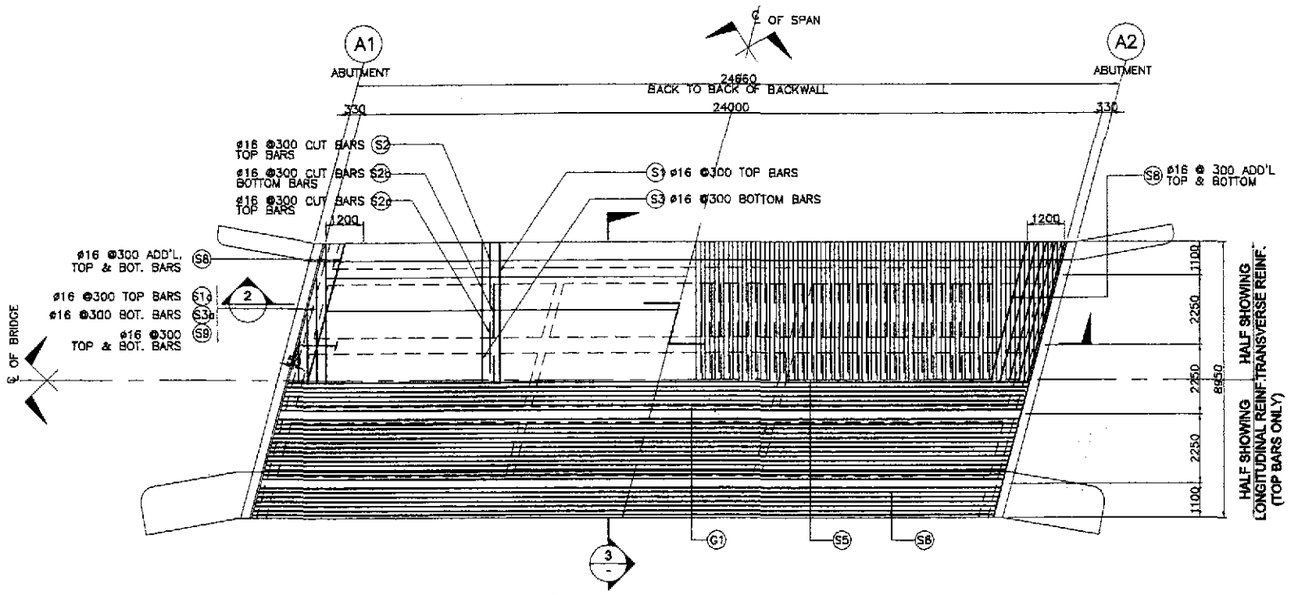
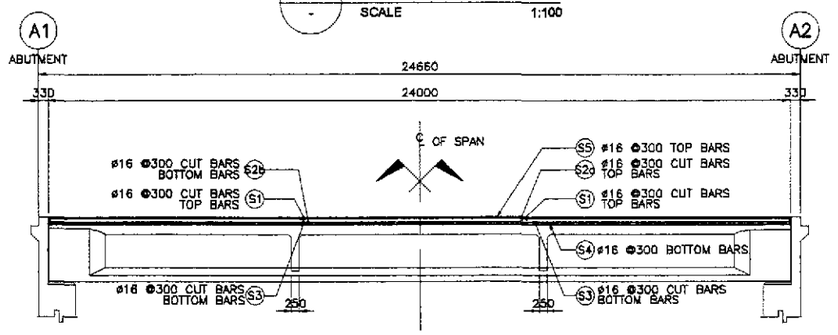
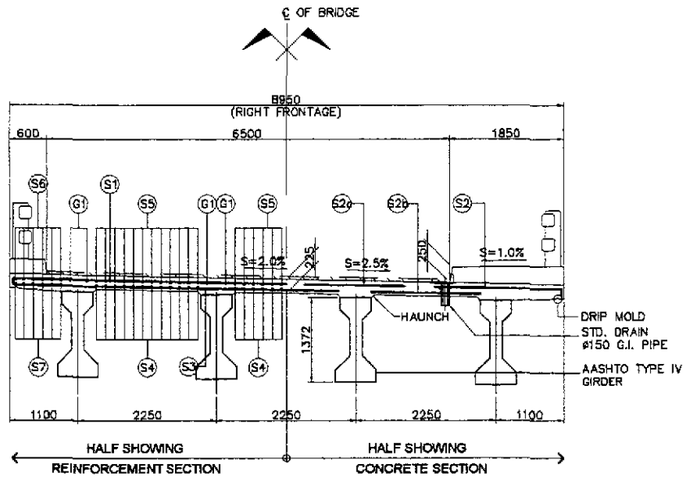


1 — FRAMING PLAN
SCALE 1:100



2 — LONGITUDINAL SECTION
SCALE 1:100



3 — TYPICAL CROSS SECTION
SCALE 1:50

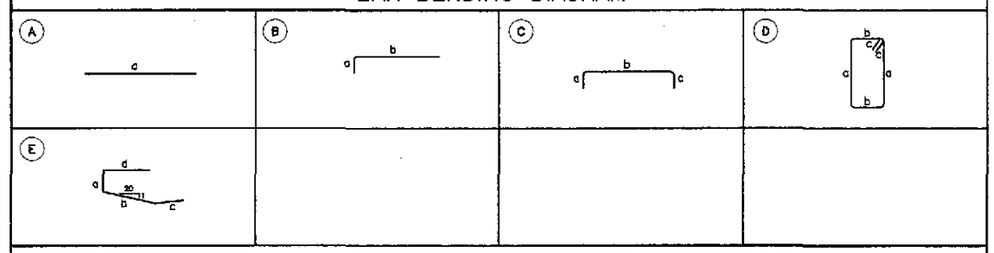
NOTE :

FOR LEFT FRONTAGE – IT IS THE MIRROR IMAGE OF THE CROSS-SECTION, FRAMING PLAN OF RIGHT FRONTAGE.

ESTIMATED QUANTITIES OF SUPERSTRUCTURE

ITEM NO.	DESCRIPTION	UNIT	TOTAL
404(1)a	REINFORCING STEEL GRADE 40	kgs.	16136
	DECK SLAB	8590	
	DIAPHRAGM	256	
	GIRDER	3560	
	SIDEWALK, RAILING, & POST	2772	
	APPROACH SLAB	958	
404(1)b	REINFORCING STEEL GRADE 60	kgs.	8776
	DECK SLAB	0	
	DIAPHRAGM	803	
	GIRDER	4540	
	SIDEWALK, RAILING, & POST	443	
	APPROACH SLAB	2990	
405(1)	STRUCTURAL CONCRETE	cu. m.	1148.22
	DECK SLAB	51.01	
	DIAPHRAGM	7.96	
	GIRDER	50.69	
	SIDEWALK, RAILING, & POST	20.23	
	APPROACH SLAB	23.86	

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	51.01	G1	16	8	AS SHOWN	A	23900	–	–	–	23900	191.20	1.579	302	168.40	
		S1	16	73	300	C	145	8850	145	–	9140	667.22	1.579	1054		
		S1a	16	18	300	C	145	5050	145	–	5340	96.12	1.579	152		
		S2	16	146	300	B	145	2000	–	–	2145	313.17	1.579	495		
		S2a	16	146	300	A	1700	–	–	–	1700	248.20	1.579	392		
		S2b	16	219	300	A	1850	–	–	–	1850	405.15	1.579	640		
		S3	16	73	300	A	8850	–	–	–	8850	646.05	1.579	1021		
		S3a	16	18	300	A	5050	–	–	–	5050	90.90	1.579	144		
		S4	16	36	150	A	23900	–	–	–	23900	860.40	1.579	1359		
		S5	16	36	150	A	23900	–	–	–	23900	860.40	1.579	1359		
		S6	16	12	AS SHOWN	A	23900	–	–	–	23900	286.80	1.579	453		
		S7	16	12	AS SHOWN	A	23900	–	–	–	23900	286.80	1.579	453		
		S8	16	20	300	A	9200	–	–	–	9200	184.00	1.579	291		
		S9	16	36	300	A	5050	–	–	–	5050	181.80	1.579	288		
		S10	12	108	450	E	145	900	600	300	1945	210.06	0.888	187		
TOTAL	51.01													GRADE 40 TOTAL = 8,590 kgs.		

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YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/09/02	E.A. SALLAN
CHECKED	10/16/02	
SUBMITTED	10/18/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

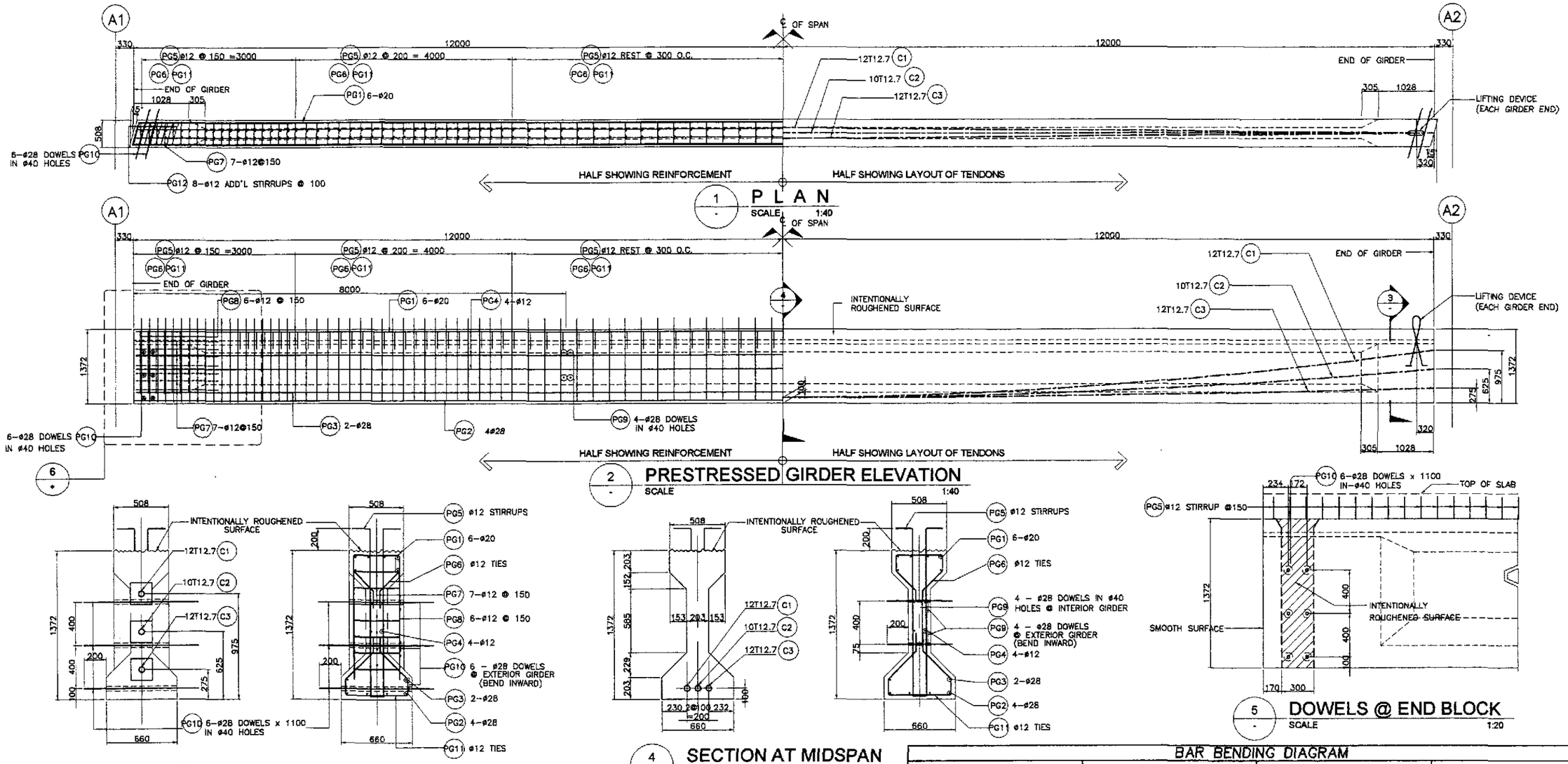
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director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

SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4 & 5
DECK FRAMING PLAN AND SECTIONS
RIGHT & LEFT FRONTAGE (ULTIMATE STAGE)

SHEET NO. :
B4-13



NOTES ;

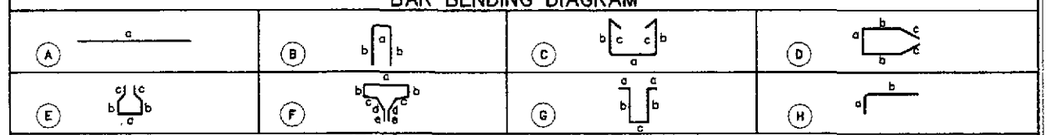
1.) SEE GENERAL NOTES, -2, FOR GIRDER DESIGN GUIDE.

2.) JACKING FORCE PER GIRDER, PJ = 4681 KN.

3.) JACKING WILL BE DONE AT BOTH ENDS.

4.) FINAL PRESTRESSING FORCE @ MIDSPAN, F_{NET} = 3,413 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	23920	–	–	–	–	23920	143.52	2.466	354	12.67	159.78	QUANTITIES ARE FOR ONE (1) GIRDER ONLY
	PG2	28	4	AS SHOWN	A	23920	–	–	–	–	23920	95.68	4.833	463			
	PG3	28	2	AS SHOWN	A	23920	–	–	–	–	23920	47.84	4.833	232			
	PG4	12	4	AS SHOWN	A	23920	–	–	–	–	23920	95.68	0.888	85			
	PG5	12	112	150	G	100	1540	103	–	–	3383	378.90	0.888	337			
	PG6	12	112	150	E	430	160	150	260	–	1570	175.84	0.888	157			
	PG7	12	14	150	D	430	1000	550	–	–	3530	49.42	0.888	44			
	PG8	12	12	150	C	430	1230	150	–	–	3190	38.28	0.888	34			
	PG9	28	8	AS SHOWN	A	603	–	–	–	–	603	4.82	4.833	24			
	PG10	28	12	AS SHOWN	A	1060	–	–	–	–	1060	12.72	4.833	62			
	PG11	12	112	150	E	580	160	150	360	–	1920	215.04	0.888	191			
	PG12	12	16	100	B	430	1230	–	–	–	2890	46.24	0.888	42			

GRADE 40 TOTAL = 890 kgs.
GRADE 60 TOTAL = 1,135 kgs.

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YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/09/02	E. M. SALLAN
CHECKED	10/16/02	
SUBMITTED	10/18/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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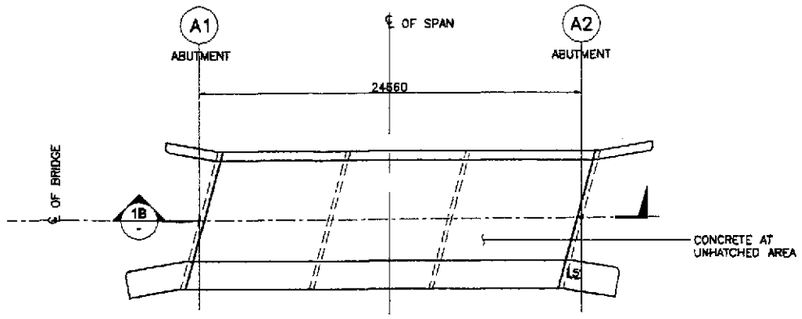
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved by: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO N. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director	Chief, Bridges Division	Director IV (OIC)	Undersecretary	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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4 & 5
AASHTO TYPE IV GIRDER
RIGHT & LEFT FRONTAGE (ULTIMATE STAGE)

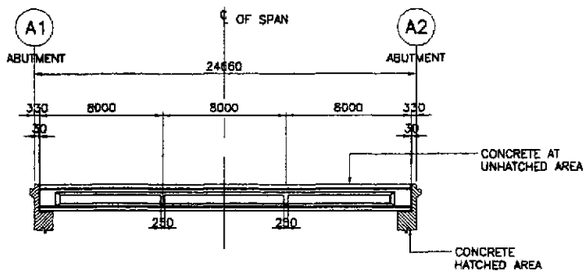
SHEET NO. : B4-14



NOTES:

1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST TWENTY ONE (21) DAYS AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. SEE GIRDER DETAILS FOR SPACING OF ø28 DOWELS.

1A - PLAN
SCALE 1:200



1B - LONGITUDINAL SECTION
SCALE 1:200

1 - CONCRETE POURING SEQUENCE
SCALE 1 : 200

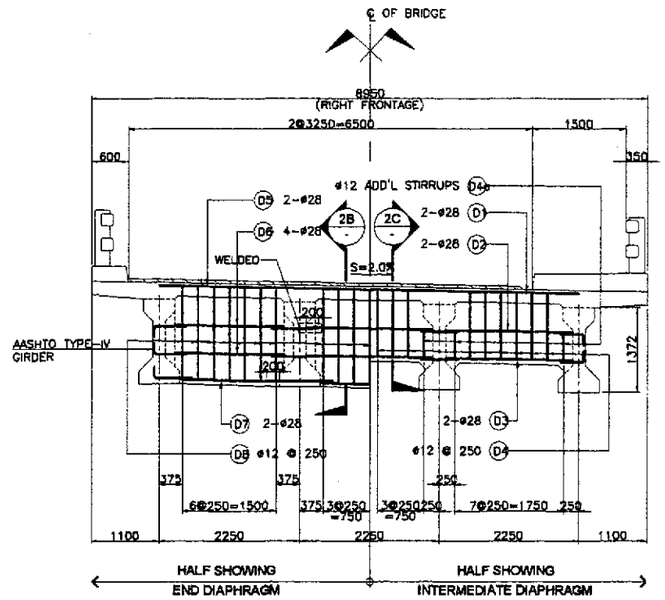
BAR BENDING DIAGRAM

(A)

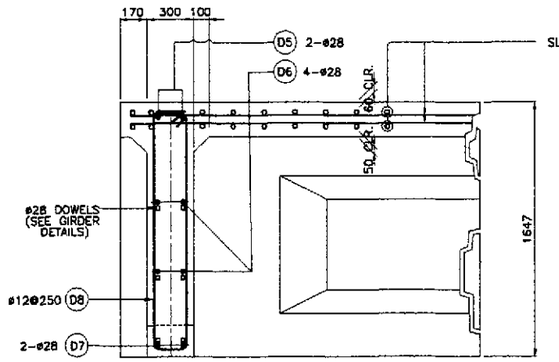
(B)

SCHEDULE OF REINFORCEMENT

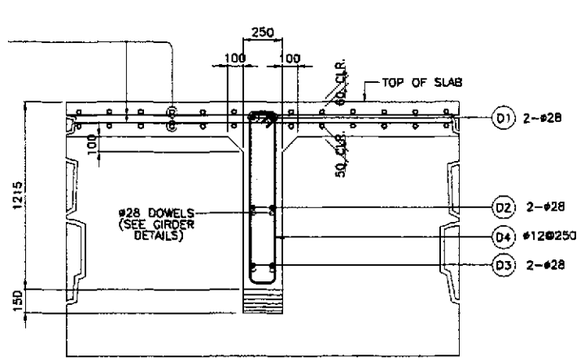
STRUCTURE COMPONENT	LOCATION	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT a	b	c	d	LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	TOTAL WEIGHT IN (kg)	REBAR RATIO (kg/m^3)
DIAPHRAGM	INTERMEDIATE DIAPHRAGM	3.50	D1	28	4	AS SHOWN	A	6750	–	–		6750	27.00	4.833	131	137.99
			D2	28	12	AS SHOWN	A	2045	–	–		2045	24.54	4.833	119	
			D3	28	12	AS SHOWN	A	2045	–	–		2045	24.54	4.833	119	
			D4	12	36	250	B	150	1200	150		3000	108.00	0.888	96	
			D4a	12	12	AS SHOWN	B	150	500	150		1600	19.20	0.888	18	
	END DIAPHRAGM	4.46	D5	28	4	AS SHOWN	A	6750	–	–		6750	27.00	4.833	131	129.18
			D6	28	24	AS SHOWN	A	1740	–	–		1740	41.76	4.833	202	
			D7	28	12	AS SHOWN	A	1740	–	–		1740	20.88	4.833	101	
			D8	12	42	250	B	200	1550	150		3800	159.60	0.888	142	
	TOTAL	7.96											GRADE 60 TOTAL = 803 kgs.			
													GRADE 40 TOTAL = 256 kgs.			



2A - ELEVATION
SCALE 1:50



2B - SECTION
SCALE 1:20



2C - SECTION
SCALE 1:20

2 - DETAIL OF END & INTERMEDIATE DIAPHRAGM
SCALE AS SHOWN

NOTE :

FOR LEFT FRONTAGE – IT IS THE MIRROR IMAGE OF THE PLAN, ELEVATION OF RIGHT FRONTAGE.

