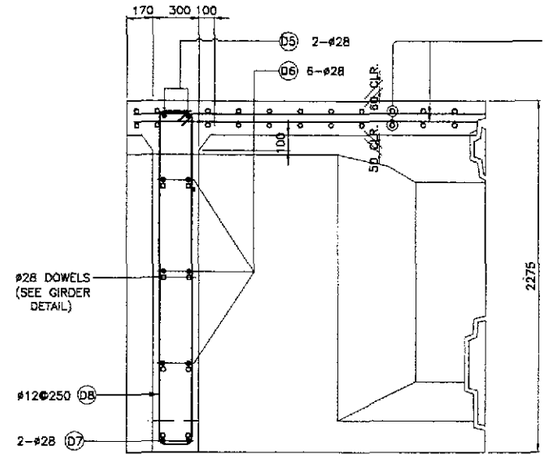
1B — LONGITUDINAL SECTION
SCALE 1:200

1 — CONCRETE POURING SEQUENCE
SCALE AS SHOWN

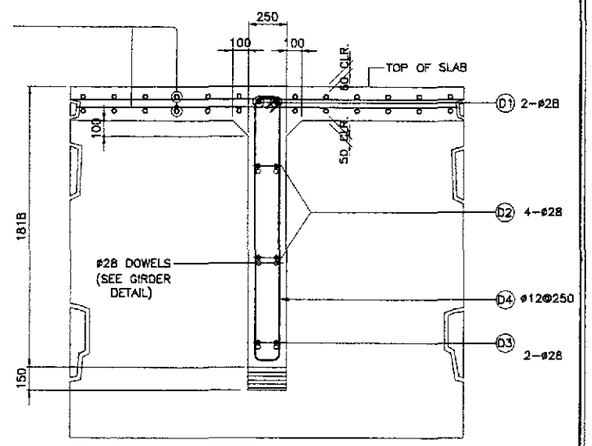
NOTES:
1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST TWENTY ONE (21) DAYS AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. REINFORCEMENT SHALL BE CONTINUOUS AT CONSTRUCTION JOINTS.
3. SEE GIRDER DETAIL FOR SPACING OF ø28 DOWELS.



2A — ELEVATION
SCALE 1:25



2B — SECTION
SCALE 1:20



2C — SECTION
SCALE 1:20

2 — DETAIL OF END & INTERMEDIATE DIAPHRAGM
SCALE AS SHOWN

BAR BENDING DIAGRAM

(A) a

(B) 

SCHEDULE OF REINFORCEMENT

STRUCTURE COMPONENT	LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	TOTAL WEIGHT IN (kg)	REBAR RATIO (kg/m^3)	REMARKS
DIAPHRAGM	INTERMEDIATE DIAPHRAGM	8.03	D1	28	8	AS SHOWN	A	6750				6750	40.50	4.833	196	120.95	TOP BARS
			D2	28	36	AS SHOWN	A	2045				2045	73.62	4.833	356		DIST. BARS
			D3	28	18	AS SHOWN	A	2045				2045	36.81	4.833	178		BOTT. BARS
			D4	12	45	250	B	150	1690	150		3980	179.10	0.888	160		STIRRUPS
			D4a	12	36	AS SHOWN	B	150	960	150		2520	90.72	0.888	81		ADD'L. STIRRUPS
	END DIAPHRAGM	5.68	D5	28	4	AS SHOWN	A	6750				6750	27.00	4.833	182	137.70	TOP BARS
			D6	28	36	AS SHOWN	A	2045				2045	73.62	4.833	356		DIST. BARS
			D7	28	12	AS SHOWN	A	2045				2045	24.54	4.833	119		BOTT. BARS
			D8	12	30	250	B	200	2150	150		5000	150.00	0.888	134		STIRRUPS
			D8a	12	12	AS SHOWN	B	200	1600	150		3900	46.80	0.888	42		ADD'L. STIRRUPS
	TOTAL	13.71											GRADE 60 TOTAL =		1,338 kgs		
													GRADE 40 TOTAL =		417 kgs		

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

	DATE	SIGNATURE
DESIGNED	9/28/02	E.N. SALLAN
CHECKED	9/30/02	ARCHITECT
SUBMITTED	10/16/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

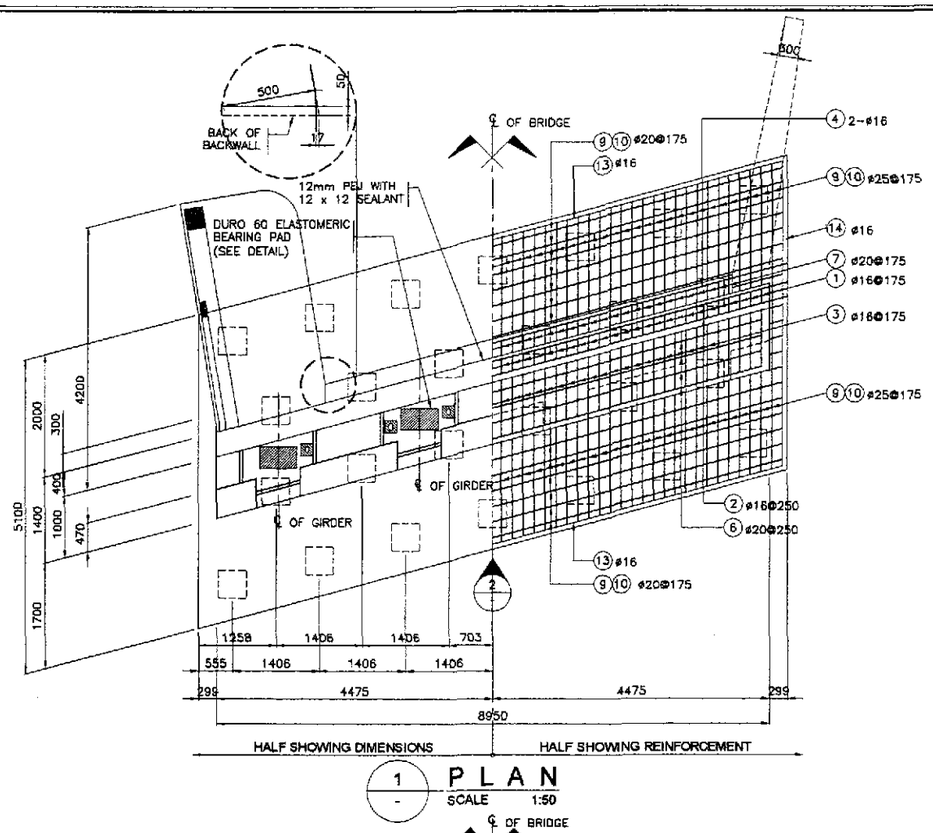
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DORDY	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director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

