

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

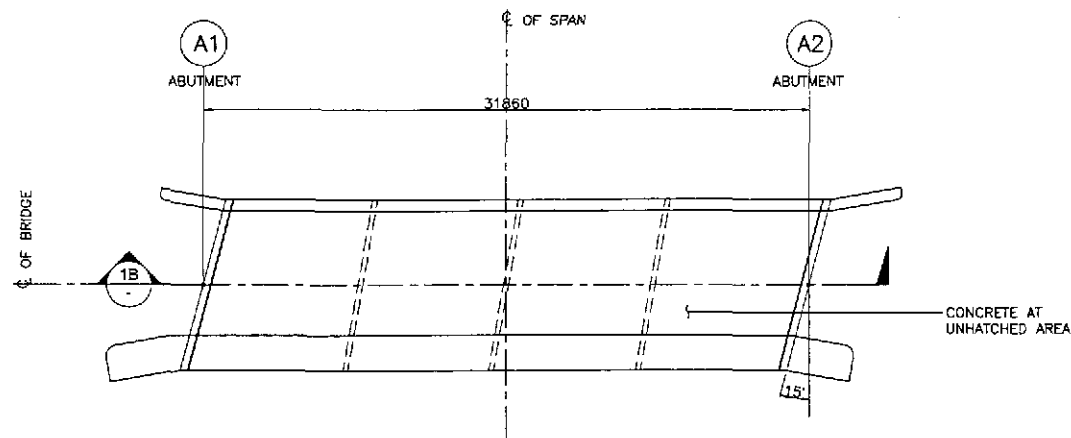
ESTIMATED QUANTITIES OF SUPERSTRUCTURE				
ITEM NO.	DESCRIPTION	UNIT	TOTAL	
404(1)a	REINFORCING STEEL GRADE 40	kgs.	20675	
	DECK SLAB	10931		
	DIAPHRAGM	383		
	GIRDER	4796		
	SIDEWALK, RAILING, & POST	3579		
	APPROACH SLAB	986		
404(1)b	REINFORCING STEEL GRADE 60	kgs.	10583	
	DECK SLAB	0		
	DIAPHRAGM	1203		
	GIRDER	5808		
	SIDEWALK, RAILING, & POST	590		
	APPROACH SLAB	2982		
405(1)	STRUCTURAL CONCRETE	cu. m.	206	
	DECK SLAB	85.89		
	DIAPHRAGM	11.45		
	GIRDER	77.73		
	SIDEWALK, RAILING, & POST	26.20		
	APPROACH SLAB	23.91		

BAR BENDING DIAGRAM

SCHEDULE OF REINFORCEMENT

LOCATION	CONCRETE VOLUME (m³)	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/m³)	REMARKS
							a	b	c	d						
DECK SLAB	65.89	G1	16	16	AS SHOWN	(A)	30900	-	-	-	30900	247.20	1.579	391	165.91	
		S1	16	113	300	(C)	145	8850	145	-	9140	877.44	1.579	1386		
		S1a	16	18	300	(C)	145	5050	145	-	5340	96.12	1.579	152		
		S2	16	226	300	(B)	145	2000	-	-	2145	411.84	1.579	651		
		S2a	16	226	300	(A)	1700	-	-	-	1700	326.40	1.579	516		
		S2b	16	339	300	(A)	1850	-	-	-	1850	532.80	1.579	842		
		S3	16	113	300	(A)	8850	-	-	-	8850	849.60	1.579	1342		
		S3a	16	18	300	(A)	5050	-	-	-	5050	90.90	1.579	144		
		S4	16	24	150	(A)	30900	-	-	-	30900	1112.40	1.579	1757		
		S5	16	24	150	(A)	30900	-	-	-	30900	1112.40	1.579	1757		
		S6	16	2	AS SHOWN	(A)	30900	-	-	-	30900	370.80	1.579	586		
		S7	16	2	AS SHOWN	(A)	30900	-	-	-	30900	370.80	1.579	586		
		S8	16	2	300	(A)	9200	-	-	-	9200	184.00	1.579	291		
		S9	16	2	300	(A)	5050	-	-	-	5050	181.80	1.579	288		
		S10	12	2	450	(E)	145	900	600	300	1945	272.30	0.888	242		
TOTAL	65.89	GRADE 40 TOTAL = 10,931 kgs.														

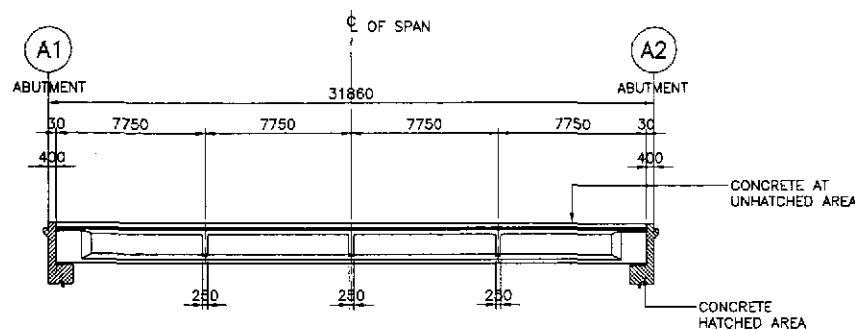
JICA JAPAN INTERNATIONAL COOPERATION AGENCY		KATAHIRA & ENGINEERS YEO YACHIYO ENGINEERING CO., LTD.		DATE: 10/09/02 DESIGNED: [Signature] CHECKED: [Signature] SUBMITTED: 10/18/02		SIGNATURE: [Signature] P.J.H.L. - P.M.O. Submitted By: [Signature] DANILLO C. TRAJANO Project Director		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN Reviewed By: [Signature] ADRIANO M. DORON Chief, Bridges Division		OFFICE OF THE SECRETARY Recommended By: [Signature] (See cover sheet for Signature/Approval) MANUEL M. BONGAN Undersecretary		PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Paridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE II		SCALE : AS SHOWN FULL SIZE A1		SHEET CONTENTS : BRIDGE NO. 8 DECK FRAMING PLAN AND SECTIONS RIGHT & LEFT FRONTAGE (ULTIMATE STAGE)		SHEET NO. : B8-13	
--	--	---	--	--	--	--	--	---	--	--	--	--	--	-------------------------------------	--	---	--	----------------------	--