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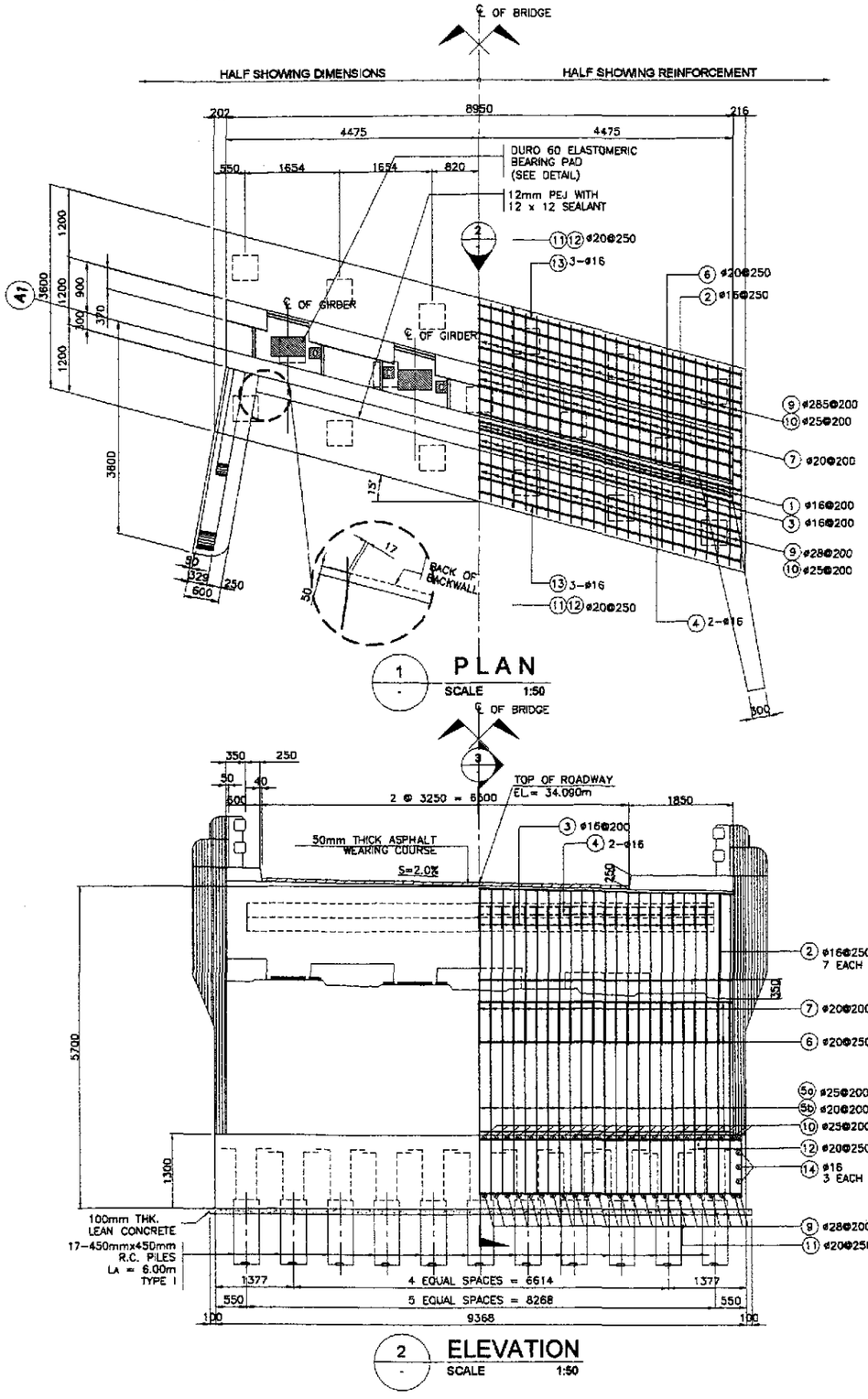
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YEC YACHIYO ENGINEERING CO., LTD.

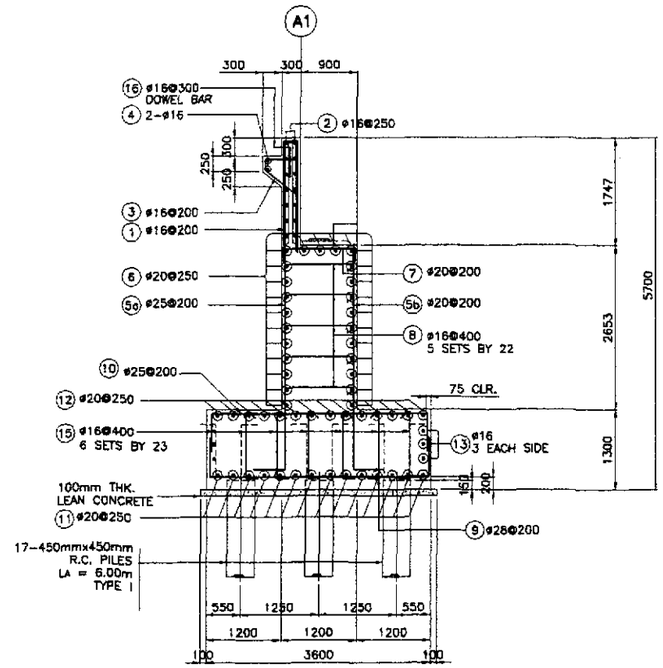
	DATE	SIGNATURE
DESIGNED	10/04/02	E. N. SALLAN
CHECKED	10/16/02	
SUBMITTED	10/18/02	M. KUDOH, TEAM LEADER

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

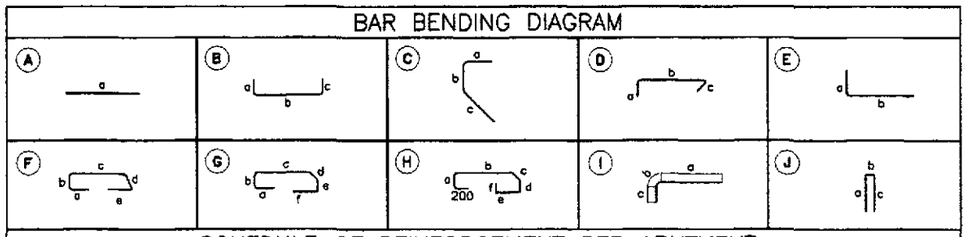
PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) **CABANATUAN BYPASS - CONTRACT PACKAGE II**	AS SHOWN FULL SIZE A1	**BRIDGE NO. 4 & 5** CONCRETE POURING SEQUENCE AND DIAPHRAGM DETAILS RIGHT & LEFT FRONTAGE (ULTIMATE STAGE)	B4-15





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	5.42	(1)	16	45	200	(B)	2000	200	2200	–	–	–	4200	189.00	1.579	299	111.21
		(2)	16	14	250	(A)	9175	–	–	–	–	–	9175	128.45	1.579	203	
		(3)	16	33	200	(C)	600	150	750	–	–	–	1500	49.50	1.579	79	
		(4)	16	2	AS SHOWN	(A)	6650	–	–	–	–	–	6650	13.30	1.579	22	
MAINWALL	28.49	(5a)	25	45	200	(E)	400	3710	–	–	–	–	4110	184.95	3.854	713	76.93
		(5b)	20	45	200	(E)	400	3710	–	–	–	–	4110	184.95	2.466	457	
		(6)	20	25	250	(A)	9175	–	–	–	–	–	9175	229.38	2.466	566	
		(7)	20	45	200	(B)	250	1100	250	–	–	–	1600	72.00	2.466	178	
		(8)	16	110	400	(D)	250	1100	250	–	–	–	1600	176.00	1.579	278	
FOOTING	43.84	(9)	28	47	200	(B)	700	3450	700	–	–	–	4850	227.95	4.833	1102	74.75
		(10)	25	47	200	(B)	700	3450	700	–	–	–	4850	227.95	3.854	879	
		(11)	20	15	250	(B)	700	9555	700	–	–	–	10955	164.33	2.466	406	
		(12)	20	15	250	(B)	700	9555	700	–	–	–	10955	164.33	2.466	406	
		(13)	16	6	AS SHOWN	(A)	9555	–	–	–	–	–	9555	57.33	1.579	91	
		(14)	16	6	AS SHOWN	(A)	3450	–	–	–	–	–	3450	20.70	1.579	33	
		(15)	16	138	400	(D)	250	1150	250				1650	227.70	1.579	360	
DOWEL		(16)	16	31	300	(E)	650	500	–	–	–	–	1150	25.30	1.579	40	
TOTAL	77.76															GRADE 40 TOTAL = 4,707 kgs. GRADE 60 TOTAL = 1,405 kgs.	

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

	DATE	SIGNATURE
DESIGNED	10/09/02	A. P. GONZALES
CHECKED	10/16/02	
SUBMITTED	10/18/02	N. HOSOKAWA TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

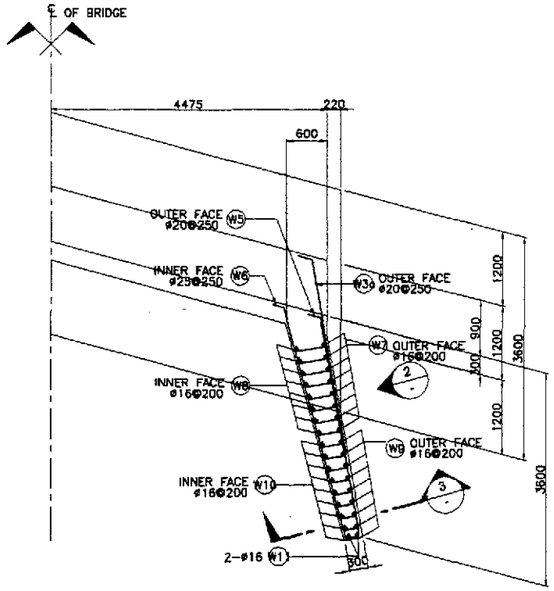
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONGAN	SIMEON A. DATUMANONG
Project Director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

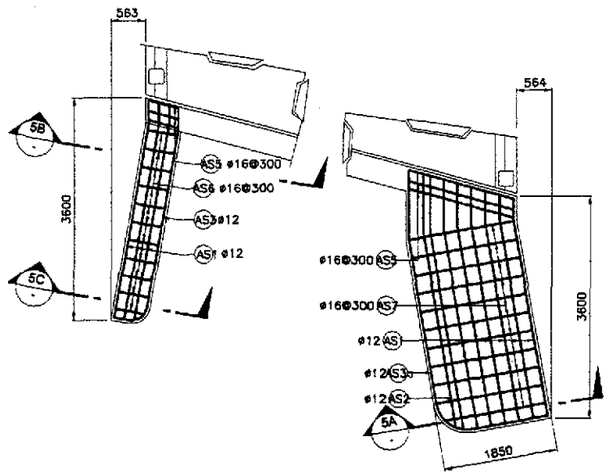
SCALE : 1 : 50 FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4
ABUTMENT A1
MAINWALL REINFORCEMENT DETAILS
RIGHT FRONTAGE (ULTIMATE STAGE)

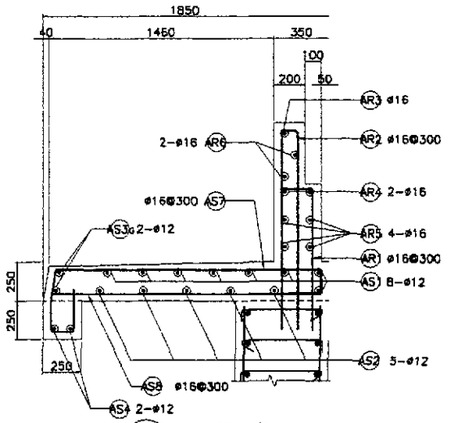
SHEET NO. : B4-16



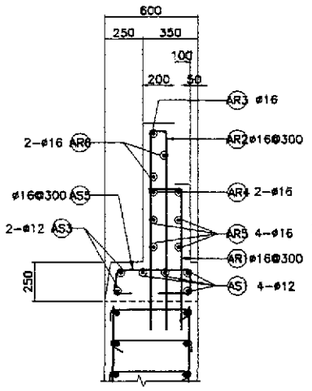
1 — PLAN
SCALE 1:50



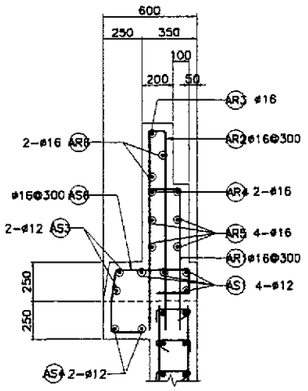
4 — SIDEWALK DETAIL
SCALE 1:50



5A — SECTION
SCALE 1:20

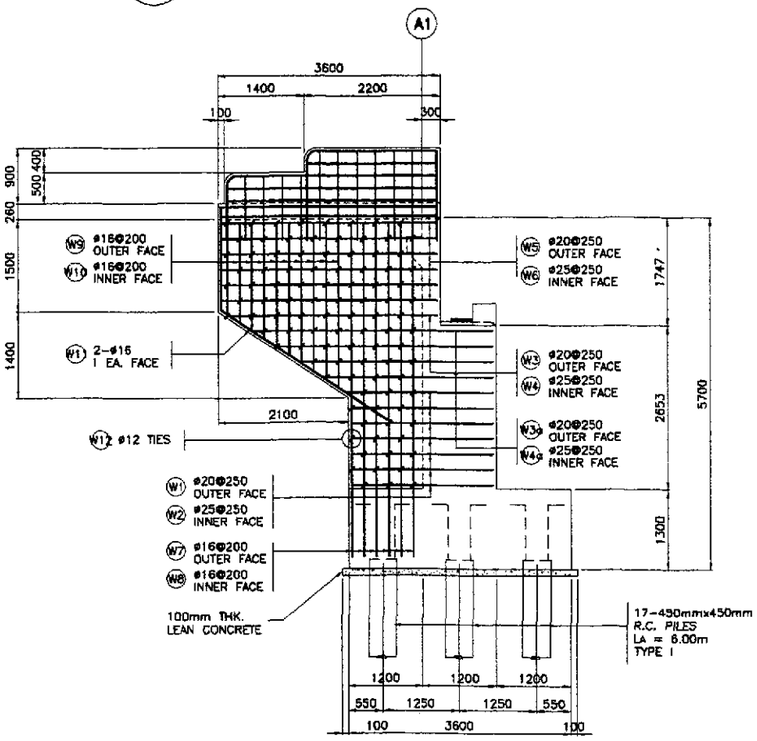


5B — SECTION
SCALE 1:20

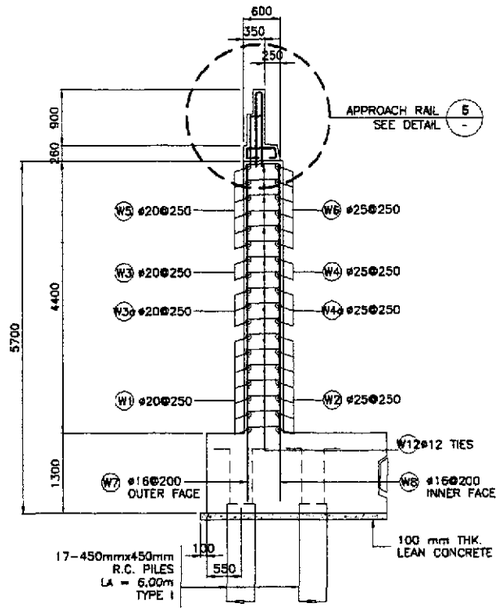


5C — SECTION
SCALE 1:20

5 — APPROACH RAIL DETAILS
SCALE 1:20

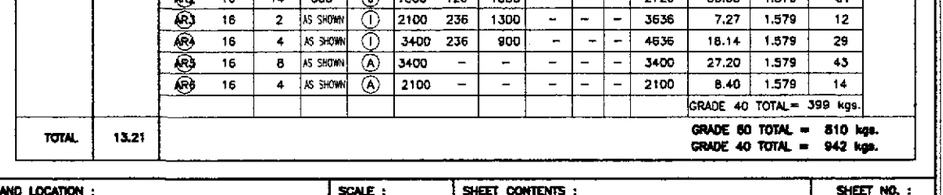


2 — WINGWALL ELEVATION
SCALE 1:50



3 — SECTION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	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	8.91	W1	20	14	250	B	400	2300	150	–	–	–	2850	39.9	2.466	99	151.85
		W2	25	14	250	B	400	2300	150	–	–	–	2850	39.9	3.854	154	
		W3	20	2	250	B	400	3400	150	–	–	–	3950	7.9	2.466	20	
		W3a	20	8	250	B	400	3350	150	–	–	–	3900	31.2	2.466	77	
		W4	25	2	250	B	400	3400	150	–	–	–	3950	7.9	3.854	31	
		W4a	25	8	250	B	400	3350	150	–	–	–	3900	31.2	3.854	121	
		W5	20	12	250	B	400	3500	150	–	–	–	4050	48.6	2.466	120	
		W6	25	12	250	B	400	3500	150	–	–	–	4050	48.6	3.854	188	
		W7	16	12	200	E	250	5450	–	–	–	–	5700	68.4	1.579	109	
		W8	16	12	200	E	250	5450	–	–	–	–	5700	68.4	1.579	109	
		W9	16	20	200	E	250	2100	–	–	–	–	2350	47.00	1.579	75	
		W10	16	20	200	E	250	210	–	–	–	–	2350	47.00	1.579	75	
		W11	16	4	AS SHOWN	C	250	1400	3500	–	–	–	5250	21.00	1.579	34	
		W12	12	200	AS SHOWN	D	170	450	170	–	–	–	790	158.00	0.888	141	
														GRADE 60 TOTAL = 810 kgs, GRADE 40 TOTAL = 543 kgs.			
APPROACH RAILING AND SIDEWALK	4.3	AS	12	12	AS SHOWN	A	3500	–	–	–	–	–	3500	42.00	0.888	38	92.81
		AS2	12	5	AS SHOWN	A	3500	–	–	–	–	–	3500	17.50	0.888	16	
		AS3	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS4	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS5	16	3	300	G	200	170	480	200	170	200	1420	4.26	1.579	7	
		AS6	16	12	300	F	200	150	480	200	200	–	1250	15.00	1.579	24	
		AS7	16	15	300	H	200	170	1730	200	170	200	2870	43.05	1.579	68	
		AS8	16	15	300	E	200	1770	–	–	–	–	1970	29.55	1.579	47	
		AR	16	8	300	E	200	900	–	–	–	–	1100	8.80	1.579	14	
		AR2	16	14	300	J	1300	120	1300	–	–	–	2720	38.08	1.579	61	
		AR3	16	2	AS SHOWN	I	2100	236	1300	–	–	–	3636	7.27	1.579	12	
		AR4	16	4	AS SHOWN	I	3400	236	900	–	–	–	4636	18.14	1.579	29	
		AR5	16	8	AS SHOWN	A	3400	–	–	–	–	–	3400	27.20	1.579	43	
		AR6	16	4	AS SHOWN	A	2100	–	–	–	–	–	2100	8.40	1.579	14	
														GRADE 40 TOTAL = 399 kgs.			
TOTAL	13.21													GRADE 60 TOTAL = 810 kgs. GRADE 40 TOTAL = 942 kgs.			

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

	DATE	SIGNATURE
DESIGNED	10/09/02	A. P. GONZALES
CHECKED	10/16/02	
SUBMITTED	10/18/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

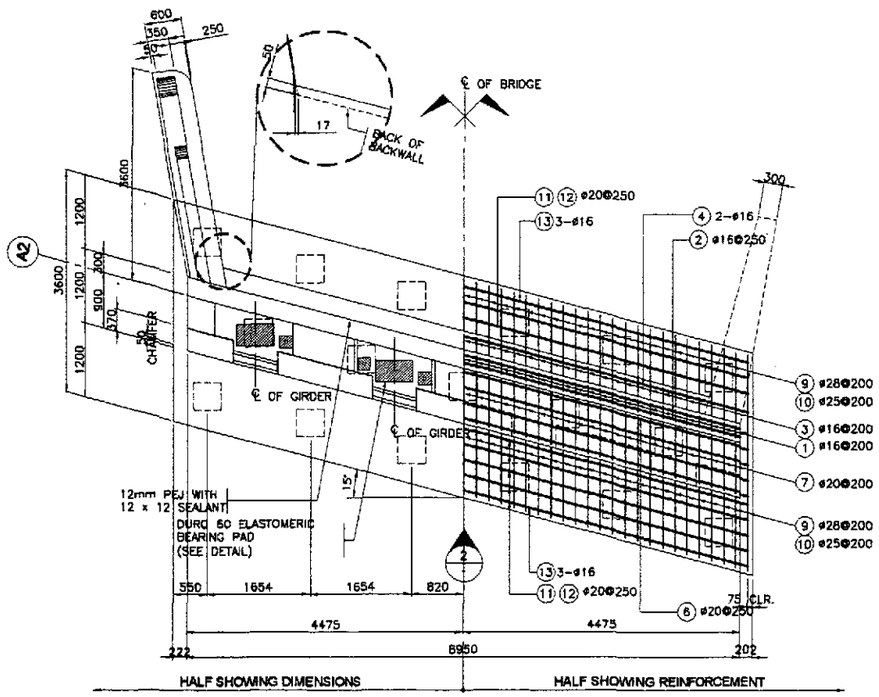
FUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	ADRIANO M. DOROY, Chief, Bridges Division	GILBERTO S. REYES, Director 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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

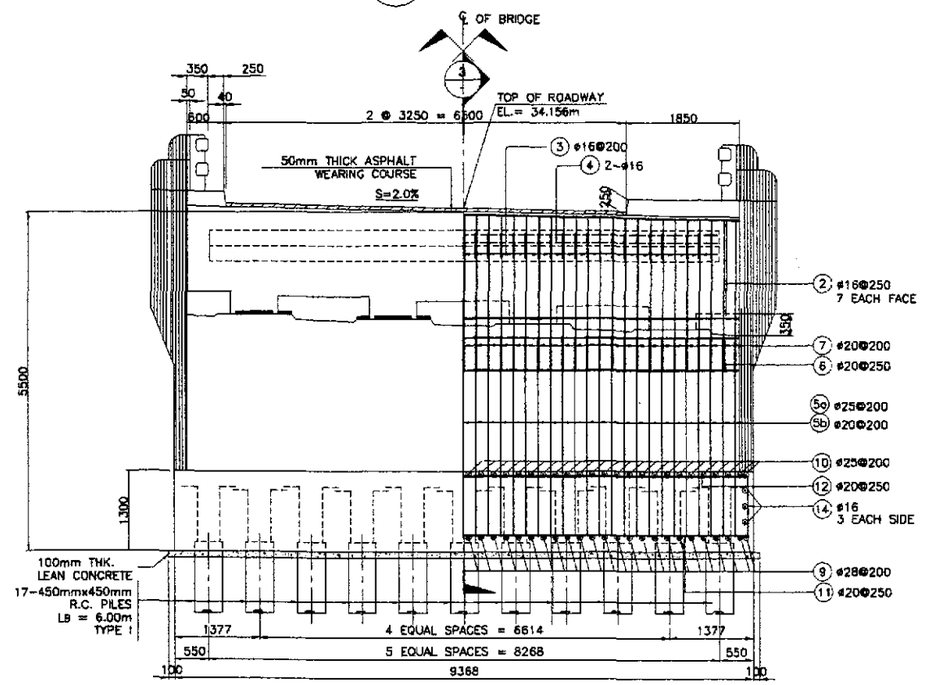
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4
ABUTMENT A1
WINGWALL REINFORCEMENT DETAILS
RIGHT FRONTAGE (ULTIMATE STAGE)