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

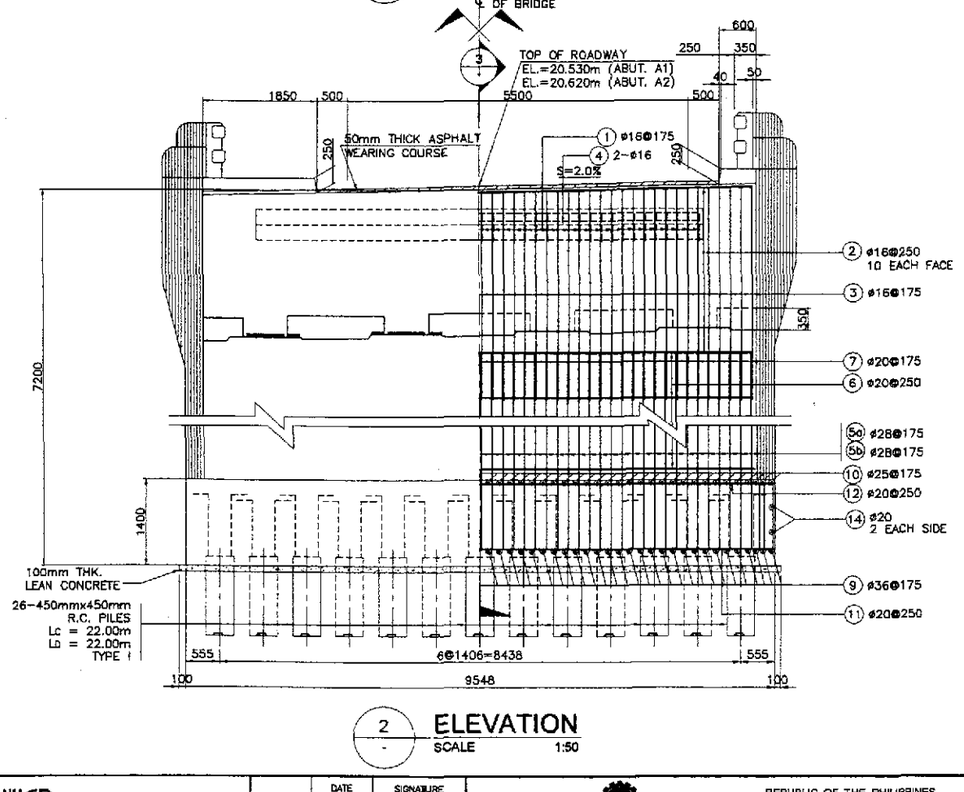
SCALE : AS SHOWN FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
CONCRETE POURING SEQUENCE
AND DIAPHRAGM DETAILS
(LEFT FRONTAGE)