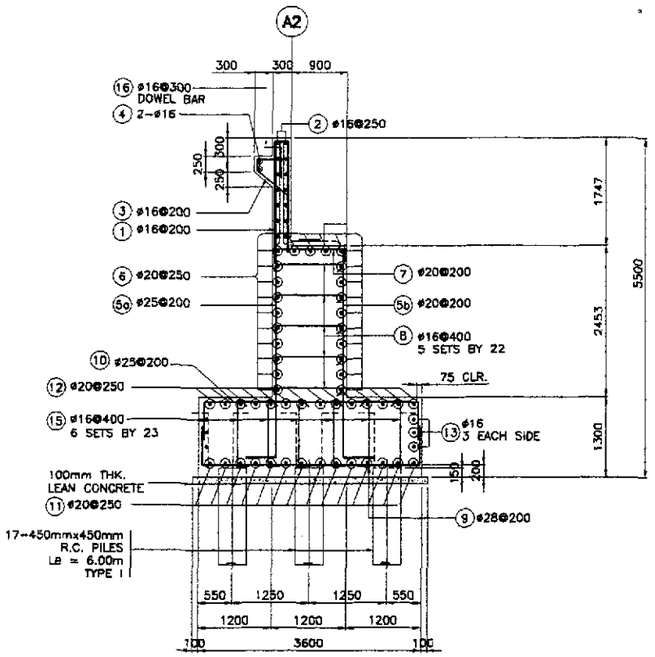
SHEET NO. :
B4-17



1 - PLAN
SCALE 1:50

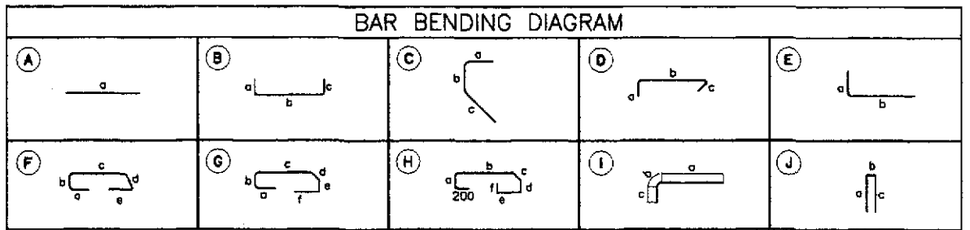


2 - ELEVATION
SCALE 1:50



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	5.42	①	16	45	200	B	2000	200	2000	–	–	–	4200	189.00	1.579	299	111.21
		②	16	14	250	A	9175	–	–	–	–	–	9175	128.45	1.579	203	
		③	16	33	200	C	520	150	750	–	–	–	1500	49.50	1.579	79	
		④	16	2	AS SHOWN	A	6650	–	–	–	–	–	6650	13.30	1.579	22	
MAINWALL	26.35	⑤a	25	45	200	E	400	3510	–	–	–	–	3910	175.95	3.854	679	79.33
		⑤b	20	45	200	E	400	3510	–	–	–	–	3910	175.95	2.466	434	
		⑥	20	23	250	A	9175	–	–	–	–	–	9175	211.03	2.466	521	
		⑦	20	45	200	B	250	1100	250	–	–	–	1600	72.00	2.466	178	
		⑧	16	110	400	D	250	1100	250	–	–	–	1600	176.00	1.579	278	
FOOTING	43.87	⑨	28	47	200	B	700	3450	700	–	–	–	4850	227.95	4.833	1102	74.70
		⑩	25	47	200	B	700	3450	700	–	–	–	4850	227.95	3.854	879	
		⑪	20	15	250	B	700	9555	700	–	–	–	10955	164.33	2.466	406	
		⑫	20	15	250	B	700	9555	700	–	–	–	10955	164.33	2.466	406	
		⑬	16	6	AS SHOWN	A	9555	–	–	–	–	–	9555	57.33	1.579	91	
		⑭	16	6	AS SHOWN	A	3450	–	–	–	–	–	3450	20.70	1.579	33	
		⑮	16	138	400	D	250	1150	250				1650	227.70	1.579	360	
DOWEL		⑯	16	22	300	E	650	500	–	–	–	–	1150	25.30	1.579	40	
TOTAL	75.64															GRADE 40 TOTAL = 1,406 kgs. GRADE 60 TOTAL = 4,605 kgs.	

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

	DATE	SIGNATURE	
DESIGNED	10/09/02	A. P. GONZALES	
CHECKED	10/14/02		
SUBMITTED	10/15/02	TEAM LEADER	

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

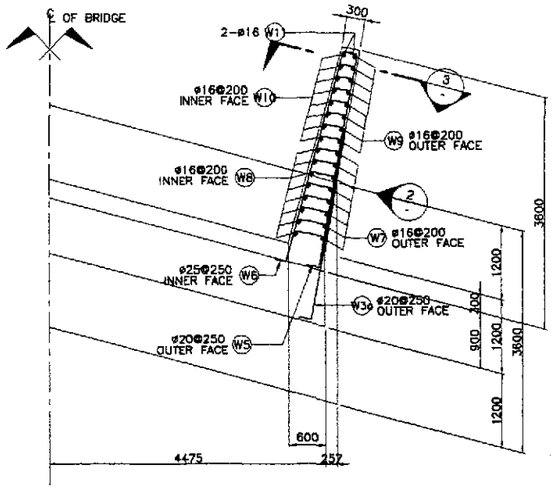
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DORGY	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG
Project Director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

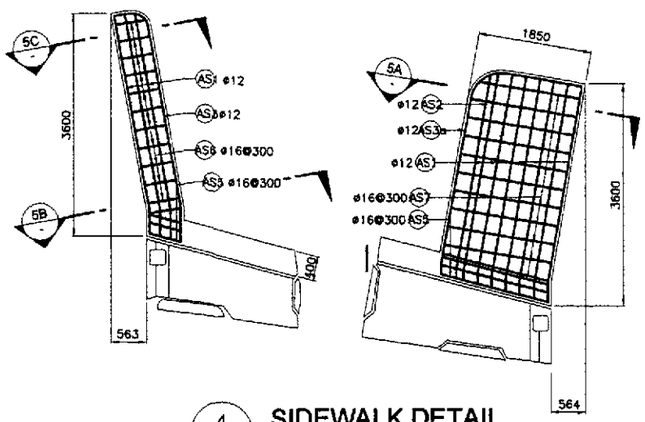
SCALE : 1 : 50 FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4
ABUTMENT A2
MAINWALL REINFORCEMENT DETAILS
RIGHT FRONTAGE (ULTIMATE STAGE)

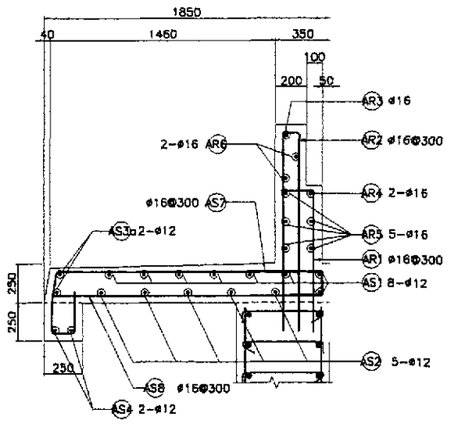
SHEET NO. : B4-18



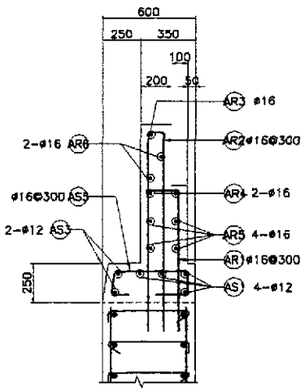
1 - PLAN
SCALE 1:50



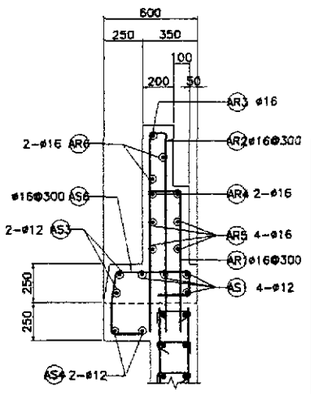
4 - SIDEWALK DETAIL
SCALE 1:50



5A - SECTION
SCALE 1:20

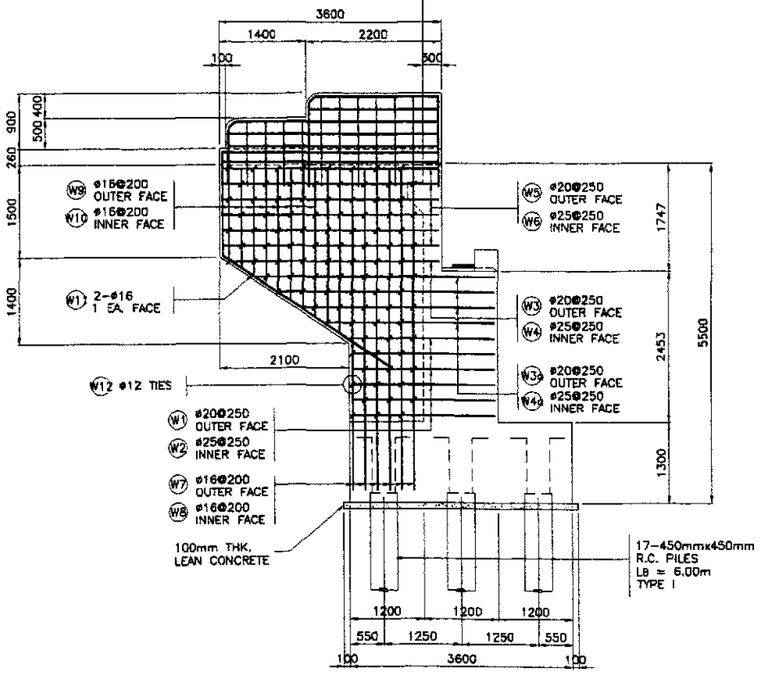


5B - SECTION
SCALE 1:20

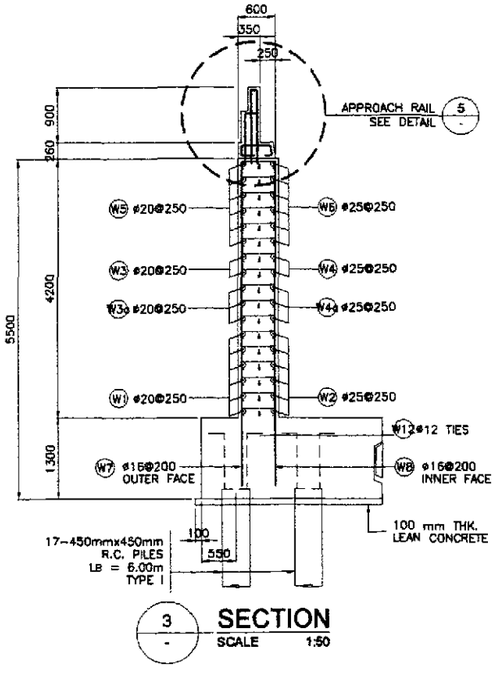


5C - SECTION
SCALE 1:20

5 - APPROACH RAIL DETAILS
SCALE 1:20

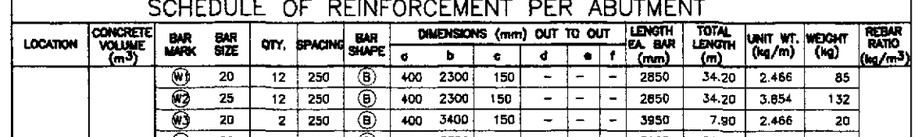


2 - WINGWALL ELEVATION
SCALE 1:50



3 - SECTION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	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	8.69	W1	20	12	250	B	400	2300	150	–	–	–	2850	34.20	2.466	85	150.56
		W2	25	12	250	B	400	2300	150	–	–	–	2850	34.20	3.854	132	
		W3	20	2	250	B	400	3400	150	–	–	–	3950	7.90	2.466	20	
		W3a	20	8	250	B	400	3350	150	–	–	–	3900	31.20	2.466	77	
		W4	25	2	250	B	400	3400	150	–	–	–	3950	7.90	3.854	31	
		W4a	25	8	250	B	400	3350	150	–	–	–	3900	31.20	3.854	121	
		W5	20	12	250	B	400	3500	150	–	–	–	4050	48.60	2.466	120	
		W6	25	12	250	B	400	3500	150	–	–	–	4050	48.60	3.854	188	
		W7	16	12	200	E	250	5250	–	–	–	–	5500	66.00	1.579	105	
		W8	16	12	200	E	250	5250	–	–	–	–	5500	66.00	1.579	105	
		W9	16	20	200	E	250	2100	–	–	–	–	2350	47.00	1.579	75	
		W10	16	20	200	E	250	2100	–	–	–	–	2350	47.00	1.579	75	
		W1	16	4	AS SHOWN	C	250	1400	3500	–	–	–	5250	21.0	1.579	34	
		W12	12	200	AS SHOWN	D	170	450	170	–	–	–	790	158.00	0.888	141	
														GRADE 60 TOTAL = 774 kgs.			
														GRADE 40 TOTAL = 535 kgs.			
APPROACH RAILING AND SIDEWALK	4.30	AS	12	12	AS SHOWN	A	3500	–	–	–	–	–	3500	42.00	0.888	38	92.81
		AS2	12	5	AS SHOWN	A	3500	–	–	–	–	–	3500	17.50	0.888	16	
		AS3	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS4	16	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	1.579	13	
		AS5	16	3	300	G	200	170	480	200	170	200	1420	4.26	1.579	7	
		AS6	16	12	300	G	200	150	480	200	200	–	1250	15.00	1.579	24	
		AS7	16	15	300	H	200	170	1730	200	170	200	2870	43.05	1.579	68	
		AS8	16	15	300	E	200	1770	–	–	–	–	1970	29.55	1.579	47	
		AR	16	8	300	E	200	900	–	–	–	–	1100	8.80	1.579	14	
		AR2	16	14	300	J	1300	120	1300	–	–	–	2720	38.08	1.579	61	
		AR3	16	2	AS SHOWN	I	2100	236	1300	–	–	–	3636	7.27	1.579	12	
		AR4	16	4	AS SHOWN	I	3400	236	900	–	–	–	4636	18.14	1.579	29	
		AR5	16	8	AS SHOWN	A	3400	–	–	–	–	–	3400	27.20	1.579	43	
		AR6	16	4	AS SHOWN	A	2100	–	–	–	–	–	2100	8.40	1.579	14	
														GRADE 40 TOTAL= 399 kgs.			
TOTAL	12.99													GRADE 60 TOTAL = 774 kgs. GRADE 40 TOTAL = 934 kgs.			

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	DATE	SIGNATURE
DESIGNED	10/09/02	A. P. GONZALES
CHECKED	10/10/02	
SUBMITTED	10/18/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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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 :
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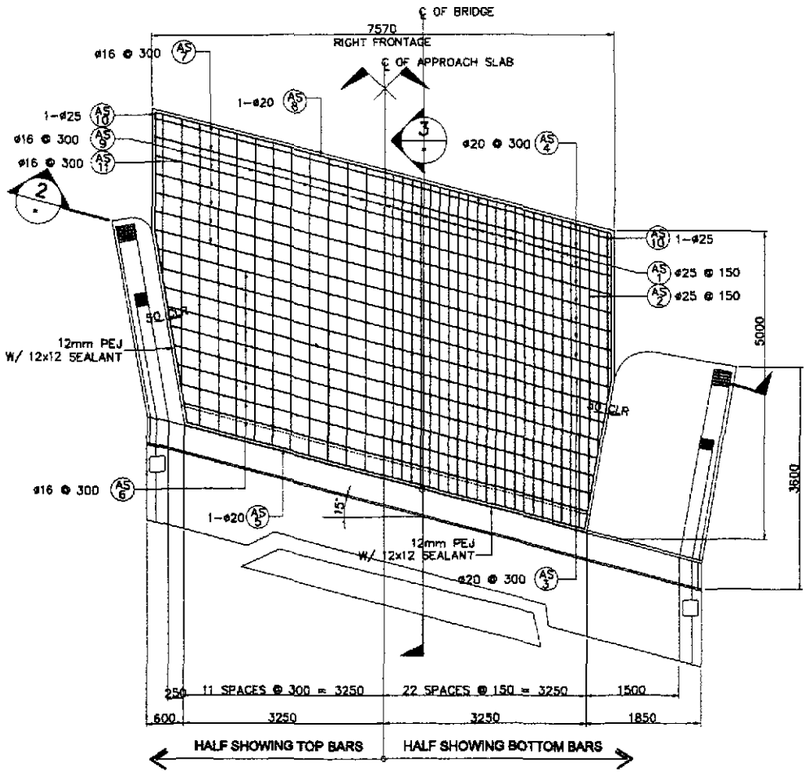
ALONG THE PAN-PHILIPPINE HIGHWAY
(Plaridel, Cabanatuan and San Jose Bypasses)
CABANATUAN BYPASS - CONTRACT PACKAGE II

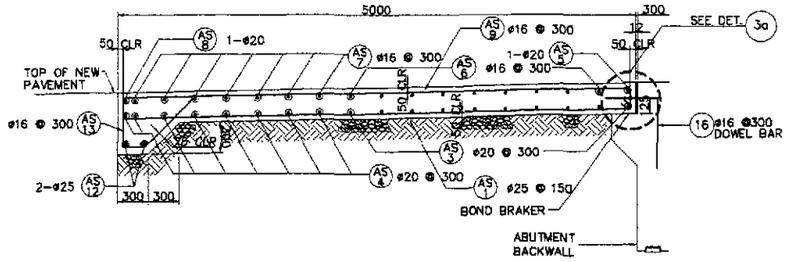
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4
ABUTMENT A2
WINGWALL REINFORCEMENT DETAILS
RIGHT FRONTAGE (ULTIMATE STAGE)

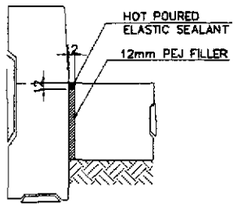
SHEET NO. :
B4-19

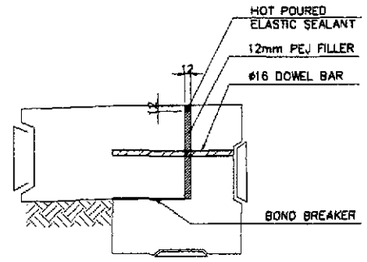


1 - PLAN
SCALE 1:50



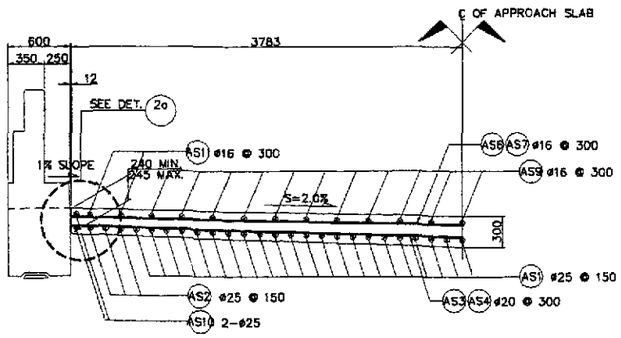
3 - SECTION
SCALE 1:30





2a - DETAIL
SCALE 1:10

3a - DETAIL
SCALE 1:10



2 - SECTION
SCALE 1:30

NOTE:
FOR LEFT FRONTAGE - IT IS THE MIRROR IMAGE OF THE SECTION, PLAN OF RIGHT FRONTAGE.

BAR BENDING DIAGRAM

(A) a

(B) a, b

(C) a, b

(D) 400, a, b, c

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	11.93	AS1	25	46	150	B	4900	200	-	-	-	-	5100	234.60	3.854	905	165.50
		AS2	25	6	150	B	3600	200	-	-	-	-	3800	22.80	3.854	88	
		AS3	20	10	300	A	7050	-	-	-	-	-	7050	70.50	2.466	174	
		AS4	20	8	300	A	7740	-	-	-	-	-	7740	61.92	2.466	153	
		AS5	20	1	AS SHOWN	A	6600	-	-	-	-	-	6600	6.60	2.466	17	
		AS6	16	9	300	A	7050	-	-	-	-	-	7050	63.45	1.579	101	
		AS7	16	7	300	A	7740	-	-	-	-	-	7740	54.18	1.579	86	
		AS8	20	1	AS SHOWN	A	7740	-	-	-	-	-	7740	7.74	2.466	20	
		AS9	16	24	300	B	4900	200	-	-	-	-	5100	122.40	1.579	194	
		AS10	25	4	AS SHOWN	C	2000	3050	-	-	-	-	5050	20.20	3.854	78	
		AS11	16	4	300	B	3450	200	-	-	-	-	3650	14.60	1.579	24	
		AS12	25	2	AS SHOWN	A	7740	-	-	-	-	-	7740	15.48	3.854	60	
		AS13	16	26	300	D	400	500	200	700	-	-	1800	46.80	1.579	74	
TOTAL	11.93															GRADE 40 TOTAL = 1,495 kgs. GRADE 60 TOTAL = 478 kgs.	