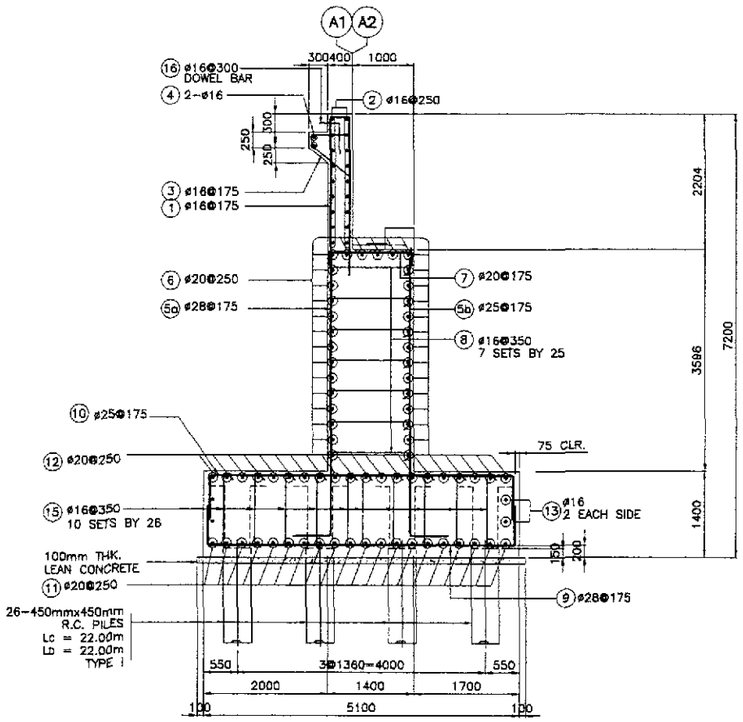
SHEET NO. : B10-24



1 / - PLAN
SCALE 1:50

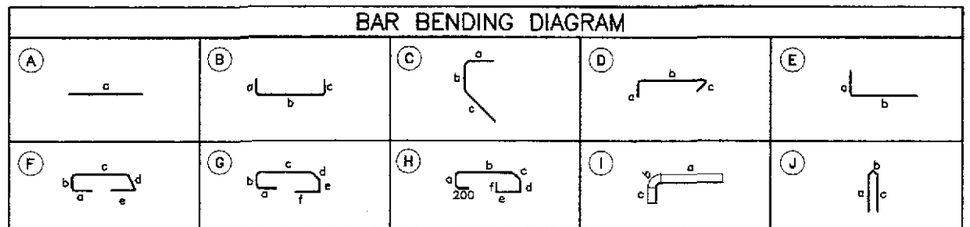


2 / - ELEVATION
SCALE 1:50



3 / - SECTION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
BACKWALL	6.62	1	16	52	175	B	2600	300	2600	–	–	–	5500	286.00	1.579	452	95.81
		2	16	16	250	A	9165	–	–	–	–	–	9165	164.97	1.579	261	
		3	16	38	150	C	600	150	750	–	–	–	1500	57.00	1.579	91	
		4	16	2	AS SHOWN	A	6650	–	–	–	–	–	6650	13.30	1.579	22	
MAINWALL	45.06	5a	28	52	175	E	600	4700	–	–	–	–	5300	275.60	4.833	1332	87.40
		5b	25	52	175	E	600	4700	–	–	–	–	5300	275.60	3.854	1063	
		6	20	36	250	A	9165	–	–	–	–	–	9165	329.94	2.466	814	
		7	20	52	175	B	250	1300	250	–	–	–	1800	93.60	2.466	231	
		8	16	175	350	D	250	1300	250	–	–	–	1800	315.00	1.579	498	
FOOTING	68.17	9	28	55	175	B	700	4950	700	–	–	–	6350	249.25	4.833	1688	73.65
		10	25	55	175	B	700	4950	700	–	–	–	6350	349.25	3.854	1374	
		11	20	21	250	B	700	9750	700	–	–	–	11150	234.15	2.466	578	
		12	20	21	250	B	700	9750	700	–	–	–	11150	234.15	2.466	580	
		13	16	4	AS SHOWN	A	9750	–	–	–	–	–	9750	39.00	1.579	60	
		14	16	4	AS SHOWN	A	4950	–	–	–	–	–	4950	19.80	1.579	49	
		15	16	260	350	D	250	1250	250				1750	455.00	1.579	719	
DOWEL		16	16	25	300	E	650	500	–	–	–	–	1150	43.70	1.579	70	
TOTAL	121.85	GRADE 40 TOTAL = 7,680 kgs. GRADE 60 TOTAL = 2,175 kgs.															

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KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	9/29/02	P. GONZALES
CHECKED	9/30/02	
SUBMITTED	10/16/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

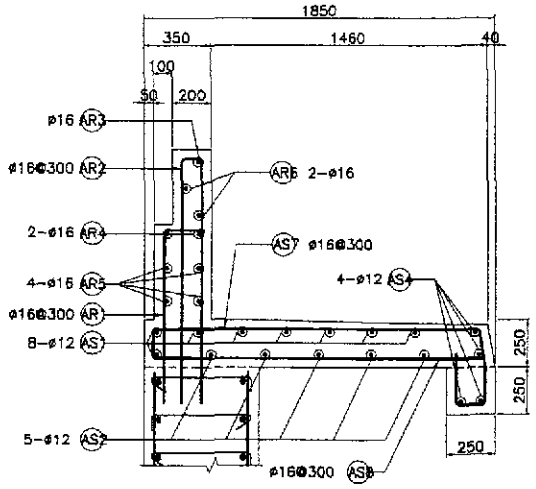
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

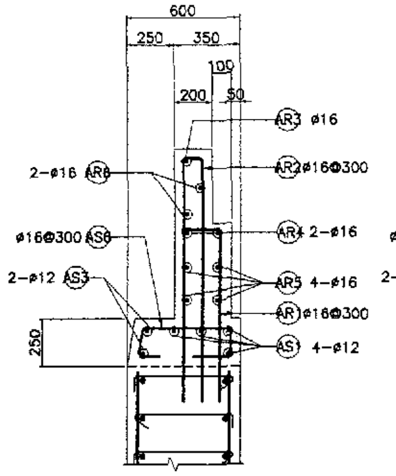
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
ABUTMENT - A1 & A2
MAINWALL REINFORCEMENT DETAILS
(LEFT FRONTAGE)