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

	DATE	SIGNATURE
DESIGNED	10/09/02	M. SALLAN
CHECKED	10/16/02	
SUBMITTED	10/16/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

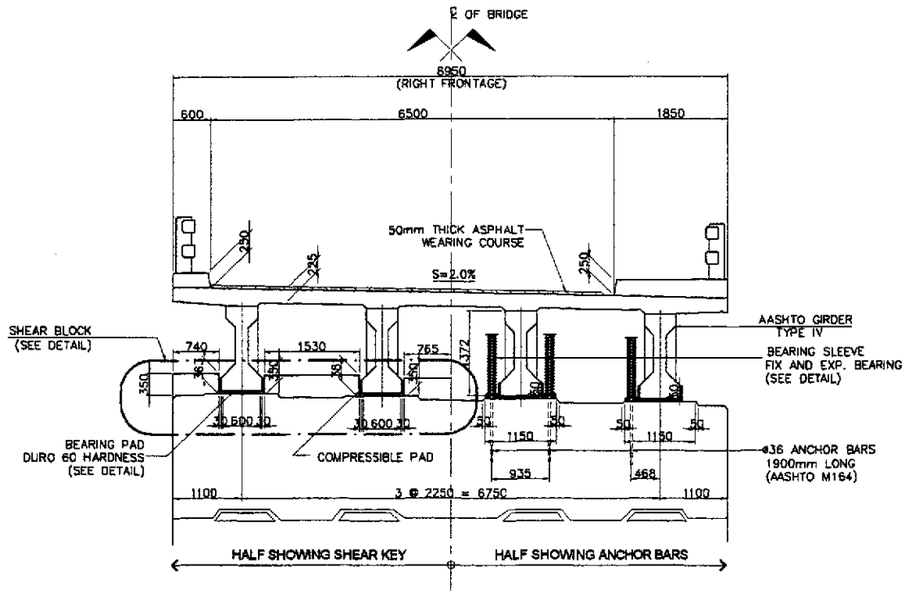
PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	ADRIANO M. DOROY, Chief, Bridges Division	GILBERTO S. REYES, Director 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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

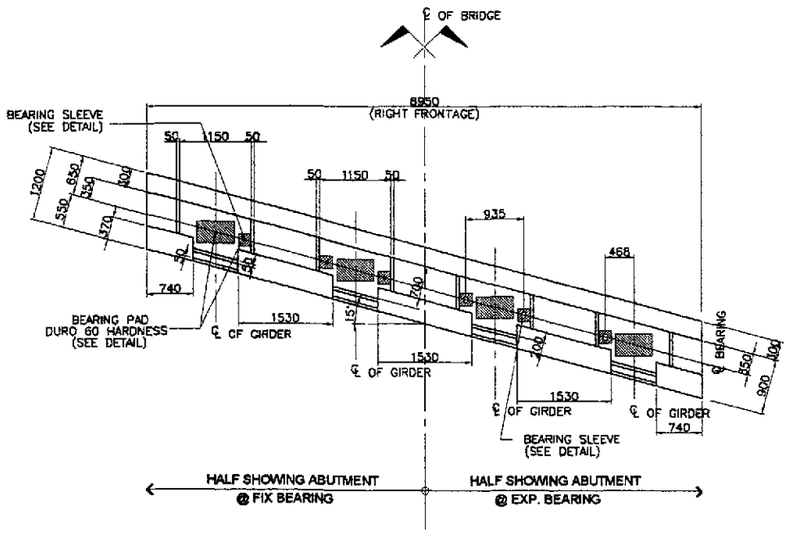
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4 & 5
APPROACH SLAB PLAN,
SECTIONS AND DETAIL
RIGHT & LEFT FRONTAGE(ULTIMATE STAGE)

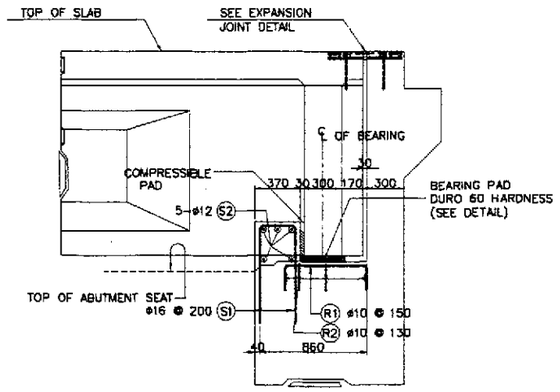
SHEET NO. :
B4-20



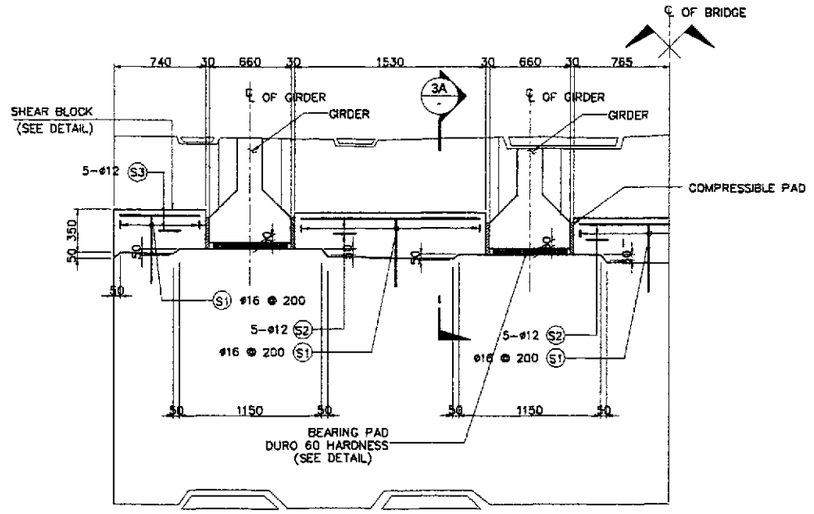
1 - SECTION AT ABUTMENT SEAT
SCALE 1:50



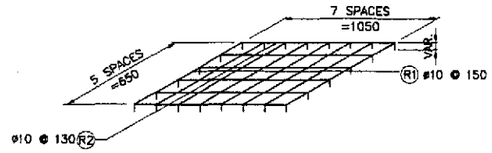
2 - PLAN AT ABUTMENT SEAT
SCALE 1:50



3A - SECTION
SCALE 1:25



3 - SHEAR BLOCK DETAIL
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	1.13	S1	16	32	200	(B)	560	290	560			1420	45.12	1.579	72	144.11
		S2	12	15	AS SHOWN	(A)	1500					1500	22.50	0.888	20	
		S3	12	10	AS SHOWN	(A)	680					680	6.80	0.888	7	
		R1	10	32	150	(B)	500	670	500			1670	53.44	0.616	33	
		R2	10	24	130	(B)	500	1090	500			2090	50.16	0.616	31	
TOTAL	1.13	GRADE 40 TOTAL = 163 kgs.														

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

NOTE :

FOR LEFT FRONTAGE – IT IS THE MIRROR IMAGE OF THE SECTION, PLAN @ ABUTMENT SEAT OF RIGHT FRONTAGE.

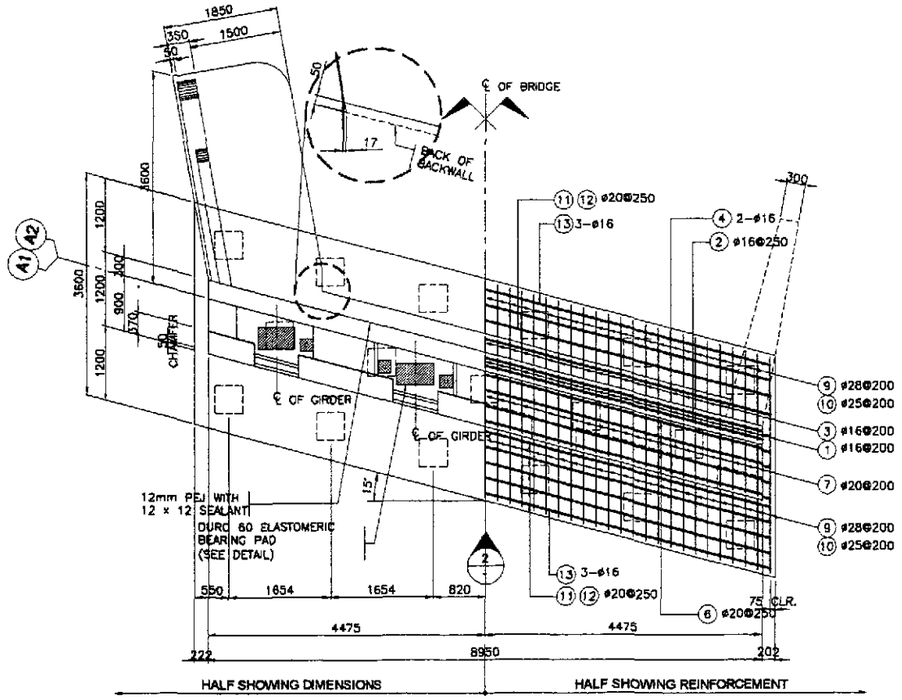
JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/04/02	E. N. SALLAN
CHECKED	10/14/02	K. KATAYAMA
SUBMITTED	10/18/02	M. MUCHI TEAM LEADER

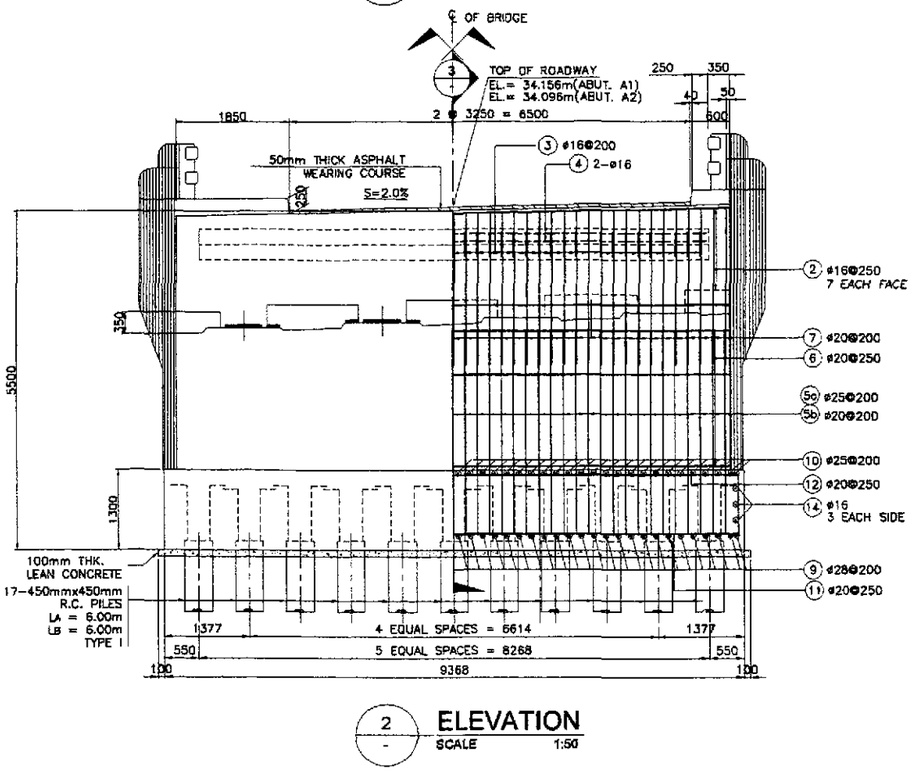
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

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

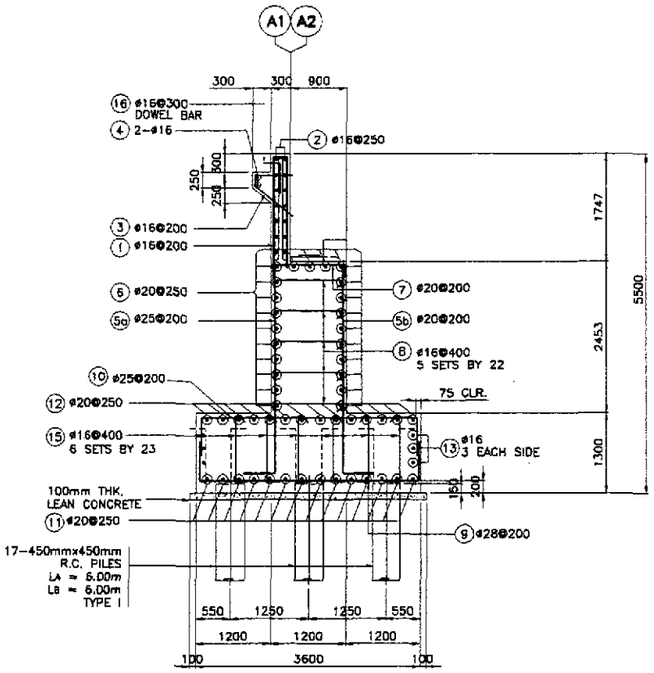
PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE II	AS SHOWN FULL SIZE A1	BRIDGE NO. 4 & 5 SHEAR KEY AND RISER DETAILS AT ABUTMENT RIGHT & LEFT FRONTAGE (ULTIMATE STAGE)	B4-21



1 / - PLAN
SCALE 1:50

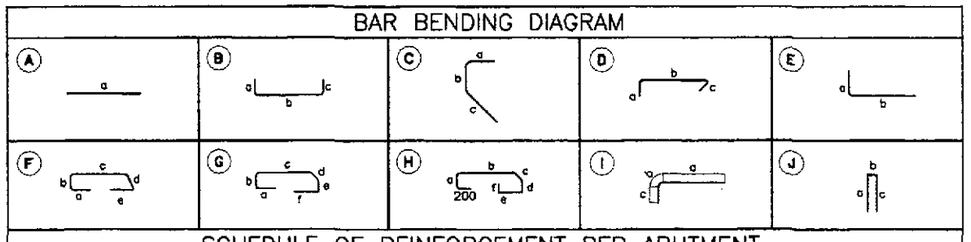


2 / - ELEVATION
SCALE 1:50



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	5.42	1	16	45	200	B	2000	200	2000	–	–	–	4200	189.00	1.579	298	111.21
		2	16	14	250	A	9175	–	–	–	–	–	9175	128.45	1.579	203	
		3	16	33	200	C	600	150	750	–	–	–	1500	49.50	1.579	79	
		4	16	2	AS SHOWN	A	6650	–	–	–	–	–	6650	13.30	1.578	22	
MAINWALL	26.35	5a	25	45	200	E	400	3510	–	–	–	–	3910	175.95	3.854	679	79.33
		5b	20	45	200	E	400	3510	–	–	–	–	3910	175.95	2.466	434	
		6	20	23	250	A	9175	–	–	–	–	–	9175	211.03	2.466	521	
		7	20	45	200	B	250	1100	250	–	–	–	1600	72.00	2.466	178	
		8	16	110	400	D	250	1100	250	–	–	–	1600	176.00	1.579	278	
FOOTING	43.87	9	28	47	200	B	700	3450	700	–	–	–	4850	227.95	4.833	1102	74.74
		10	25	47	200	B	700	3450	700	–	–	–	4850	227.95	3.854	879	
		11	20	15	250	B	700	9555	700	–	–	–	10955	149.60	2.466	406	
		12	20	15	250	B	700	9555	700	–	–	–	10955	149.60	2.466	406	
		13	16	6	AS SHOWN	A	9555	–	–	–	–	–	9555	55.77	1.579	91	
		14	16	6	AS SHOWN	A	3450	–	–	–	–	–	3450	21.90	1.579	35	
		15	16	138	400	D	250	1150	250				1650	227.70	1.579	360	
DOWEL		16	16	22	300	E	650	500	–	–	–	–	1150	36.80	1.579	40	
TOTAL	75.63															GRADE 40 TOTAL = 1,407 kgs. GRADE 60 TOTAL = 4,605 kgs.	

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/08/02	A. P. GONZALES
CHECKED	10/14/02	N. HAYASHI
SUBMITTED	10/18/02	M. DUMLAO TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

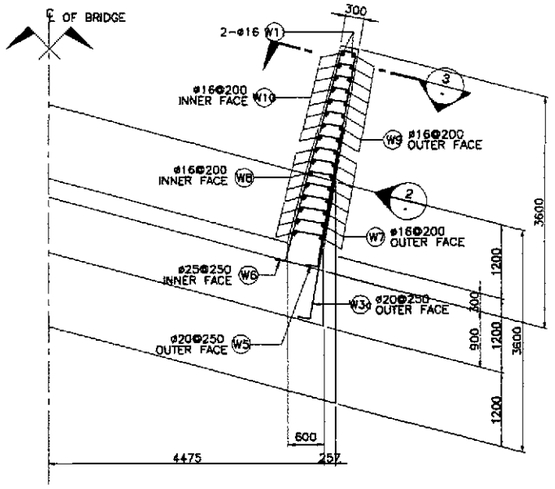
PMH – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director 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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

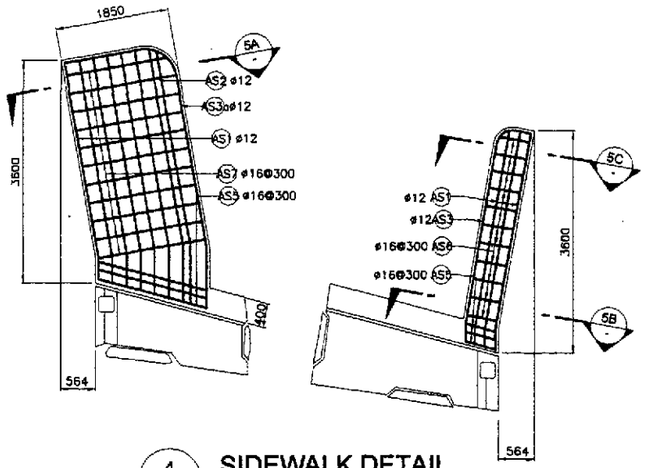
SCALE :
1 : 50
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4
ABUTMENT A1 & A2
MAINWALL REINFORCEMENT DETAILS
LEFT FRONTAGE (ULTIMATE STAGE)

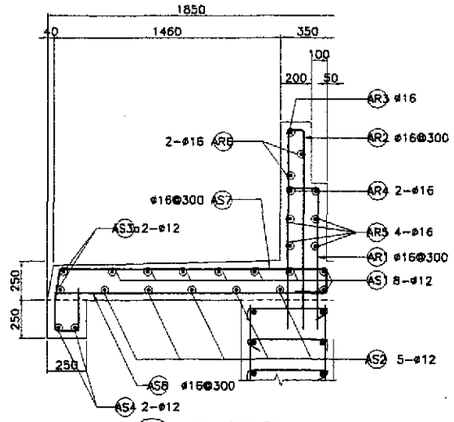
SHEET NO. :
B4-25



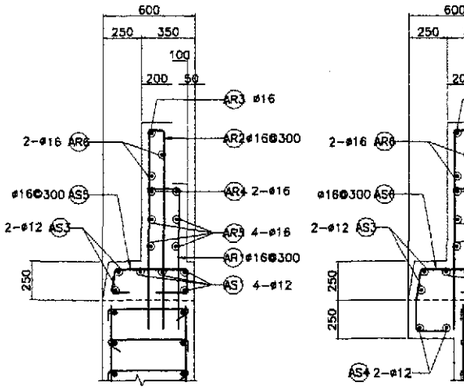
1 / - **PLAN** SCALE 1:50



4 / - **SIDEWALK DETAIL** SCALE 1:50



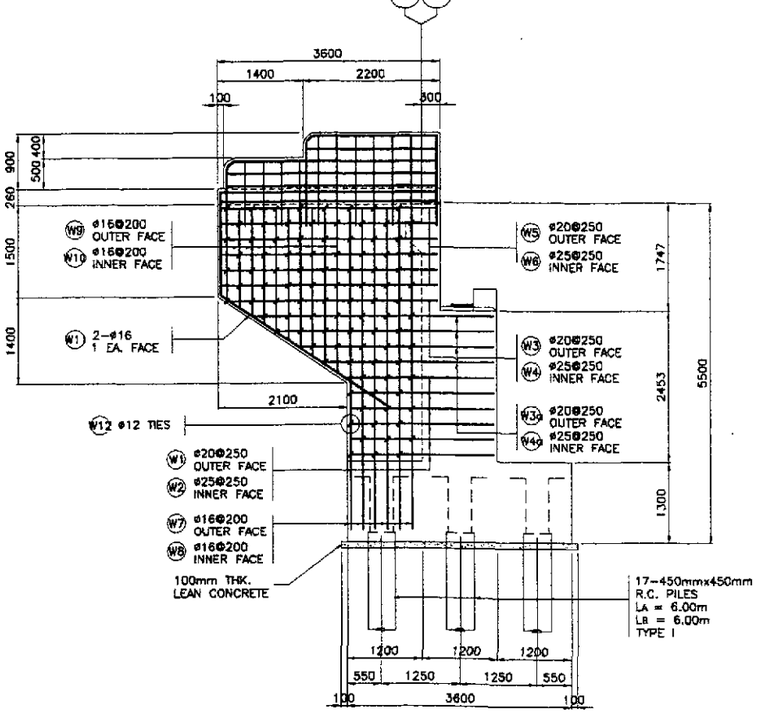
5A / - **SECTION** SCALE 1:20



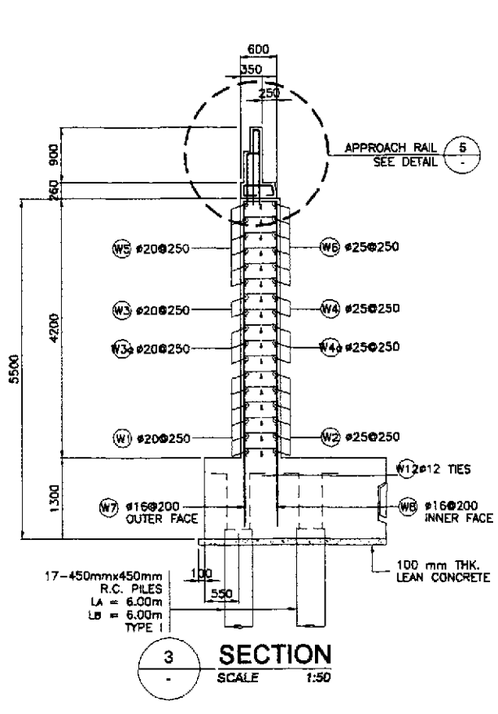
5B / - **SECTION** SCALE 1:20

5C / - **SECTION** SCALE 1:20

5 / - **APPROACH RAIL DETAILS** SCALE 1:20

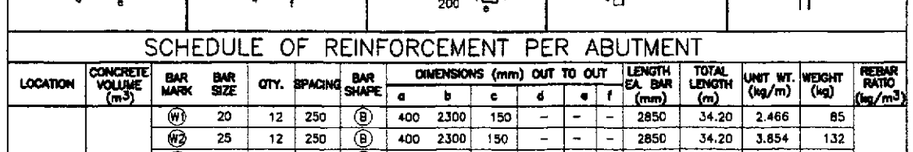


2 / - **WINGWALL ELEVATION** SCALE 1:50



3 / - **SECTION** SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	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	8.69	W1	20	12	250	B	400	2300	150	–	–	–	2850	34.20	2.466	85	149.76
		W2	25	12	250	B	400	2300	150	–	–	–	2850	34.20	3.854	132	
		W3	20	2	250	B	400	3450	150	–	–	–	3950	7.90	2.466	20	
		W3a	20	8	250	B	400	3350	150	–	–	–	3900	31.20	2.466	77	
		W4	25	2	250	B	400	3450	150	–	–	–	3950	7.90	3.854	31	
		W4a	25	8	250	B	400	3380	150	–	–	–	3900	31.20	3.854	121	
		W5	20	12	250	B	400	3500	150	–	–	–	4050	48.60	2.466	120	
		W6	25	12	250	B	400	3500	150	–	–	–	4050	48.60	3.854	188	
		W7	16	12	200	E	250	5250	–	–	–	–	5500	66.00	1.579	105	
		W8	16	12	200	E	250	5250	–	–	–	–	5500	66.00	1.579	105	
		W9	16	20	200	E	250	2100	–	–	–	–	2350	47.00	1.579	75	
		W10	16	20	200	E	250	2100	–	–	–	–	2350	47.00	1.579	75	
		W11	16	4	AS SHOWN	C	250	1400	3500	–	–	–	5150	20.60	1.579	33	
		W12	12	192	AS SHOWN	D	170	450	170	–	–	–	790	151.68	0.888	135	
														GRADE 60 TOTAL = 774 kgs. GRADE 40 TOTAL = 528 kgs.			
APPROACH RAILING AND SIDEWALK	4.30	AS1	12	12	AS SHOWN	A	3500	–	–	–	–	–	3500	42.00	0.888	38	92.81
		AS2	12	5	AS SHOWN	A	3500	–	–	–	–	–	3500	17.50	0.888	16	
		AS3	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS4	16	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	1.579	13	
		AS5	16	3	300	G	200	170	480	200	170	200	1420	4.26	1.579	7	
		AS6	16	12	300	F	200	150	480	200	200	–	1250	15.00	1.579	24	
		AS7	16	15	300	H	200	170	1730	200	170	200	2870	43.05	1.579	68	
		AS8	16	15	300	E	200	1770	–	–	–	–	1970	29.55	1.579	47	
		AR1	16	8	300	E	200	900	–	–	–	–	1100	8.80	1.579	14	
		AR2	16	14	300	J	1300	120	1300	–	–	–	2720	38.08	1.579	61	
		AR3	16	2	AS SHOWN	I	2100	236	1300	–	–	–	3636	7.27	1.579	12	
		AR4	16	4	AS SHOWN	I	3400	236	900	–	–	–	4536	18.14	1.579	29	
		AR5	16	8	AS SHOWN	A	3400	–	–	–	–	–	3400	27.20	1.579	43	
		AR6	16	4	AS SHOWN	A	2100	–	–	–	–	–	2100	8.40	1.579	14	
														GRADE 40 TOTAL= 399 kgs.			
TOTAL	12.99													GRADE 60 TOTAL = 774 kgs. GRADE 40 TOTAL = 927 kgs.			

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/09/02	A. P. GONZALES
CHECKED	10/14/02	M. KATASHI
SUBMITTED	10/15/02	M. IKUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

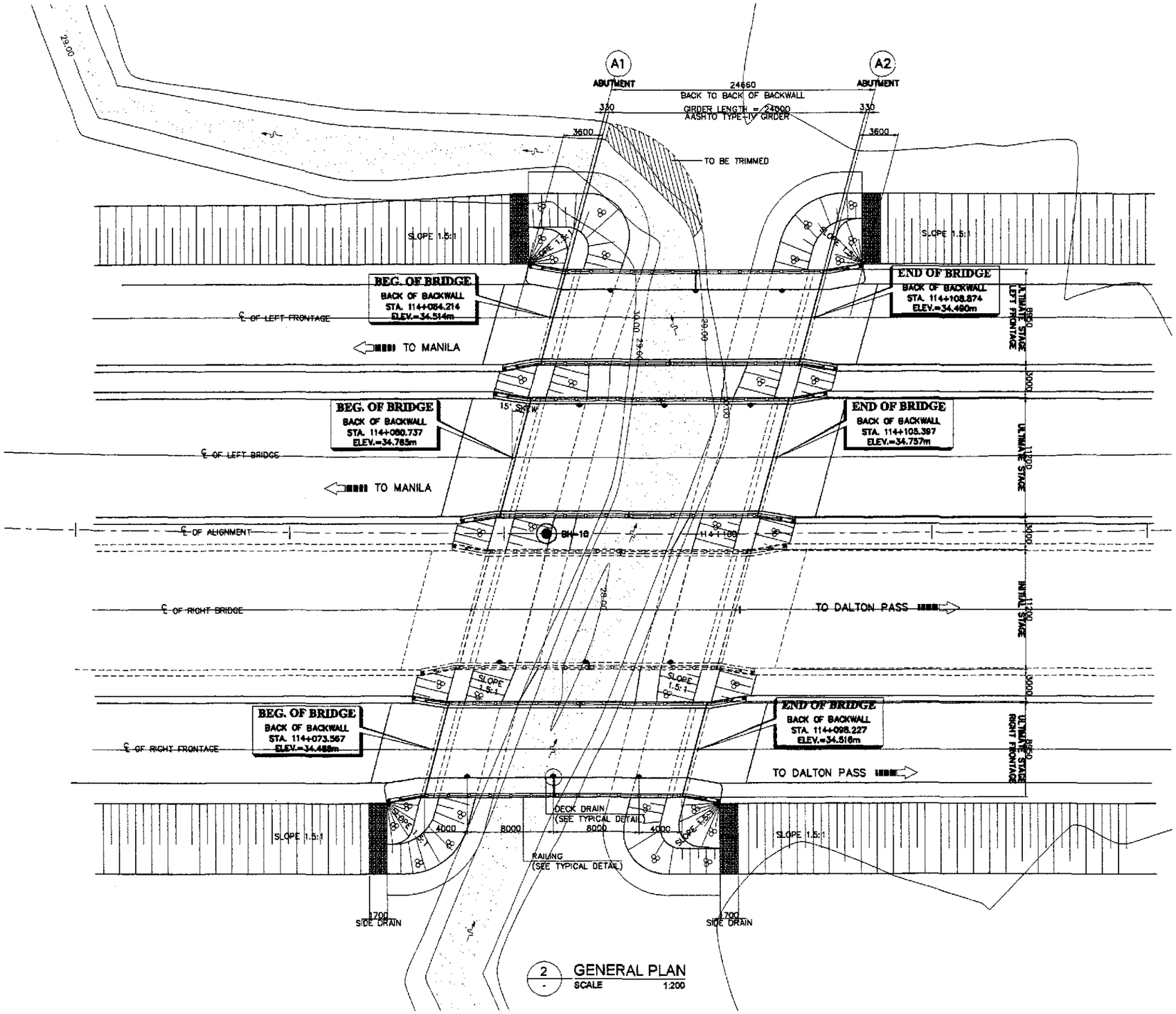
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DORDY Chief, Bridges Division	GILBERTO S. REYES Director 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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : AS SHOWN — FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 4
ABUTMENT A1 & A2
WINGWALL REINFORCEMENT DETAILS
LEFT FRONTAGE (ULTIMATE STAGE)

SHEET NO. : B4-26



2 - GENERAL PLAN
SCALE 1:200

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

A - CABANATUAN BYPASS BRIDGE NO.5 (STA.114+080.737)
SCALE AS SHOWN

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

	DATE	SIGNATURE
DESIGNED	10/09/02	A. P. GONZALES
CHECKED	10/10/02	
SUBMITTED	10/12/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

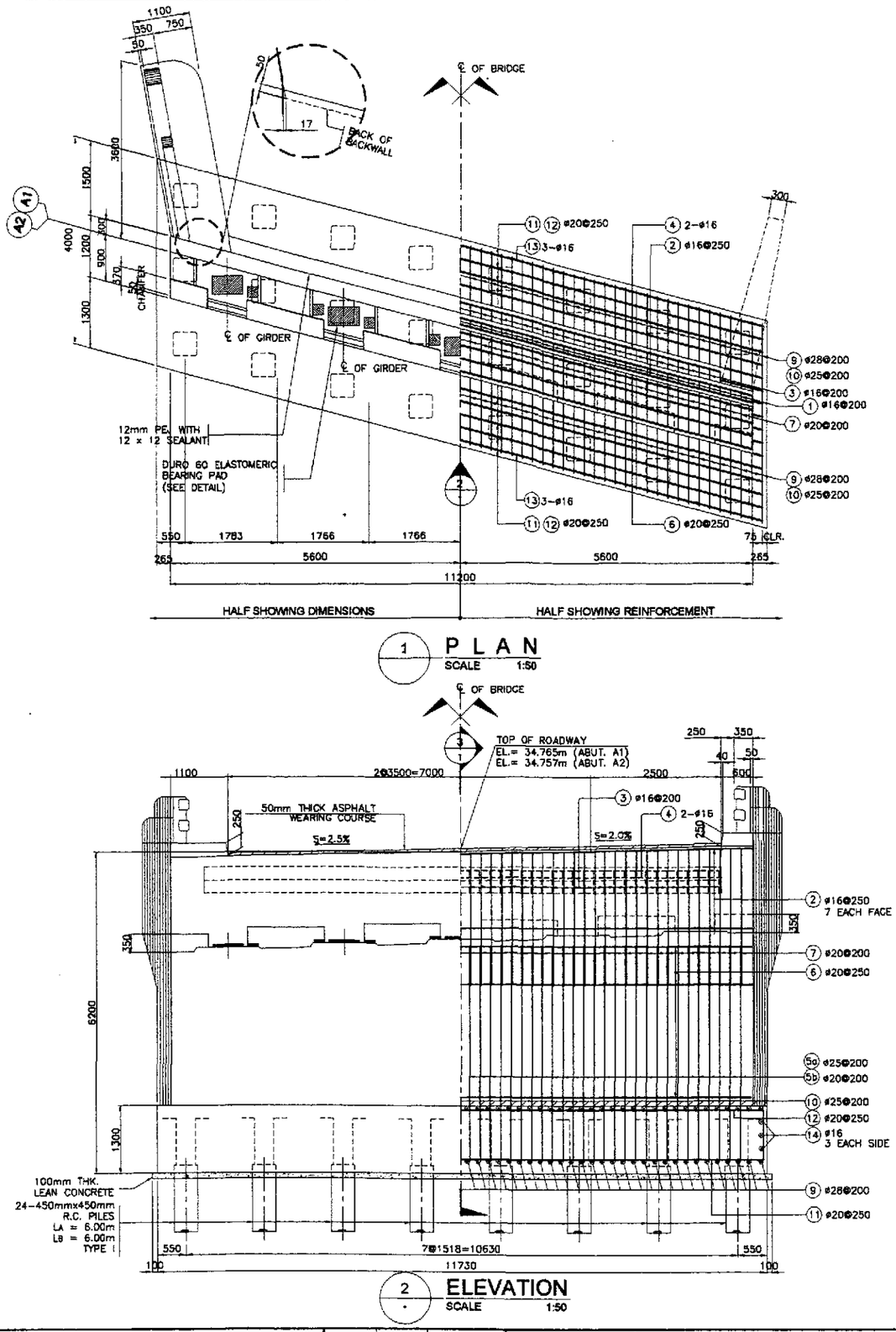
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DORDY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

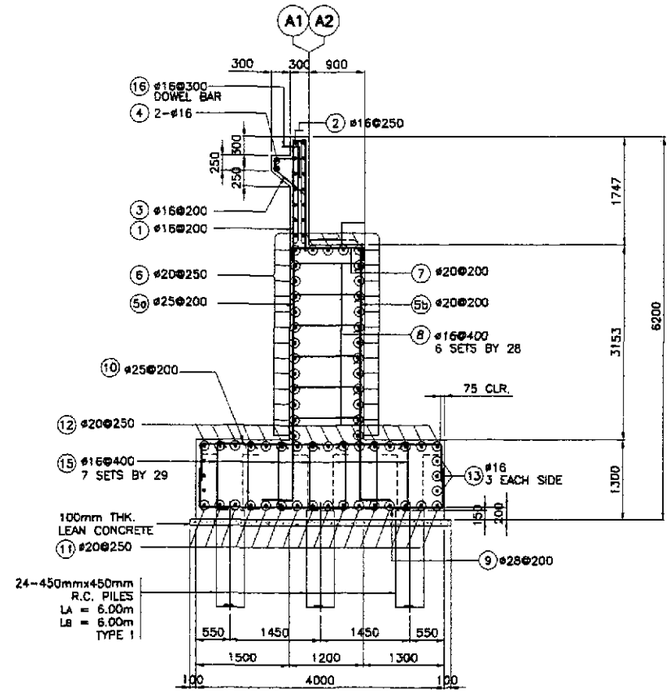
SCALE : 1 : 200 FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 5
GENERAL PLAN
(ULTIMATE STAGE)

SHEET NO. : B5-01



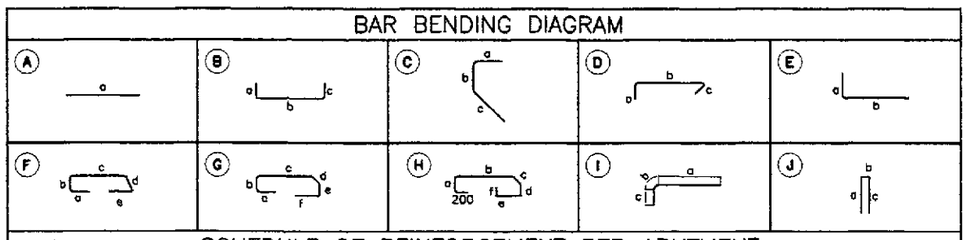
1 **PLAN** SCALE 1:50



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	6.99	①	16	57	200	B	2000	200	2000	–	–	–	4200	239.40	1.579	379	112.65
		②	16	14	250	A	11500	–	–	–	–	–	11500	161.00	1.579	255	
		③	16	51	200	C	600	150	750	–	–	–	1500	76.50	1.579	121	
		④	16	2	AS SHOWN	A	10250	–	–	–	–	–	10250	20.50	1.579	33	
MAINWALL	42.38	⑤a	25	57	200	E	400	4200	–	–	–	–	4600	262.50	3.854	1011	73.89
		⑤b	20	57	200	E	400	4200	–	–	–	–	4600	262.50	2.466	647	
		⑧	20	29	250	A	11500	–	–	–	–	–	11500	333.50	2.466	823	
		⑦	20	57	200	B	250	1100	250	–	–	–	1600	91.20	2.466	225	
		⑧	16	188	400	D	250	1100	250	–	–	–	1600	268.80	1.579	425	
FOOTING	51.00	⑨	28	59	200	B	700	3850	700	–	–	–	5250	309.75	4.833	1498	72.63
		⑩	25	59	200	B	700	3850	700	–	–	–	5250	309.75	3.854	1194	
		⑪	20	16	250	B	700	12000	700	–	–	–	13400	214.40	2.466	529	
		⑫	20	16	250	B	700	12000	700	–	–	–	13400	214.40	2.466	529	
		⑬	16	6	AS SHOWN	A	12000	–	–	–	–	–	12000	72.00	1.579	114	
		⑭	16	6	AS SHOWN	A	3850	–	–	–	–	–	3850	23.10	1.579	37	
		⑮	16	203	400	D	250	1150	250				1650	334.95	1.579	529	
DOWEL		⑯	16	34	300	E	650	500	–	–	–	–	1150	39.10	1.579	62	
TOTAL	110.37															GRADE 40 TOTAL = 1,855 kgs. GRADE 60 TOTAL = 6,456 kgs.	

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/09/07	A. P. GONZALES
CHECKED	10/16/07	
SUBMITTED	10/18/07	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

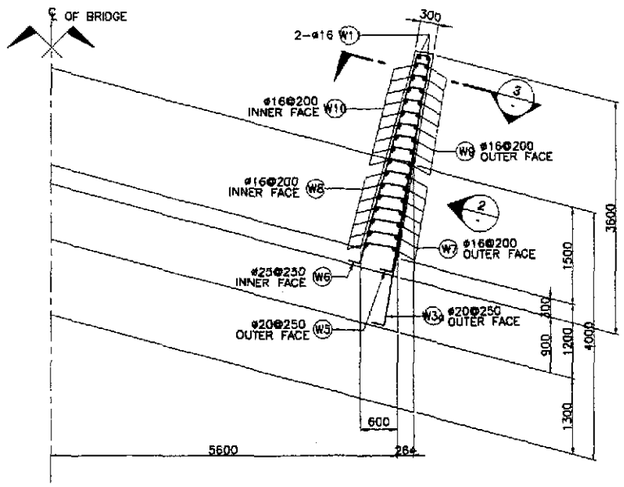
PJHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	ADRIANO M. DOROY, Chief, Bridges Division	GILBERTO S. REYES, Director 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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

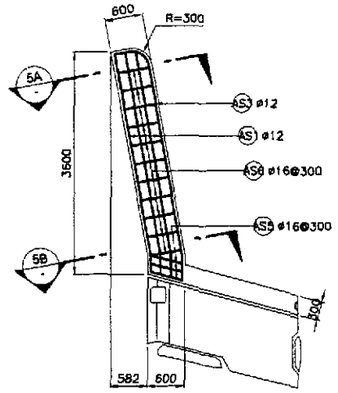
SCALE : 1 : 50 — FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 5
ABUTMENT A1 & A2
MAINWALL REINFORCEMENT DETAILS
(ULTIMATE STAGE)

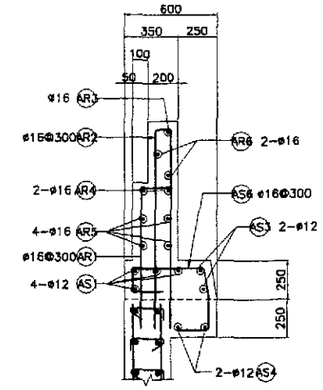
SHEET NO. : B5-06



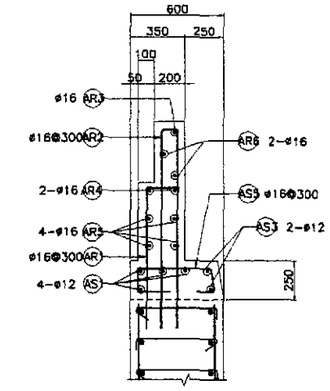
1 — PLAN
SCALE 1:50



4 — SIDEWALK DETAIL
SCALE 1:50

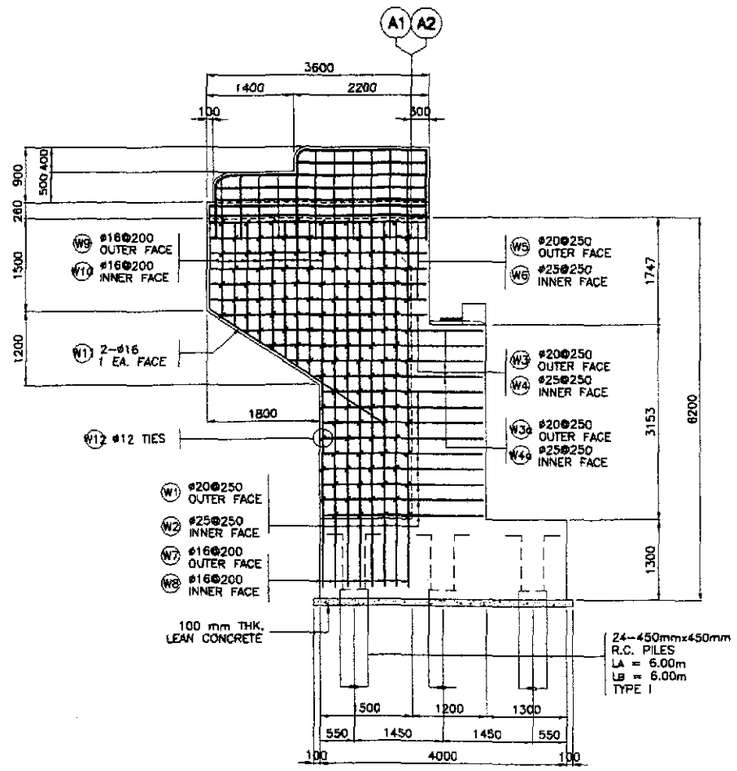


5A — SECTION
SCALE 1:20

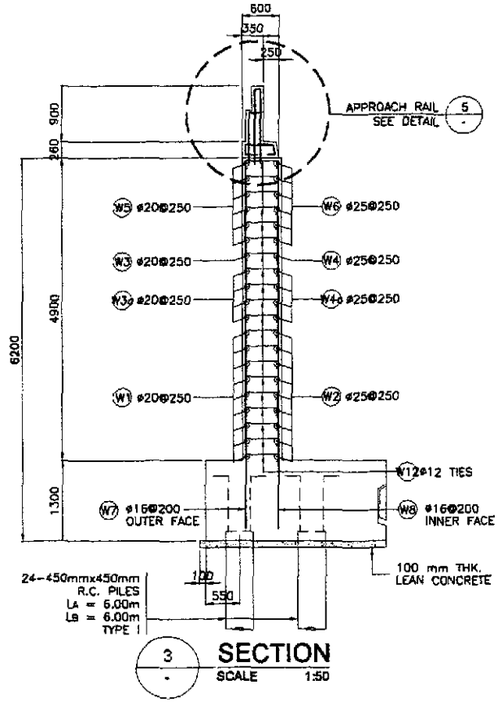


5B — SECTION
SCALE 1:20

5 — APPROACH RAIL DETAILS
SCALE 1:20

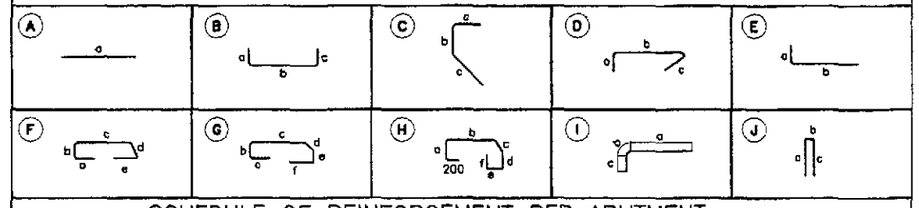


2 — WINGWALL ELEVATION
SCALE 1:50



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	10.02	W1	20	18	250	B	400	2600	150	–	–	–	31.50	56.70	2.466	140	158.98
		W2	25	18	250	B	400	2600	150	–	–	–	31.50	56.70	3.854	219	
		W3	20	2	250	B	400	3350	150	–	–	–	3900	7.80	2.466	20	
		W3a	20	8	250	B	400	3350	150	–	–	–	3900	31.20	2.466	77	
		W4	20	2	250	B	400	3350	150	–	–	–	3900	7.80	2.466	20	
		W4a	25	8	250	B	400	3350	150	–	–	–	3900	31.20	3.854	121	
		W5	25	12	250	B	400	3500	150	–	–	–	4050	48.60	3.854	188	
		W6	25	12	250	B	400	3500	150	–	–	–	4050	48.60	3.854	188	
		W7	16	16	200	E	250	5900	–	–	–	–	6150	98.40	1.579	156	
		W8	16	16	200	E	250	5900	–	–	–	–	6150	98.40	1.579	156	
		W9	16	16	200	E	250	2000	–	–	–	–	2250	36.00	1.579	57	
		W10	16	16	200	E	250	2000	–	–	–	–	2250	36.00	1.579	57	
		W11	16	4	AS SHOWN	C	250	1500	3500	–	–	–	5250	21.60	1.579	34	
		W12	12	228	AS SHOWN	D	170	450	170	–	–	–	790	173.80	0.888	160	
														GRADE 60 TOTAL = 973 kgs. GRADE 40 TOTAL = 620 kgs.			
APPROACH RAILING AND SIDEWALK	3.03	AS	12	8	AS SHOWN	A	3500	–	–	–	–	–	3500	28.00	0.888	25	97.03
		AS2	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS3	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS4	16	6	300	F	200	170	480	200	200	–	1250	7.50	1.579	12	
		AS5	16	22	300	G	200	170	480	200	170	200	1420	31.24	1.579	50	
		AR1	16	8	300	E	200	900	–	–	–	–	1100	8.80	1.579	14	
		AR2	16	16	300	J	1300	120	1300	–	–	–	2720	43.52	1.579	69	
		AR3	16	2	AS SHOWN	I	2100	236	1300	–	–	–	3536	7.27	1.579	12	
		AR4	16	4	AS SHOWN	I	3400	236	900	–	–	–	4536	18.14	1.579	29	
		AR5	16	8	AS SHOWN	A	3400	–	–	–	–	–	3400	27.20	1.579	43	
		AR6	16	4	AS SHOWN	A	2100	–	–	–	–	–	2100	8.40	1.579	14	
														GRADE 40 TOTAL= 294 kgs.			
TOTAL	12.91													GRADE 60 TOTAL = 973 kgs. GRADE 40 TOTAL = 914 kgs.			