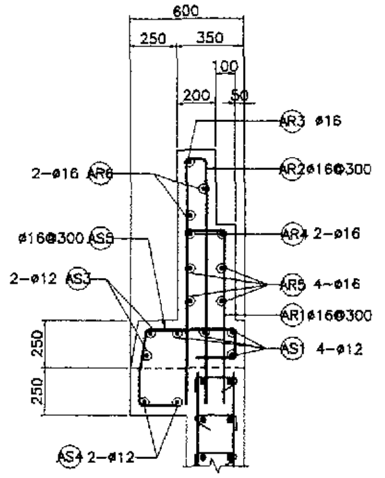
SHEET NO. :
B10-25



5A SECTION
SCALE 1:20

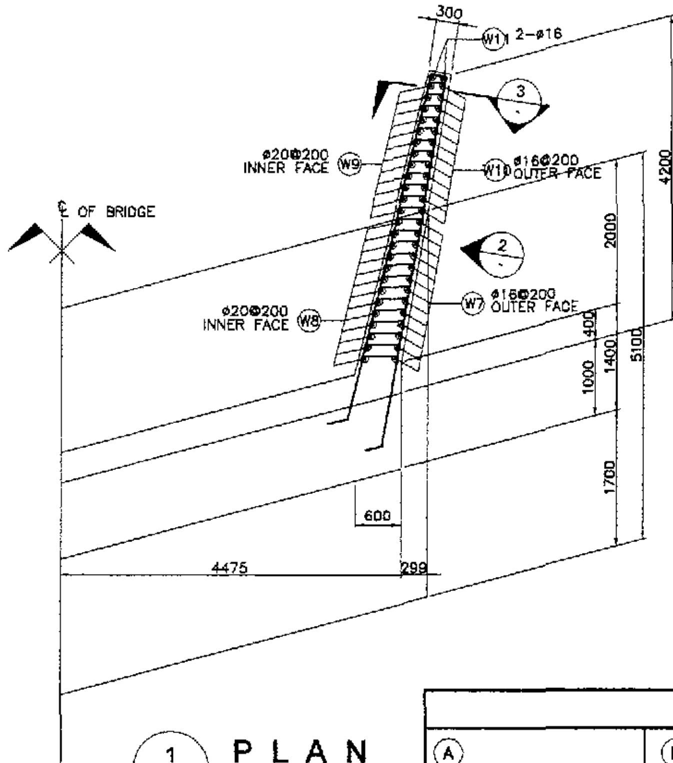


5B SECTION
SCALE 1:20

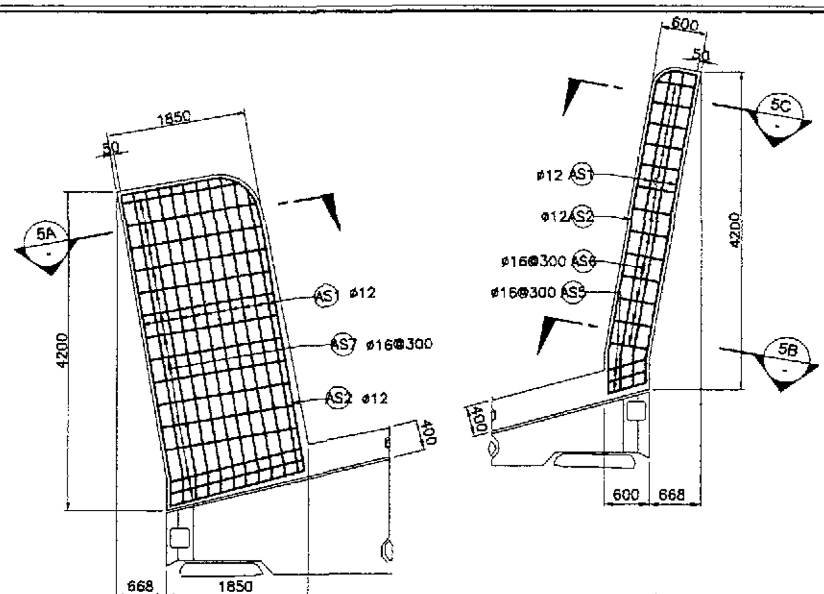


5C SECTION
SCALE 1:20

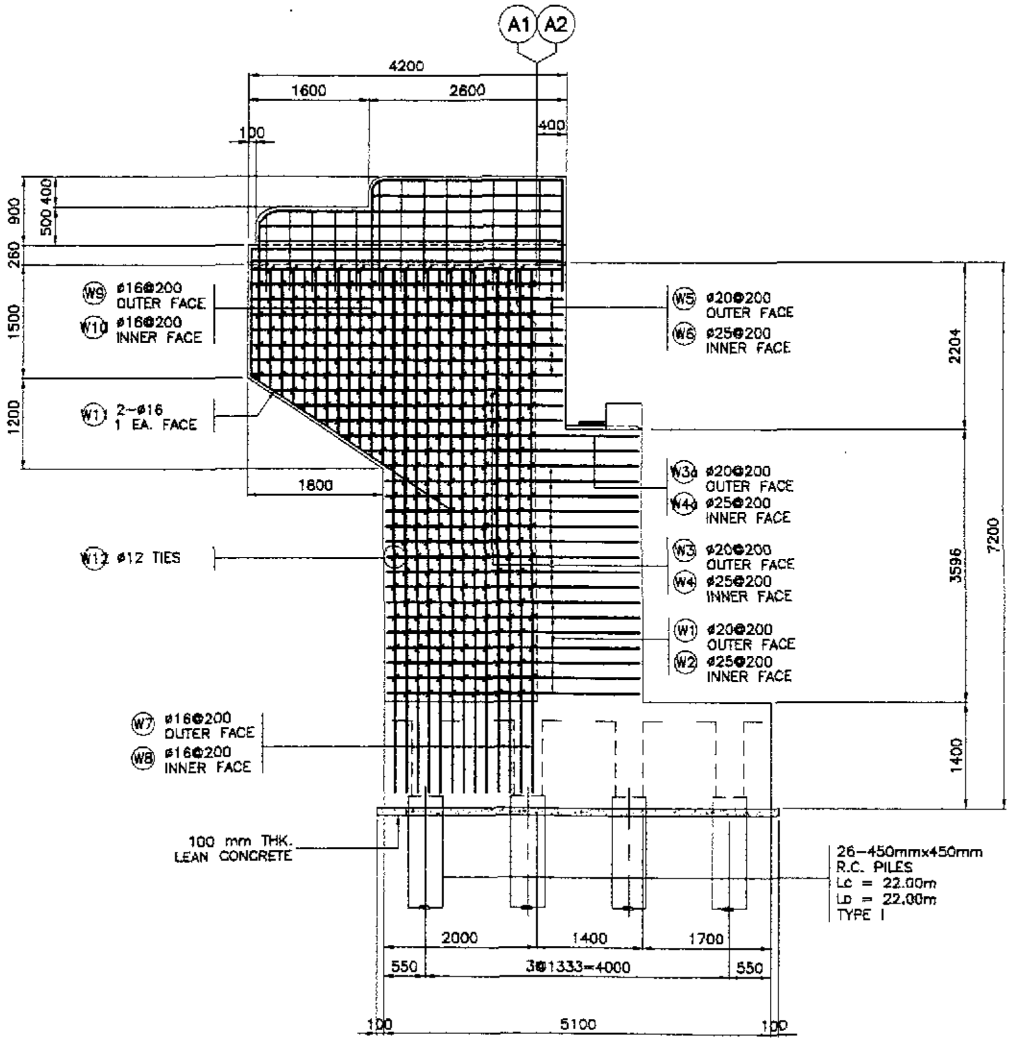
5 APPROACH RAIL DETAILS
SCALE 1:20



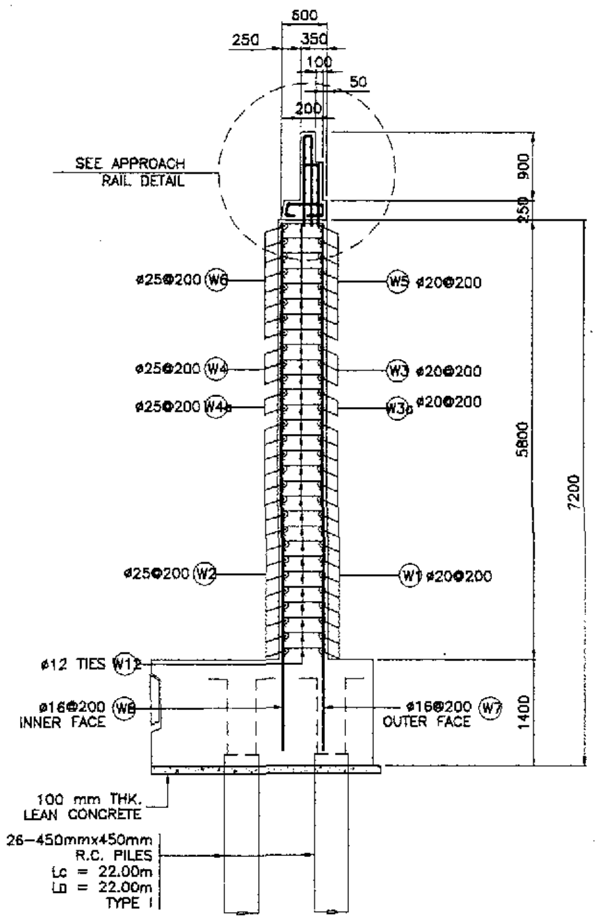
1 PLAN
SCALE 1:50



4 SIDEWALK DETAIL
SCALE 1:50

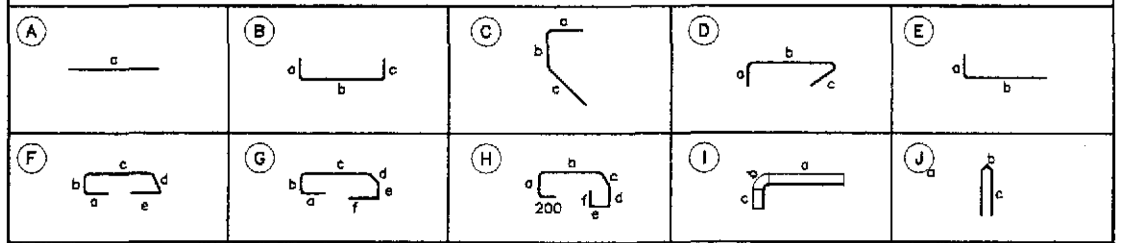


2 WINGWALL ELEVATION
SCALE 1:50



3 SECTION
SCALE 1:50

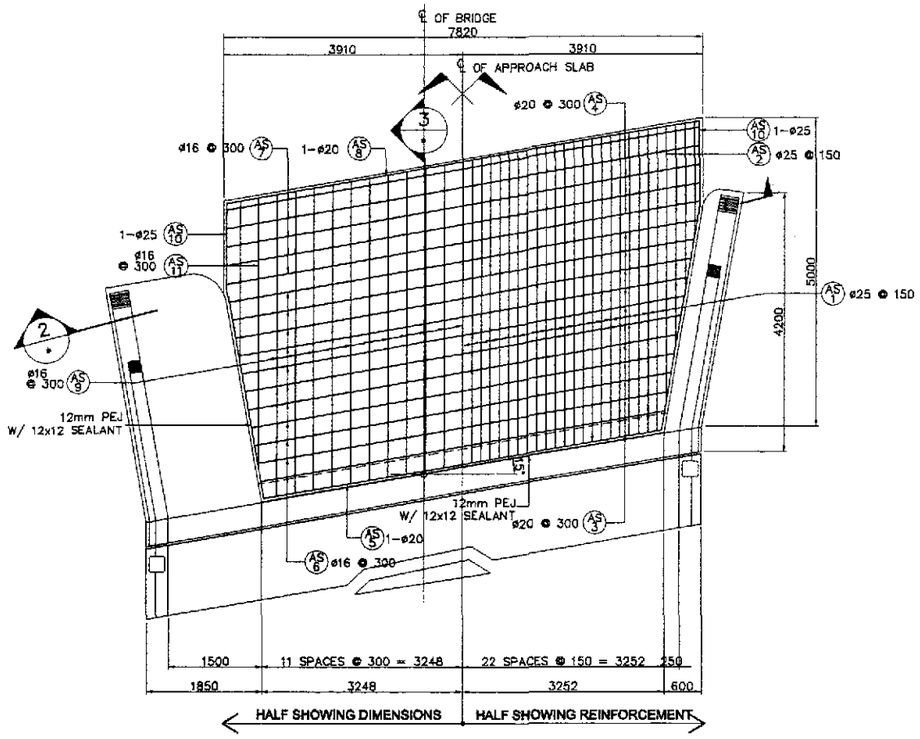
BAR BENDING DIAGRAM



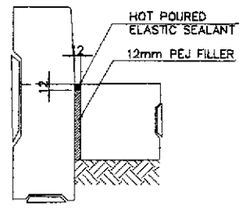
SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING 200	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m³)
WINGWALL	11.68	W1	20	32	200	B	400	3300	150	–	–	–	3850	123.20	2.466	304	194.05
		W2	25	32	200	B	400	3300	150	–	–	–	3850	123.20	3.854	475	
		W3	20	4	200	B	400	3800	150	–	–	–	4350	17.40	2.466	43	
		W3a	20	6	200	B	400	3950	150	–	–	–	4500	27.00	2.466	67	
		W4	25	4	200	B	400	3800	150	–	–	–	4350	17.40	3.854	98	
		W4a	25	6	200	B	400	3950	150	–	–	–	4500	27.00	3.854	105	
		W5	20	16	250	B	400	4100	150	–	–	–	4650	74.40	2.466	184	