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

	DATE	SIGNATURE
DESIGNED	10/09/02	A. P. GONZALES
CHECKED	10/16/02	
SUBMITTED	10/18/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

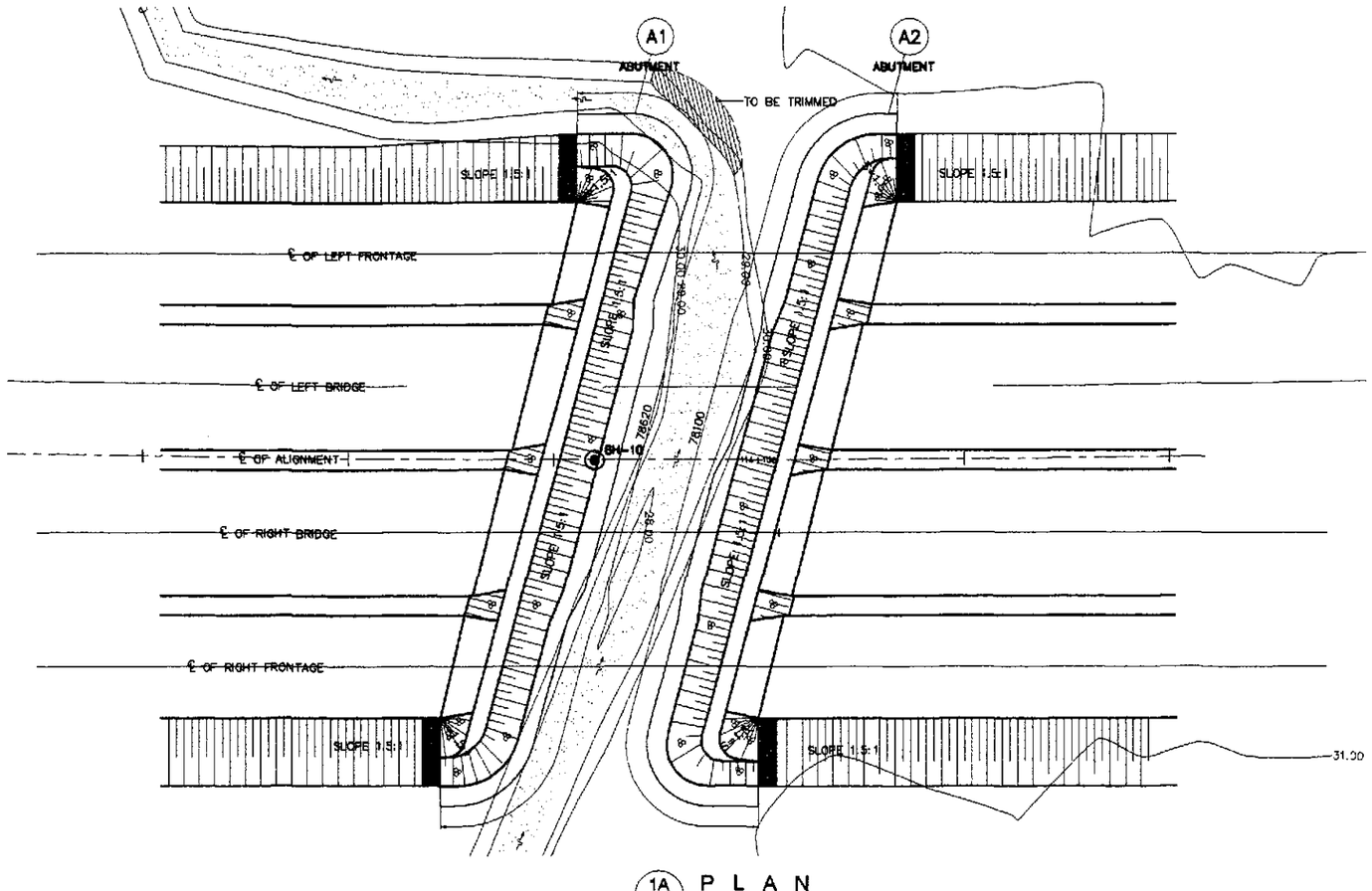
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

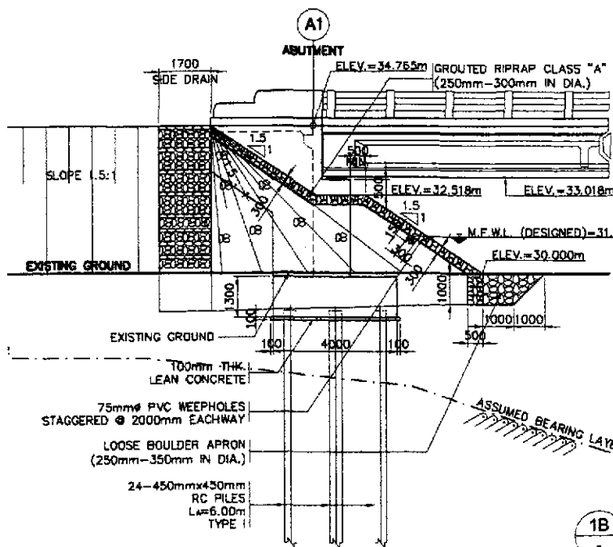
SCALE :
AS SHOWN
FULL SIZE A1

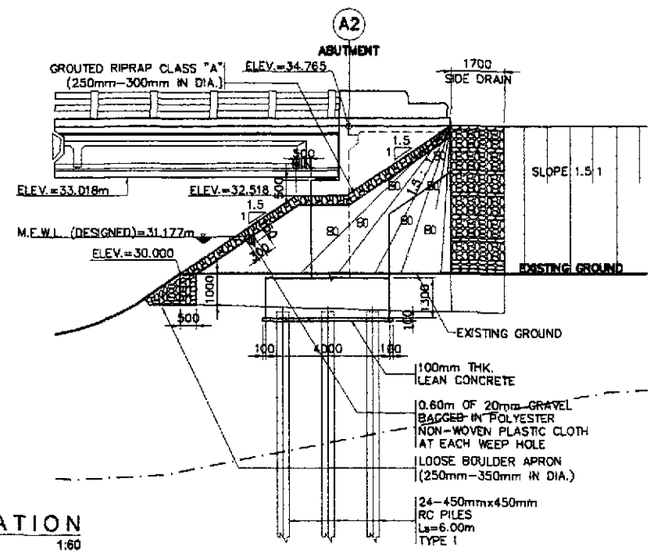
SHEET CONTENTS :
BRIDGE NO. 5
ABUTMENT A1 & A2
WINGWALL REINFORCEMENT DETAILS
(ULTIMATE STAGE)

SHEET NO. :
B5-07



1A PLAN
SCALE 1:300





1B ELEVATION
SCALE 1:60

1 ABUTMENT SLOPE PROTECTION
SCALE AS SHOWN

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

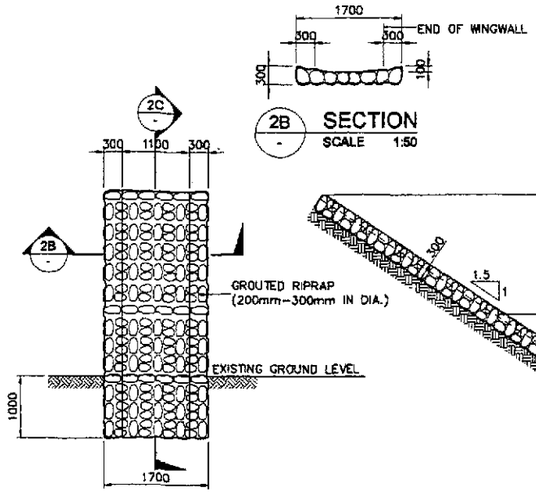
3. GRAVEL FILTER SHALL BE COARSE AGGREGATES MATERIALS WHICH SATISFY THE REQUIREMENTS FOR ITEM 405, STRUCTURAL CONCRETE, GRADING B OF TABLE 405.1 AS REVISED.

4. FOR THE LOOSE BOULDER APRON, BOULDERS 250-350mmø 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.

5. 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.

6. NO CONCRETING UNDER WATER SHALL BE PERMITTED.

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



2A ELEVATION
SCALE 1:50

2C SECTION
SCALE 1:50

2 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

PER ABUTMENT

LOCATION	SIZES	QUANTITY	
		ABUT. A1	ABUT. A2
SIDE DRAIN	200mm-300mm IN DIA.	9.80 cu. m.	9.80 cu. m.
GROUTED RIPRAP	250mm-300mm IN DIA.	134.41 cu. m.	134.41 cu. m.
BOULDER APRON	250mm-350mm IN DIA.	89.59 cu. m.	89.59 cu. m.

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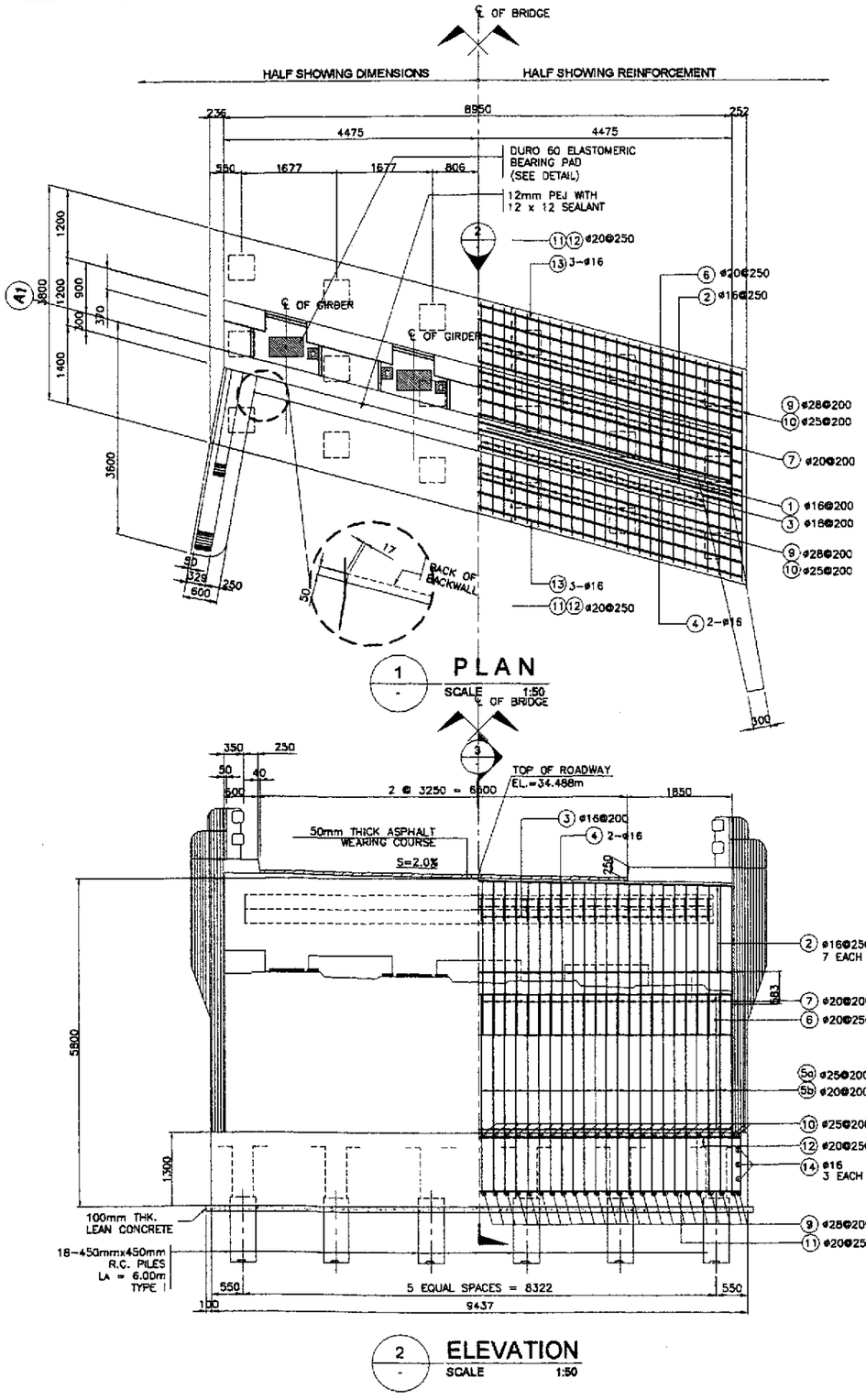
JAPAN INTERNATIONAL COOPERATION AGENCY
KEI KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/09/02	A. P. GONZALES
CHECKED	10/14/02	
SUBMITTED	10/18/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

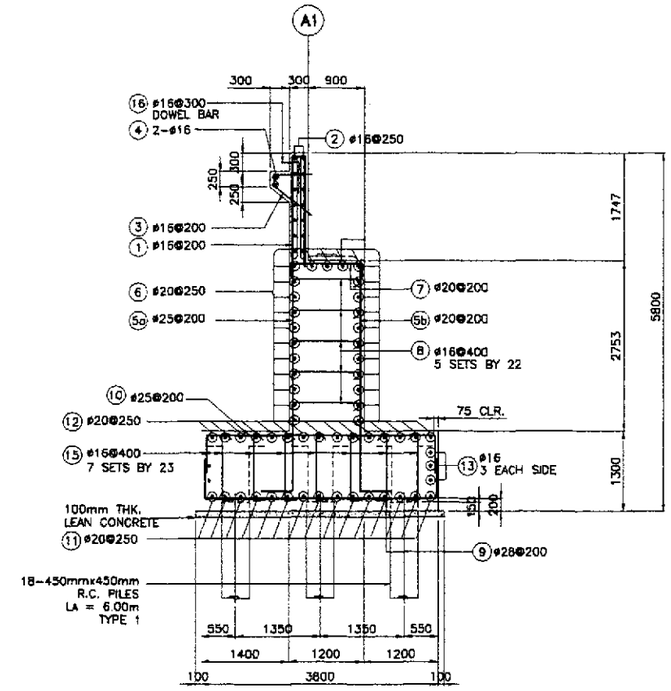
PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	PERFECTO L. ZAPLAN JR.	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director	Chief, Hydraulics Division (OIC)	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) CABANATUAN BYPASS - CONTRACT PACKAGE II	AS SHOWN FULL SIZE A1	BRIDGE NO. 5 ABUTMENT PROTECTION AND SIDE DRAIN DETAILS (ULTIMATE STAGE)	B5-10



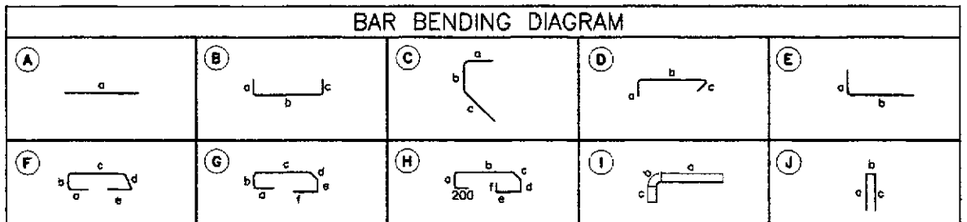
1 - PLAN SCALE 1:50

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	5.42	①	16	45	200	B	2000	200	2200	–	–	–	4200	189.00	1.579	299	111.21
		②	16	14	250	A	9175	–	–	–	–	–	9175	128.45	1.579	203	
		③	16	33	200	C	600	150	750	–	–	–	1500	49.50	1.579	79	
		④	16	2	AS SHOWN	A	6500	–	–	–	–	–	6650	13.30	1.579	22	
MAINWALL	29.57	5a	25	45	200	E	400	3810	–	–	–	–	4210	189.45	3.854	731	75.12
		5b	20	45	200	E	400	3810	–	–	–	–	4210	189.45	2.466	468	
		⑥	20	25	250	A	9186	–	–	–	–	–	9175	229.38	2.466	566	
		⑦	20	45	200	B	250	1100	250	–	–	–	1600	72.00	2.466	178	
		⑧	16	110	400	D	250	1100	250	–	–	–	1600	176.00	1.579	278	
FOOTING	46.62	⑨	28	47	200	B	700	3650	700	–	–	–	5050	237.35	4.833	1148	74.66
		⑩	25	47	200	B	700	3650	700	–	–	–	5050	237.35	3.854	915	
		⑪	20	16	250	B	700	9650	700	–	–	–	11050	176.80	2.466	436	
		⑫	20	15	250	B	700	9650	700	–	–	–	11050	176.80	2.466	436	
		⑬	16	6	AS SHOWN	A	9650	–	–	–	–	–	9650	57.90	1.579	92	
		⑭	16	6	AS SHOWN	A	3650	–	–	–	–	–	3650	21.90	1.579	35	
		⑮	16	161	400	D	250	1150	250				1650	265.65	1.579	420	
DOWEL		⑯	16	22	300	E	650	500	–	–	–	–	1150	25.30	1.579	40	
TOTAL	81.61															GRADE 40 TOTAL = 1,468 kgs. GRADE 60 TOTAL = 4,878 kgs.	

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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

	DATE	SIGNATURE
DESIGNED	10/04/02	A. P. GONZALES
CHECKED	10/16/02	
SUBMITTED	10/18/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

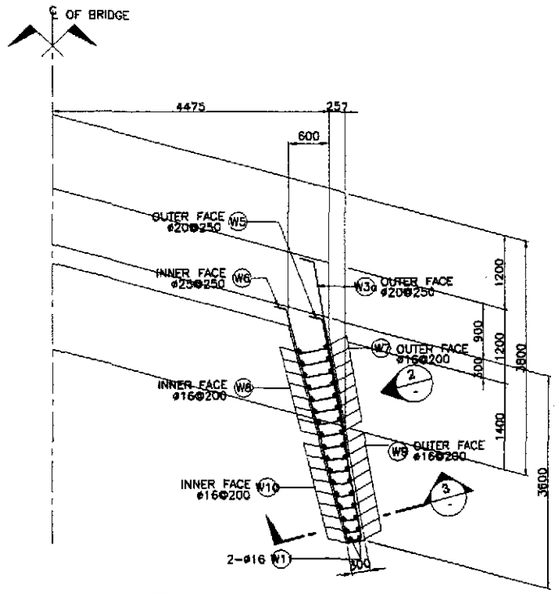
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO, Project Director	ADRIANO M. DOROY, Chief, Bridges Division	GILBERTO S. REYES, Director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

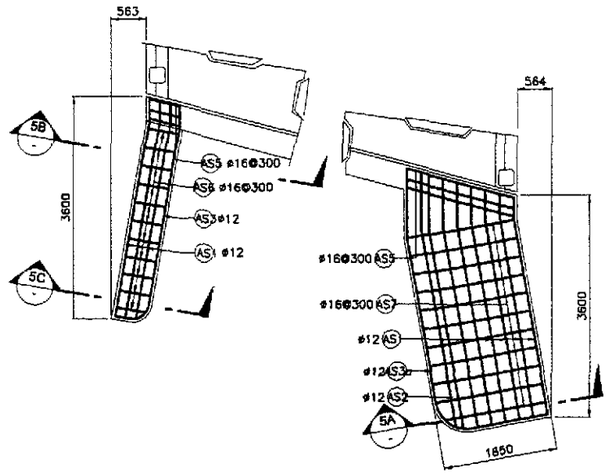
PROJECT AND LOCATION :
THE DETAILED DESIGN STUDY ON
UPGRADING INTER-URBAN HIGHWAY SYSTEM
ALONG THE PAN-PHILIPPINE HIGHWAY
(Plaridel, Cabanatuan and San Jose Bypasses)
CABANATUAN BYPASS - CONTRACT PACKAGE II

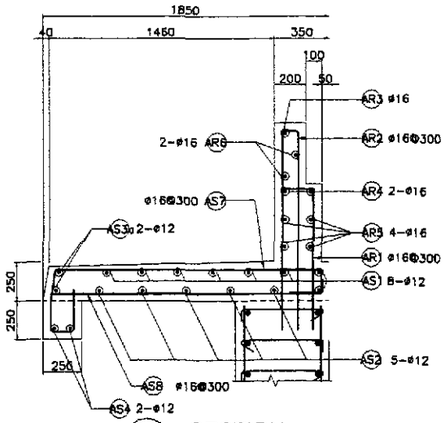
SCALE : 1 : 50 FULL SIZE A1

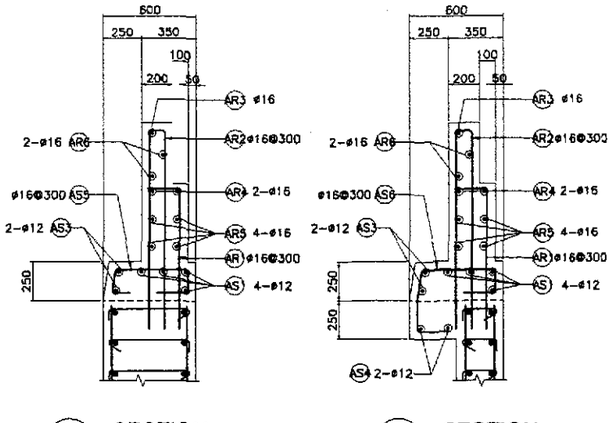
SHEET CONTENTS :
BRIDGE NO. 5
ABUTMENT A1
MAINWALL REINFORCEMENT DETAILS
RIGHT FRONTAGE(ULTIMATE STAGE)