		W6	25	16	250	B	400	4100	150	–	–	–	4650	74.40	3.854	287	
		W7	16	26	200	E	250	6950	–	–	–	–	7200	187.20	1.579	296	
		W8	16	26	200	E	250	6950	–	–	–	–	7200	187.20	1.579	296	
		W9	16	24	200	E	250	2050	–	–	–	–	2300	55.20	1.579	88	
		W10	16	24	200	E	250	2050	–	–	–	–	2300	55.20	1.579	88	
		W11	16	4	AS SHOWN	C	250	1500	3200	–	–	–	4950	19.80	1.579	32	
		W12	12	502	AS SHOWN	D	170	450	170	–	–	–	790	396.58	0.888	353	
														GRADE 60 TOTAL = 1,533 kgs GRADE 40 TOTAL = 1,153 kgs			
APPROACH RAILING AND SIDEWALK	5.01	AS1	12	12	AS SHOWN	A	4100	–	–	–	–	–	4100	49.20	0.888	44	86.70
		AS2	12	5	AS SHOWN	A	4100	–	–	–	–	–	4100	20.50	0.888	19	
		AS3	12	2	AS SHOWN	A	4100	–	–	–	–	–	4100	8.20	0.888	8	
		AS4	16	4	AS SHOWN	A	4100	–	–	–	–	–	4100	16.40	0.888	15	
		AS5	16	3	300	F	200	170	480	200	170	200	1230	4.26	1.579	7	
		AS6	16	12	300	G	200	170	480	200	200		1250	15.00	1.579	24	
		AS7	16	14	300	H	200	170	1730	200	170	200	2870	40.18	1.579	64	
		AS8	16	14	300	E	200	1770	–	–	–	–	1970	27.58	1.579	44	
		AR1	16	10	300	E	200	900	–	–	–	–	1100	11.00	1.579	18	
		AR2	16	18	300	J	200	120	1300	–	–	–	2720	48.96	1.579	78	
		AR3	16	2	AS SHOWN	I	1300	236	1300	–	–	–	4036	8.07	1.579	13	
		AR4	16	4	AS SHOWN	I	2500	236	900	–	–	–	5136	20.54	1.579	33	
		AR5	16	8	AS SHOWN	A	4000	–	–	–	–	–	4000	32.00	1.579	51	
		AR6	16	4	AS SHOWN	A	2500	–	–	–	–	–	2500	10.00	1.579	16	
														GRADE 40 TOTAL = 434 kgs			
TOTAL	18.85	GRADE 60 TOTAL = 1,533 kgs. GRADE 40 TOTAL = 1,587 kgs.															

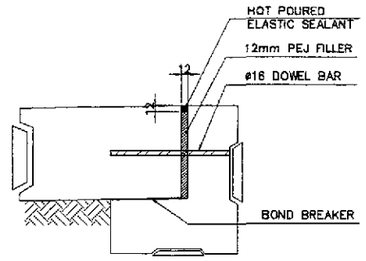
JICA JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL YACHIYO ENGINEERING CO., LTD.	DESIGNED: 7/28/02 P. GONZALES CHECKED: 7/30/02 SUBMITTED: 10/16/02 M. KIKUCHI TEAM LEADER	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS PJHL - PMO Submitted By: DANILO C. TRAJANO, Project Director BUREAU OF DESIGN Reviewed By: ADRIANO M. DOROY, Chief, Bridges Division Recommended By: GILBERTO S. REYES, Director IV (OIC) OFFICE OF THE SECRETARY Recommended By: (See cover sheet for Signature) MANUEL M. BONOAN, Undersecretary Approved By: (See cover sheet for Signature/Approval) SIMEON A. DATUMANONG, Secretary	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE IV	SCALE : AS SHOWN FULL SIZE A1	SHEET CONTENTS : BRIDGE NO. 10 ABUTMENT - A1 & A2 WINGWALL REINFORCEMENT DETAILS (LEFT FRONTAGE) SHEET NO. : B10-26