SHEET NO. : B5-14

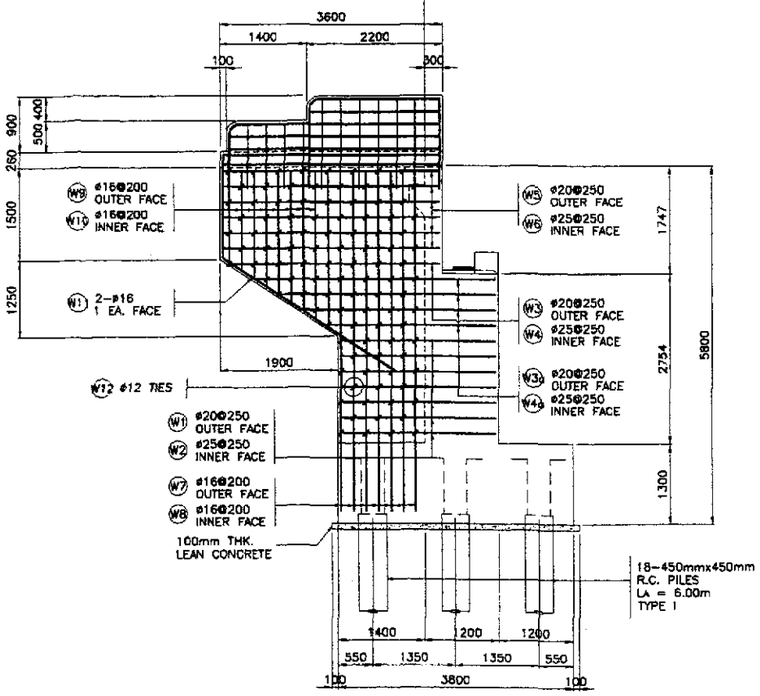


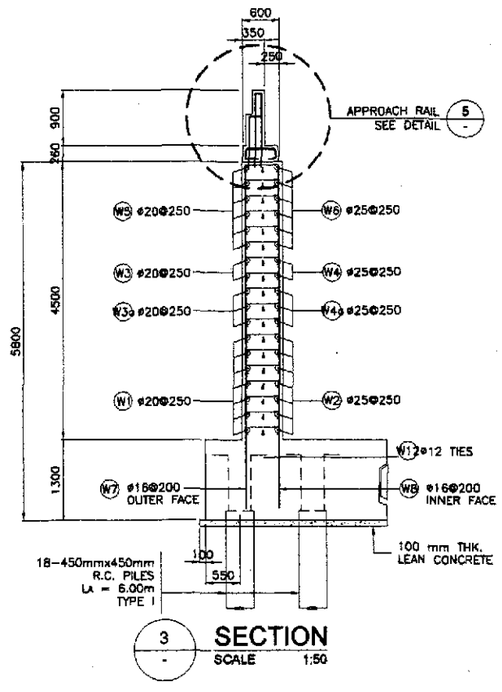




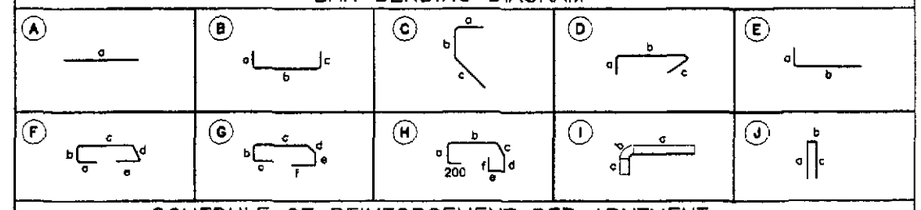


5 APPROACH RAIL DETAILS
SCALE 1:20





BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

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 WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m³)
WINGWALL	9.30	W1	20	14	250	B	400	2500	150	–	–	–	3050	42.70	2.466	106	146.29
		W2	25	14	250	B	400	2500	150	–	–	–	3050	42.70	3.854	165	
		W3	20	2	250	B	400	3400	150	–	–	–	3950	7.90	2.466	20	
		W3a	20	8	250	B	400	3350	150	–	–	–	3900	31.20	2.466	77	
		W4	25	2	250	B	400	3400	150	–	–	–	3950	7.90	3.854	31	
		W4a	25	8	250	B	400	3350	150	–	–	–	3900	31.20	3.854	121	
		W5	20	12	250	B	400	3500	150	–	–	–	4050	48.60	2.486	120	
		W6	25	12	250	B	400	3500	150	–	–	–	4050	48.60	3.854	188	
		W7	16	12	200	E	250	5550	–	–	–	–	5800	69.60	1.579	110	
		W8	16	12	200	E	250	5550	–	–	–	–	5800	69.60	1.579	110	
		W9	16	18	200	E	250	2100	–	–	–	–	2350	42.30	1.579	67	
		W10	16	18	200	E	250	2100	–	–	–	–	2350	42.30	1.579	67	
		W11	16	4	AS SHOWN	C	250	1500	3500	–	–	–	5250	21.00	1.579	34	
		W12	12	206	AS SHOWN	D	170	450	170	–	–	–	790	75.84	0.888	145	
														GRADE 60 TOTAL = 828 kgs. GRADE 40 TOTAL = 533 kgs.			
APPROACH RAILING AND SIDEWALK	4.30	AS	12	12	AS SHOWN	A	3500	–	–	–	–	–	3500	42.00	0.888	38	92.81
		AS2	12	5	AS SHOWN	A	3500	–	–	–	–	–	3500	17.50	0.888	16	
		AS3	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS4	16	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	1.579	13	
		AS5	16	3	300	G	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	15	300	H	200	170	1730	200	170	200	2870	43.05	1.579	68	
		AS8	16	15	300	E	200	1770	–	–	–	–	1970	29.55	1.579	47	
		AR1	16	8	300	E	200	900	–	–	–	–	1100	8.80	1.579	14	
		AR2	16	14	300	J	1300	120	1300	–	–	–	2720	38.08	1.579	61	
		AR3	16	2	AS SHOWN	I	2100	236	1300	–	–	–	3636	7.27	1.579	12	
		AR4	16	4	AS SHOWN	I	3400	236	900	–	–	–	4536	18.14	1.579	29	
		AR5	16	8	AS SHOWN	A	3400	–	–	–	–	–	3400	27.20	1.579	43	
		AR6	16	4	AS SHOWN	A	2100	–	–	–	–	–	2100	8.40	1.579	14	
														GRADE 40 TOTAL= 359 kgs.			
TOTAL	13.60													GRADE 60 TOTAL = 828 kgs. GRADE 40 TOTAL = 932 kgs.			

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

	DATE	SIGNATURE
DESIGNED	10/09/02	A. P. GONZALES
CHECKED	10/16/02	K. KOBAYASHI
SUBMITTED	10/18/02	M. KIKUCHI TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

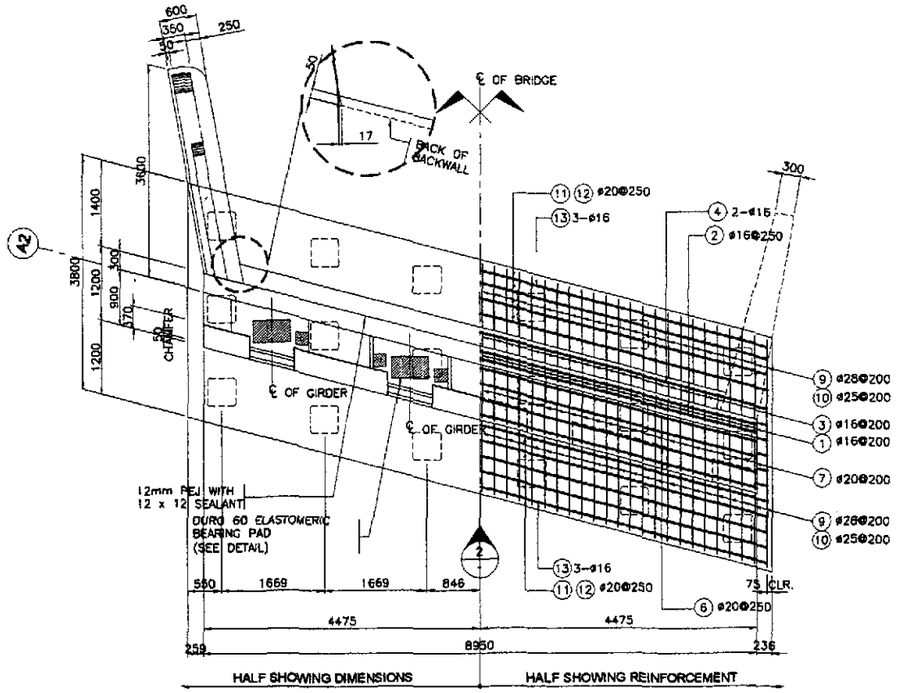
PJHL - PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO Project Director	ADRIANO M. DOROY Chief, Bridges Division	GILBERTO S. REYES Director 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)
CABANATUAN BYPASS - CONTRACT PACKAGE II

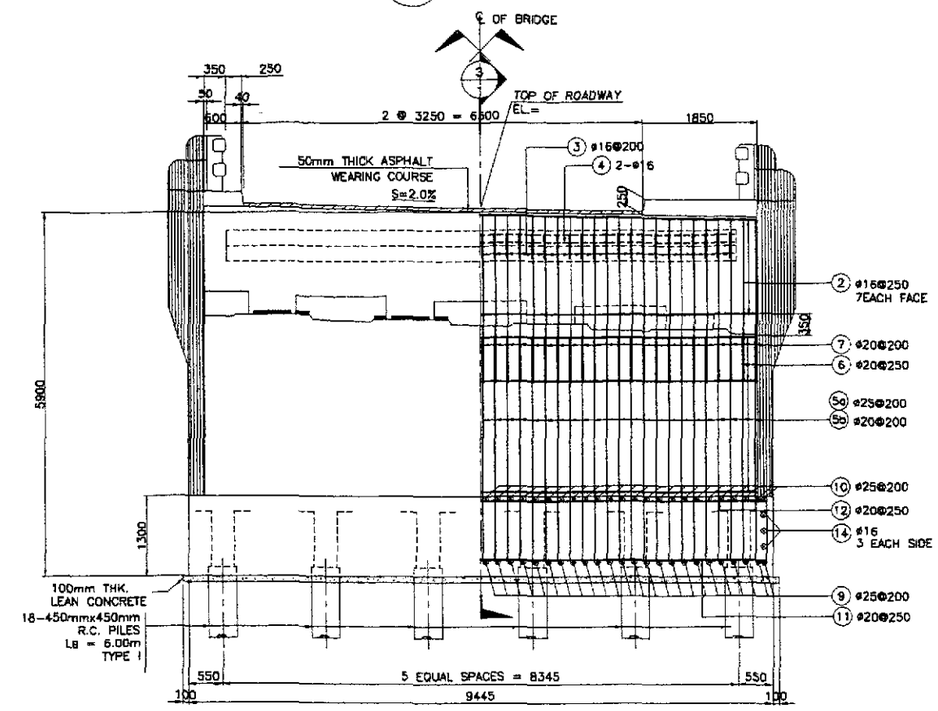
SCALE : AS SHOWN FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 5
ABUTMENT A1
WINGWALL REINFORCEMENT DETAILS
RIGHT FRONTAGE (ULTIMATE STAGE)

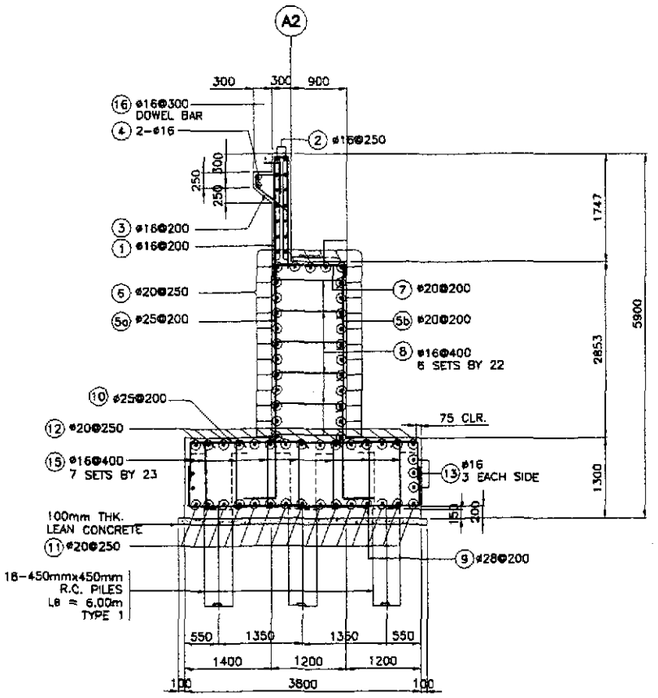
SHEET NO. : B5-15



1 / - PLAN
SCALE 1:50

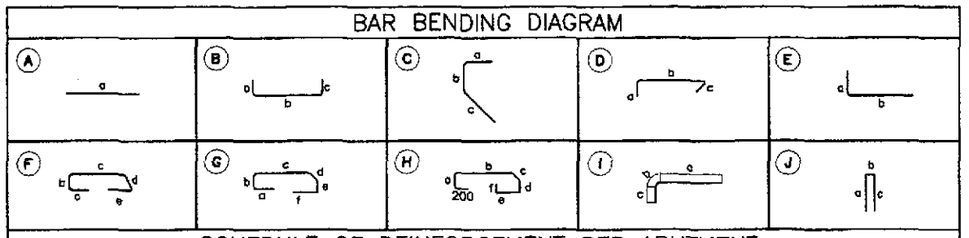


2 / - ELEVATION
SCALE 1:50



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	5.42	①	16	45	200	B	2000	200	2000	–	–	–	4200	189.00	1.579	299	111.21
		②	16	14	250	A	9175	–	–	–	–	–	9175	128.45	1.579	203	
		③	16	33	200	C	600	150	750	–	–	–	1500	49.50	1.579	79	
		④	16	2	AS SHOWN	A	6650	–	–	–	–	–	6650	13.30	1.579	22	
MAINWALL	30.64	5a	25	45	200	E	400	3910	–	–	–	–	4310	193.95	3.854	748	76.69
		5b	20	45	200	E	400	3910	–	–	–	–	4310	193.95	2.466	479	
		⑥	20	27	250	A	9175	–	–	–	–	–	9175	247.73	2.466	611	
		⑦	20	45	200	B	250	1100	250	–	–	–	1600	72.00	2.466	178	
		⑧	16	132	400	D	250	1100	250	–	–	–	1600	211.20	1.579	334	
FOOTING	46.66	⑨	28	47	200	B	700	3650	700	–	–	–	5050	237.35	4.833	1148	74.63
		⑩	25	47	200	B	700	3650	700	–	–	–	5050	237.35	3.854	915	
		⑪	20	16	250	B	700	9650	700	–	–	–	11050	176.80	2.466	436	
		⑫	20	16	250	B	700	9650	700	–	–	–	11050	176.80	2.466	436	
		⑬	16	6	AS SHOWN	A	9650	–	–	–	–	–	9650	57.90	1.579	92	
		⑭	16	6	AS SHOWN	A	3650	–	–	–	–	–	3650	21.90	1.579	35	
		⑮	16	161	400	D	250	1150	250				1650	265.65	1.579	420	
DOWEL		⑯	16	22	300	E	650	500	–	–	–	–	1150	25.30	1.579	40	
TOTAL	82.72															GRADE 40 TOTAL = 1,524 kgs. GRADE 60 TOTAL = 4,951 kgs.	

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KATAHIRA & ENGINEERS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

	DATE	SIGNATURE
DESIGNED	10/09/02	R. GONZALES
CHECKED	10/10/02	[illegible]
SUBMITTED	10/18/02	[illegible] TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

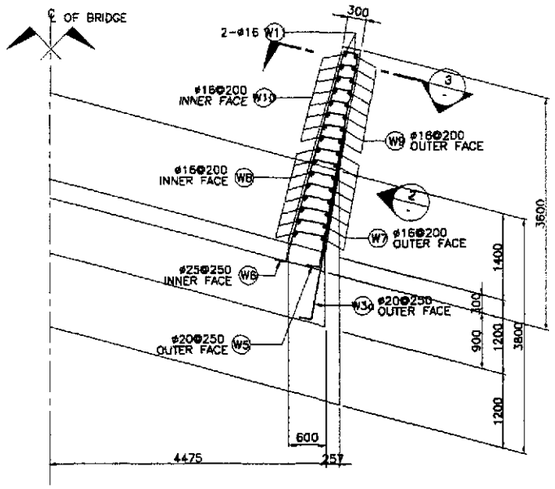
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

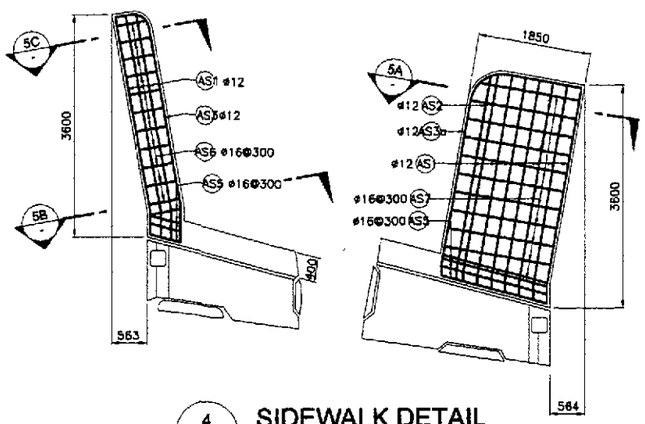
SCALE :
1 : 50
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 5
ABUTMENT A2
MAINWALL REINFORCEMENT DETAILS
RIGHT FRONTAGE(ULTIMATE STAGE)

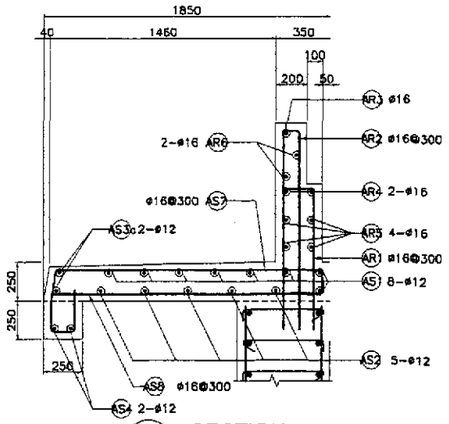
SHEET NO. :
B5-16



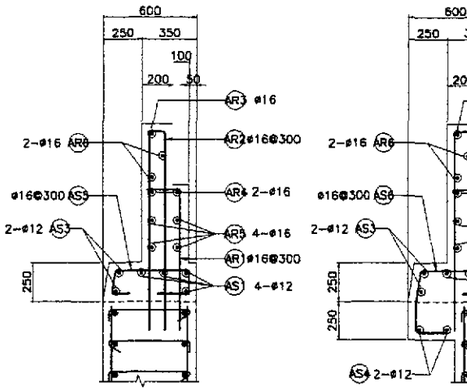
1 - PLAN
SCALE 1:50



4 - SIDEWALK DETAIL
SCALE 1:50



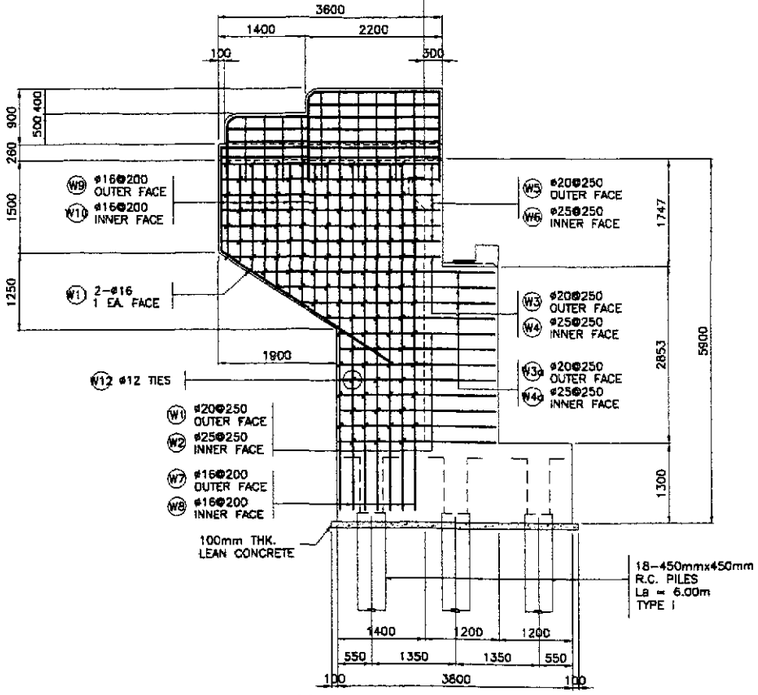
5A - SECTION
SCALE 1:20



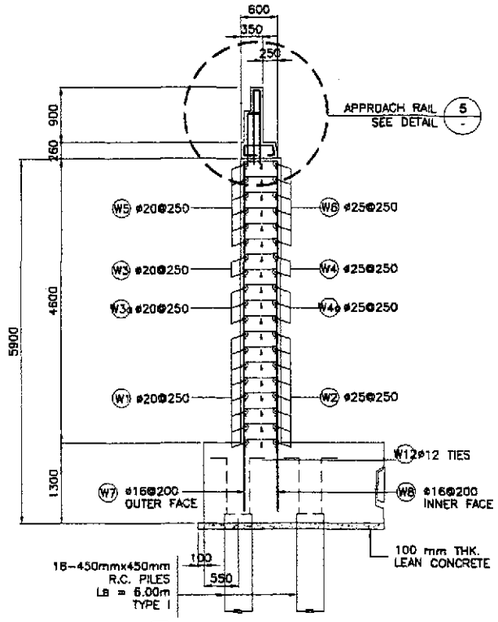
5B - SECTION
SCALE 1:20

5C - SECTION
SCALE 1:20

5 - APPROACH RAIL DETAILS
SCALE 1:20

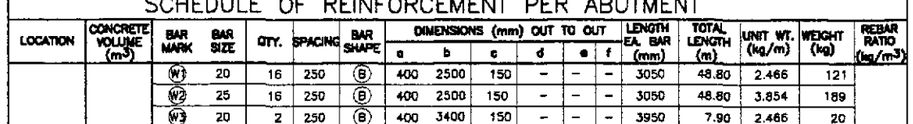


2 - WINGWALL ELEVATION
SCALE 1:50



3 - SECTION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	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	9.43	W1	20	16	250	B	400	2500	150	–	–	–	3050	48.80	2.466	121	149.31
		W2	25	16	250	B	400	2500	150	–	–	–	3050	48.80	3.854	189	
		W3	20	2	250	B	400	3400	150	–	–	–	3950	7.90	2.466	20	
		W3a	20	8	250	B	400	3350	150	–	–	–	3900	31.20	2.466	77	
		W4	25	2	250	B	400	3400	150	–	–	–	3950	7.90	3.854	31	
		W4a	25	8	250	B	400	3350	150	–	–	–	3900	31.20	3.854	121	
		W5	20	12	250	B	400	3500	150	–	–	–	4050	48.60	2.466	120	
		W6	25	12	250	B	400	3500	150	–	–	–	4050	48.60	3.854	188	
		W7	16	12	200	E	250	5650	–	–	–	–	5900	70.80	1.579	112	
		W8	16	12	200	E	250	5650	–	–	–	–	5900	70.80	1.579	112	
		W9	16	18	200	E	250	2100	–	–	–	–	2350	42.30	1.579	67	
		W10	16	18	200	E	250	2100	–	–	–	–	2350	42.30	1.579	67	
		W1	16	4	AS SHOWN	C	250	1500	3300	–	–	–	5250	21.00	1.579	34	
		W12	12	212	AS SHOWN	D	170	450	170	–	–	–	790	167.48	0.888	149	
														GRADE 60 TOTAL = 867 kgs.			
														GRADE 40 TOTAL = 541 kgs.			
APPROACH RAILING AND SIDEWALK	4.30	AS	12	12	AS SHOWN	A	3500	–	–	–	–	–	3500	42.00	0.888	38	92.81
		AS2	12	5	AS SHOWN	A	3500	–	–	–	–	–	3500	17.50	0.888	16	
		AS3	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS4	16	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	1.579	13	
		AS5	16	3	300	G	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	15	300	H	200	170	1730	200	170	200	2870	43.05	1.579	68	
		AS8	16	15	300	E	200	1770	–	–	–	–	1970	29.55	1.579	47	
		AR	16	8	300	E	200	900	–	–	–	–	1100	8.80	1.579	14	
		AR2	16	14	300	J	1300	120	1300	–	–	–	2720	38.08	1.579	61	
		AR3	16	2	AS SHOWN	I	2100	236	1300	–	–	–	3636	7.27	1.579	12	
		AR4	16	4	AS SHOWN	I	3400	236	900	–	–	–	4536	18.14	1.579	29	
		AR5	16	8	AS SHOWN	A	3400	–	–	–	–	–	3400	27.20	1.579	43	
		AR6	16	4	AS SHOWN	A	2100	–	–	–	–	–	2100	8.40	1.579	14	
														GRADE 40 TOTAL = 399 kgs.			
TOTAL	13.73													GRADE 60 TOTAL = 867 kgs. GRADE 40 TOTAL = 940 kgs.			