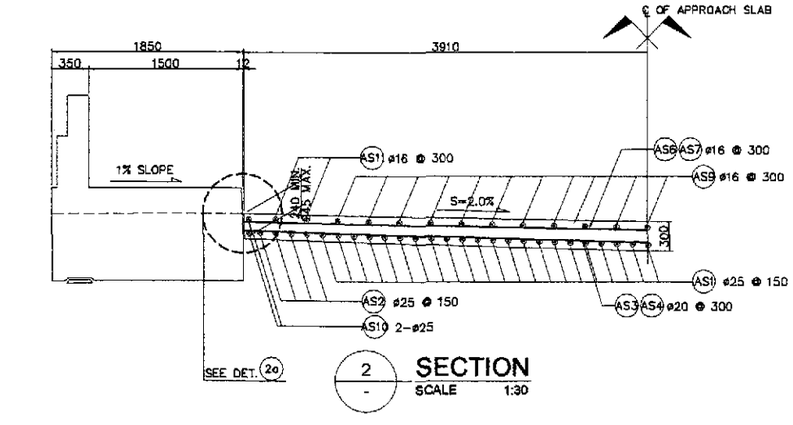
1 PLAN
SCALE 1:50



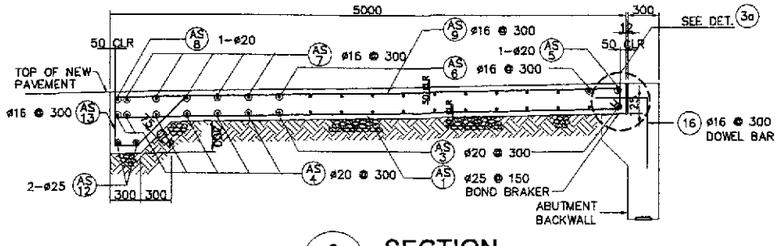
2a DETAIL
SCALE 1:10



3a DETAIL
SCALE 1:10

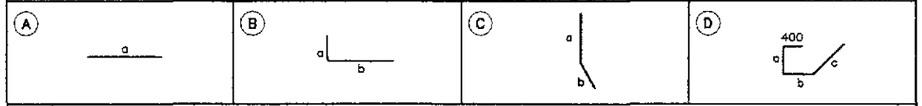


2 SECTION
SCALE 1:30



3 SECTION
SCALE 1:30

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER APPROACH SLAB

LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	e	f	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/cu.m)
APPROACH SLAB	12.07	AS1	25	44	150	B	4900	200	–	–	–	–	5100	224.40	3.854	865	161.60
		AS2	25	8	150	B	2900	200	–	–	–	–	3100	24.80	3.854	96	
		AS3	20	13	300	A	7400	–	–	–	–	–	7400	96.30	2.466	238	
		AS4	20	5	300	A	8050	–	–	–	–	–	8050	40.25	2.466	100	
		AS5	20	1	AS SHOWN	A	6750	–	–	–	–	–	6750	6.75	2.466	17	
		AS6	16	12	300	A	7450	–	–	–	–	–	7450	89.90	1.579	142	
		AS7	16	4	300	A	8050	–	–	–	–	–	8050	32.30	1.579	51	
		AS8	20	1	AS SHOWN	A	8050	–	–	–	–	–	8050	8.05	2.466	20	
		AS9	16	22	300	B	4900	200	–	–	–	–	5100	112.20	1.579	178	
		AS10	25	4	AS SHOWN	C	1100	4000	–	–	–	–	5100	20.40	3.854	79	
		AS11	16	4	300	B	3700	200	–	–	–	–	3900	15.60	1.579	25.00	
		AS12	25	2	AS SHOWN	A	8050	–	–	–	–	–	8050	16.10	3.854	63	
		AS13	16	27	300	D	400	500	200	700	–	–	1800	48.60	1.579	77	
TOTAL	12.07														GRADE 40 TOTAL = 473 kgs. GRADE 60 TOTAL = 1,478 kgs.		

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

	DATE	SIGNATURE
DESIGNED	9/20/02	E. N. SALLAN
CHECKED	9/20/02	N. KAWAMURA
SUBMITTED	10/16/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

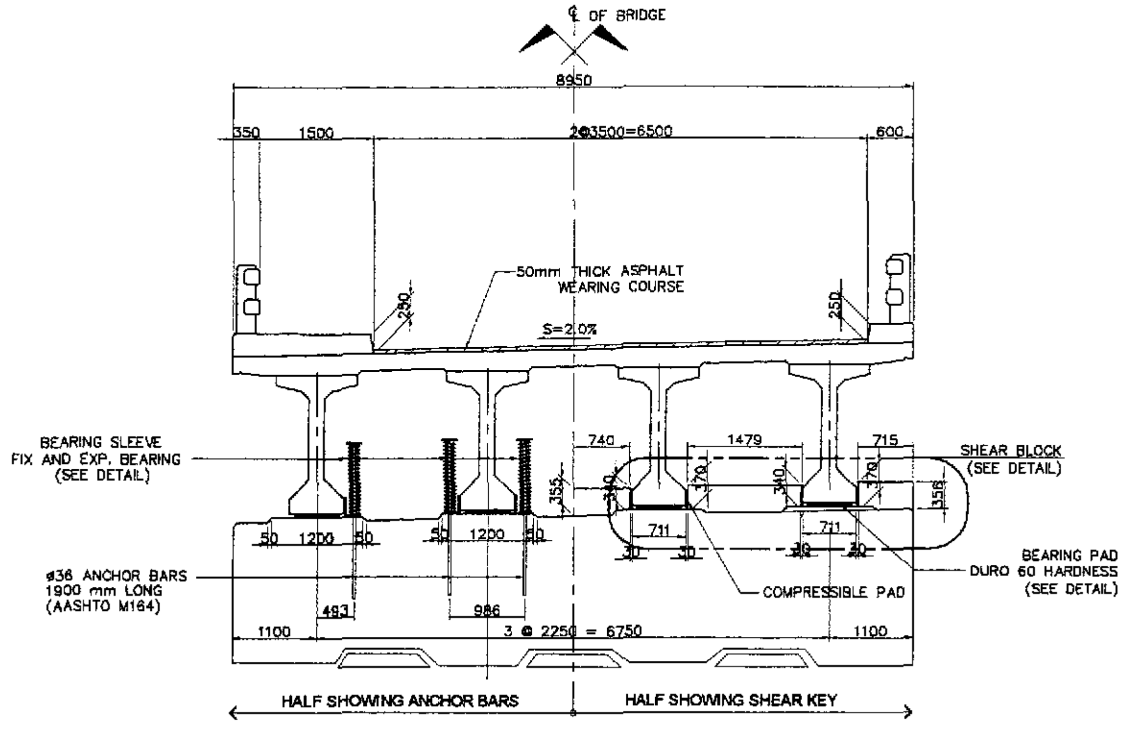
FJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director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

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

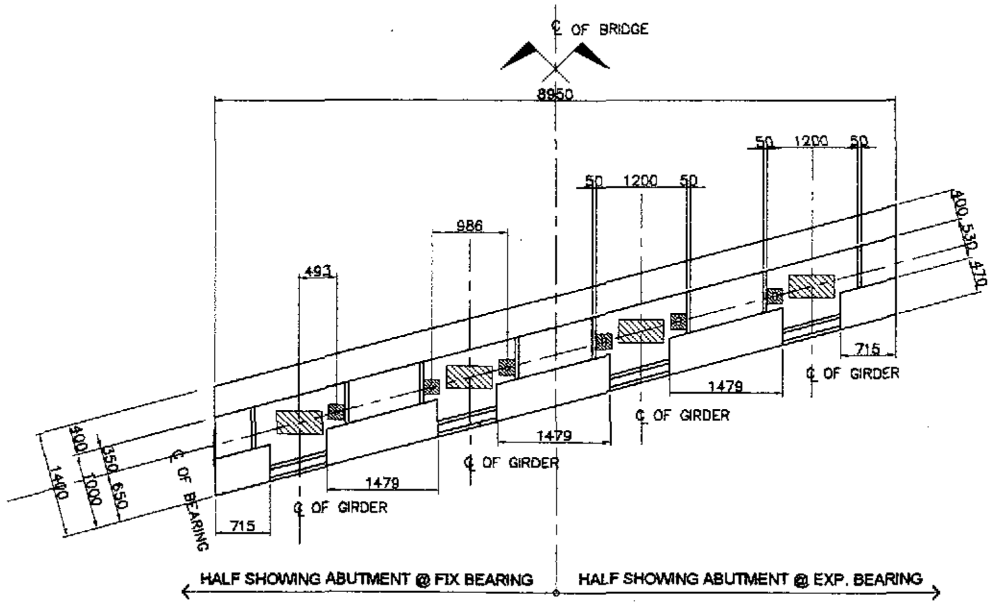
SCALE : AS SHOWN FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
APPROACH SLAB PLAN, SECTIONS AND DETAILS (LEFT FRONTAGE)

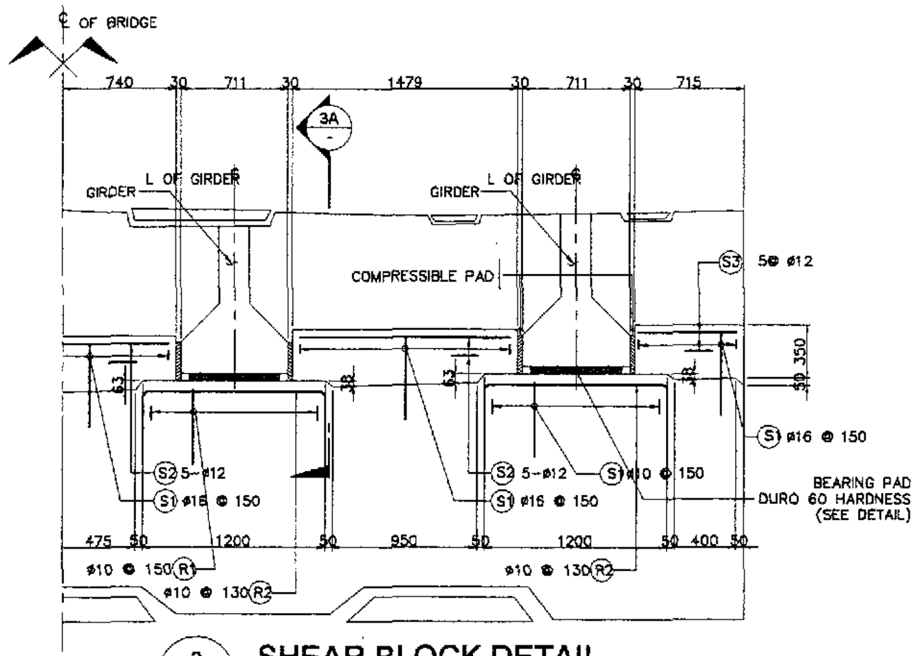
SHEET NO. : B10-27



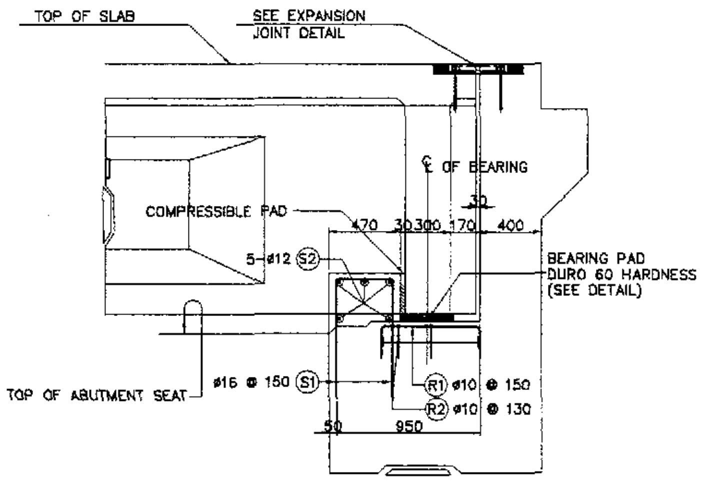
1 SECTION AT ABUTMENT SEAT
SCALE 1:50



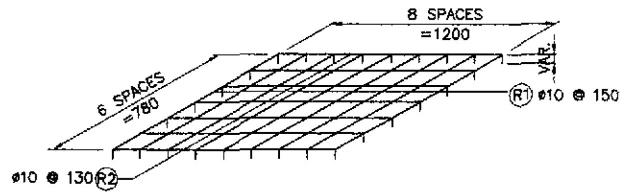
2 PLAN AT ABUTMENT SEAT
SCALE 1:50



3 SHEAR BLOCK DETAIL
SCALE 1:25



3A SECTION
SCALE 1:25



4 RISER REINFORCEMENT
NOT TO SCALE

BAR BENDING DIAGRAM

(A) a

(B) a b c

SCHEDULE OF REINFORCEMENT

LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSION(mm) OUT TO OUT a	b	c	d	e	LENGTH EACH BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m^3)
SHEAR KEY & RISER	1.42	S1	16	40	150	(B)	560	390	560			1510	60.40	1.579	96	142.68
		S2	12	15	AS SHOWN	(A)	1450					1450	21.75	0.888	20	
		S3	12	10	AS SHOWN	(A)	685					685	6.85	0.888	7	
		R1	10	36	150	(B)	500	810	500			1810	65.16	0.616	41	
		R2	10	28	130	(B)	500	1250	500			2250	63.00	0.616	39	
TOTAL	1.42	GRADE 40 TOTAL = 2030 kgs.														

THE REINFORCEMENT SHOWN ON THIS TABLE IS FOR REFERENCE ONLY. THE CONTRACTOR SHOULD CHECKED AND VERIFY ALL DIMENSIONS, SIZES AND QUANTITIES OF REINFORCEMENT.

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

	DATE	SIGNATURE
DESIGNED	9/28/02	E. N. SALLAN
CHECKED	9/30/02	
SUBMITTED	10/16/02	M. KIKUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
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SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 10
SHEARKEY AND RISER DETAILS
(LEFT FRONTAGE)

SHEET NO. : B10-28