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

	DATE	SIGNATURE
DESIGNED	10/09/01	A. P. GONZALES
CHECKED	10/16/01	
SUBMITTED	10/18/01	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

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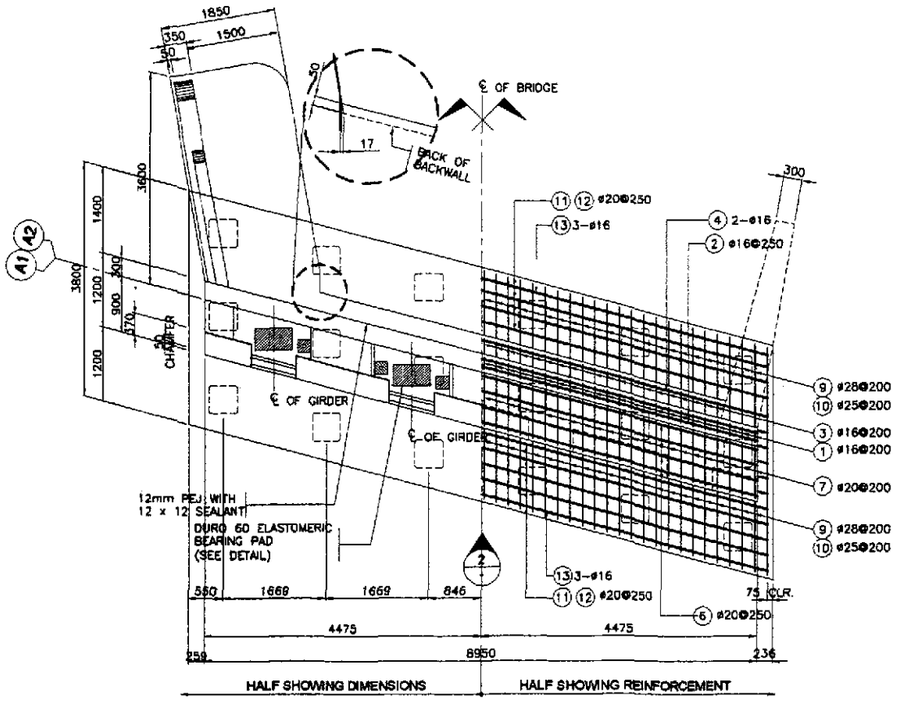
CABANATUAN BYPASS - CONTRACT PACKAGE II

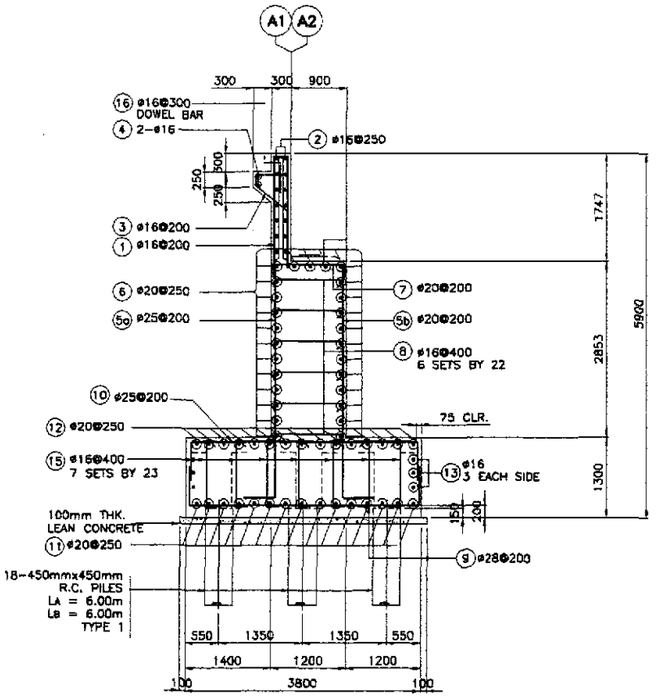
SCALE :
AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 5
ABUTMENT A2
WINGWALL REINFORCEMENT DETAILS
RIGHT FRONTAGE (ULTIMATE STAGE)

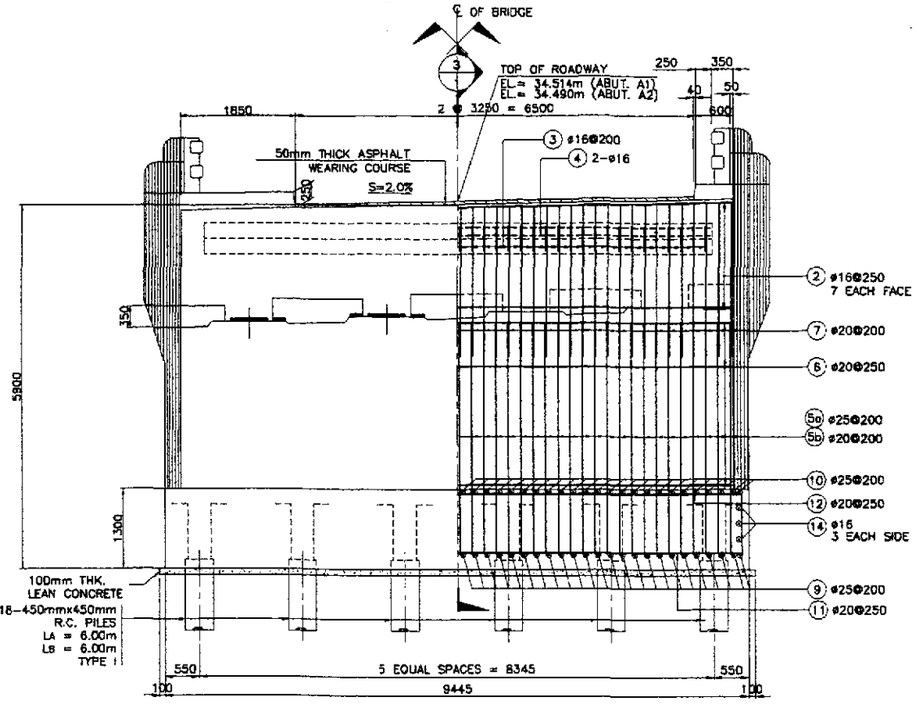
SHEET NO. :
B5-17



1 / - PLAN
SCALE 1:50

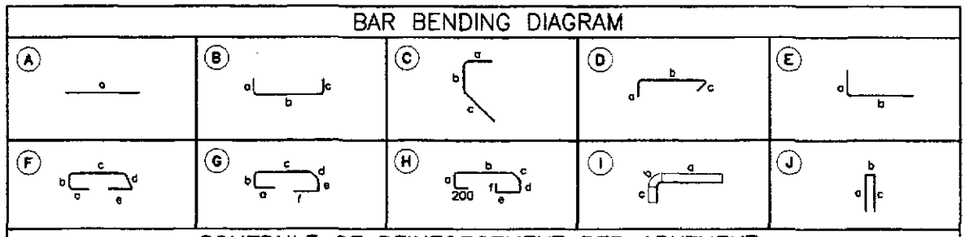


3 / - SECTION
SCALE 1:50



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	5.42	①	16	45	200	B	2200	200	2000	–	–	–	4200	189.00	1.579	299	111.21
		②	16	14	250	A	9175	–	–	–	–	–	9175	128.45	1.579	203	
		③	16	33	200	C	600	170	750	–	–	–	1520	71.44	1.579	79	
		④	16	2	AS SHOWN	A	6650	–	–	–	–	–	6650	13.30	1.579	22	
MAINWALL	30.64	5a	25	45	200	E	400	3910	–	–	–	–	4310	193.95	3.854	748	76.69
		5b	20	45	200	E	400	3910	–	–	–	–	4310	193.95	2.466	479	
		⑥	20	27	250	A	9175	–	–	–	–	–	9175	247.73	2.466	611	
		⑦	20	45	200	B	250	1100	250	–	–	–	1600	72.00	2.466	178	
		⑧	16	110	400	D	250	1100	250	–	–	–	1600	211.20	1.579	334	
FOOTING	46.66	⑨	28	47	200	B	700	3650	3650	–	–	–	8000	237.35	4.833	1148	75.01
		⑩	25	47	200	B	700	3650	700	–	–	–	5050	237.35	3.854	915	
		⑪	20	16	250	B	700	9650	700	–	–	–	11050	176.80	2.466	436	
		⑫	20	16	250	B	700	9650	700	–	–	–	11050	176.80	2.466	436	
		⑬	16	6	AS SHOWN	A	9650	–	–	–	–	–	9650	57.90	1.579	92	
		⑭	16	6	AS SHOWN	A	3650	–	–	–	–	–	3650	21.90	1.579	35	
		⑮	16	168	400	D	250	1150	250				1650	277.20	1.579	438	
DOWEL		⑯	16	22	300	E	650	500	–	–	–	–	1150	25.30	1.579	40	
TOTAL	82.72															GRADE 40 TOTAL = 1,542 kgs. GRADE 60 TOTAL = 4,851 kgs.	

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

	DATE	SIGNATURE
DESIGNED	10/09/02	A. S. GONZALES
CHECKED	10/14/02	
SUBMITTED	10/15/02	TEAM LEADER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

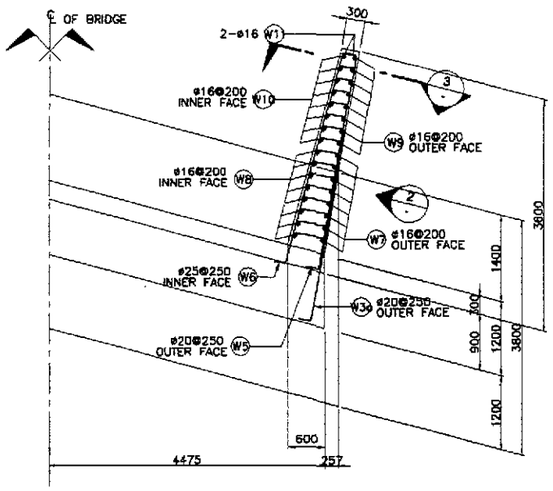
PUHL – PMO	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Recommended By: (See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)
DANILO C. TRAJANO	ADRIANO M. DOROY	GILBERTO S. REYES	MANUEL M. BONOAN	SIMEON A. DATUMANONG
Project Director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

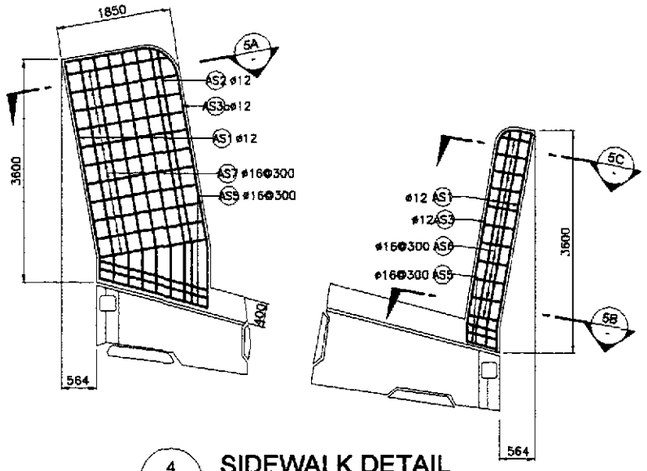
SCALE :
1 : 50
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 5
ABUTMENT A1 & A2
MAINWALL REINFORCEMENT DETAILS
LEFT FRONTAGE(ULTIMATE STAGE)

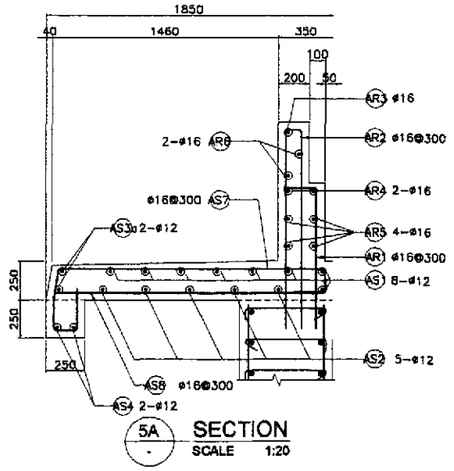
SHEET NO. :
B5-23



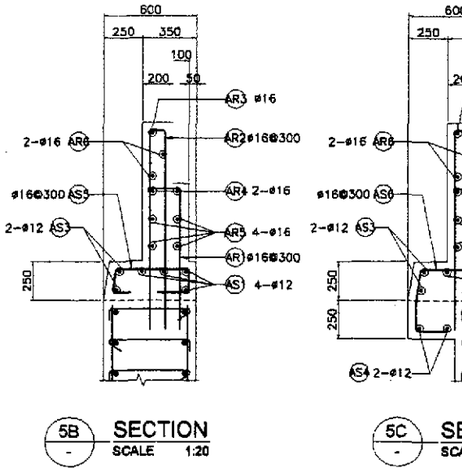
1 — PLAN
SCALE 1:50



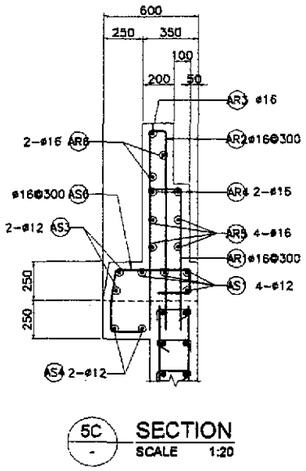
4 — SIDEWALK DETAIL
SCALE 1:50



5A — SECTION
SCALE 1:20

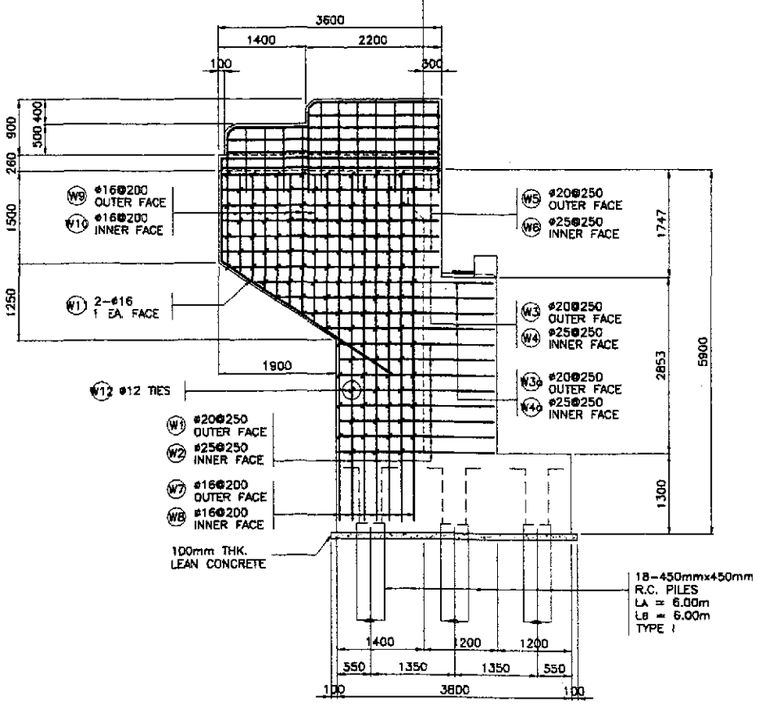


5B — SECTION
SCALE 1:20

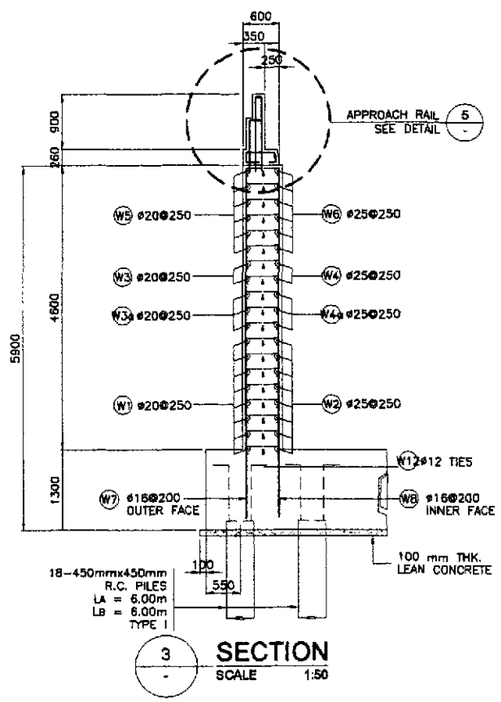


5C — SECTION
SCALE 1:20

5 — APPROACH RAIL DETAILS
SCALE 1:20

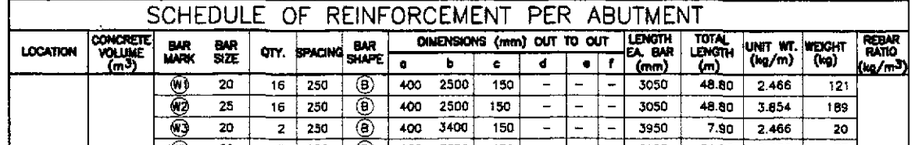


2 — WINGWALL ELEVATION
SCALE 1:50



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	9.43	W1	20	16	250	B	400	2500	150	–	–	–	3050	48.80	2.466	121	153.34
		W2	25	16	250	B	400	2500	150	–	–	–	3050	48.80	3.854	189	
		W3	20	2	250	B	400	3400	150	–	–	–	3950	7.90	2.466	20	
		W3a	20	8	250	B	400	3350	150	–	–	–	3900	31.20	2.466	77	
		W4	25	2	250	B	400	3400	150	–	–	–	3950	7.90	3.854	31	
		W4a	25	8	250	B	400	3350	150	–	–	–	3900	31.20	3.854	121	
		W5	20	12	250	B	400	3500	150	–	–	–	4050	48.60	2.466	120	
		W6	25	12	250	B	400	3500	150	–	–	–	4050	48.60	3.854	188	
		W7	16	14	200	E	250	5650	–	–	–	–	5900	82.60	1.579	131	
		W8	16	14	200	E	250	5650	–	–	–	–	5900	82.60	1.579	131	
		W9	16	18	200	E	250	2100	–	–	–	–	2350	42.30	1.579	67	
		W10	16	18	200	E	250	2100	–	–	–	–	2350	42.30	1.579	67	
		W11	16	4	AS SHOWN	C	250	1500	3300	–	–	–	5250	21.00	1.579	34	
		W12	12	212	AS SHOWN	D	170	450	170	–	–	–	790	167.48	0.888	149	
														GRADE 60 TOTAL = 867 kgs. GRADE 40 TOTAL = 579kgs.			
APPROACH RAILING AND SIDEWALK	4.30	AS1	12	12	AS SHOWN	A	3500	–	–	–	–	–	3500	42.00	0.888	38	92.81
		AS2	12	5	AS SHOWN	A	3500	–	–	–	–	–	3500	17.50	0.888	16	
		AS3	12	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	0.888	13	
		AS4	16	4	AS SHOWN	A	3500	–	–	–	–	–	3500	14.00	1.579	13	
		AS5	16	3	300	G	200	170	480	200	170	200	1420	4.26	1.579	7	
		AS6	16	11	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	43.05	1.579	68	
		AS8	16	14	300	E	200	1770	–	–	–	–	1970	29.55	1.579	47	
		AR1	16	8	300	E	200	900	–	–	–	–	1100	8.80	1.579	14	
		AR2	16	16	300	J	1300	120	1300	–	–	–	2720	38.08	1.579	61	
		AR3	16	3	AS SHOWN	I	2100	236	1300	–	–	–	3636	7.27	1.579	12	
		AR4	16	4	AS SHOWN	I	3400	236	900	–	–	–	4536	18.14	1.579	29	
		AR5	16	8	AS SHOWN	A	3400	–	–	–	–	–	3400	27.20	1.579	43	
		AR6	16	4	AS SHOWN	A	2100	–	–	–	–	–	2100	8.40	1.579	14	
														GRADE 40 TOTAL = 399kgs.			
TOTAL	13.73													GRADE 60 TOTAL = 867 kgs. GRADE 40 TOTAL = 978 kgs.			

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

	DATE	SIGNATURE
DESIGNED	10/09/02	[illegible] GONZALES
CHECKED	10/14/02	[illegible]
SUBMITTED	10/18/02	[illegible] 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)
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CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE : AS SHOWN
FULL SIZE A1

SHEET CONTENTS :
BRIDGE NO. 5
ABUTMENT A1 & A2
WINGWALL REINFORCEMENT DETAILS
LEFT FRONTAGE (ULTIMATE STAGE)

SHEET NO. : B5-24