NOTES:

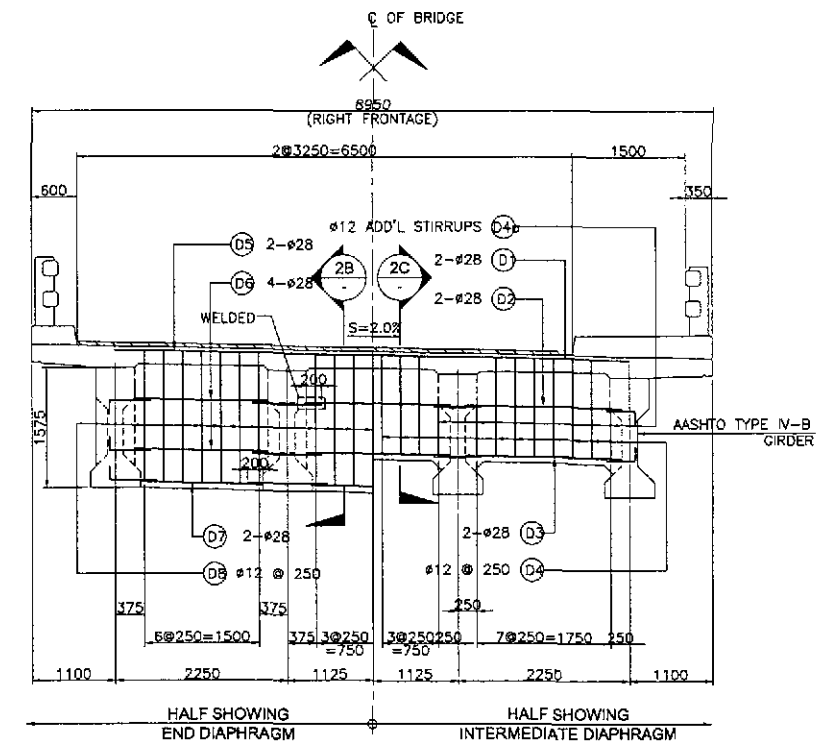
1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST TWENTY ONE (21) DAYS AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. SEE GIRDER DETAIL FOR SPACING OF #28 DOWELS.

1A PLAN
SCALE 1:200

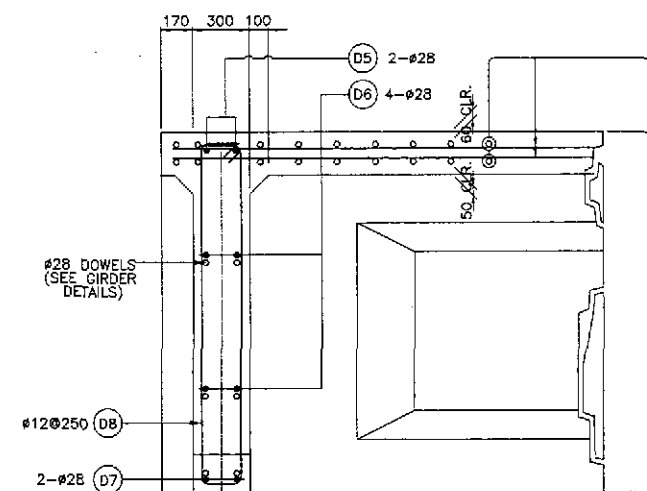


1B LONGITUDINAL SECTION
SCALE 1:200

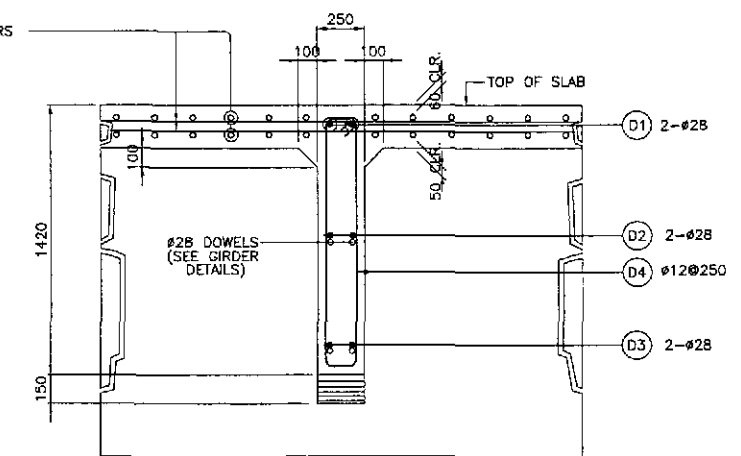
1 CONCRETE POURING SEQUENCE
SCALE 1:200



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.

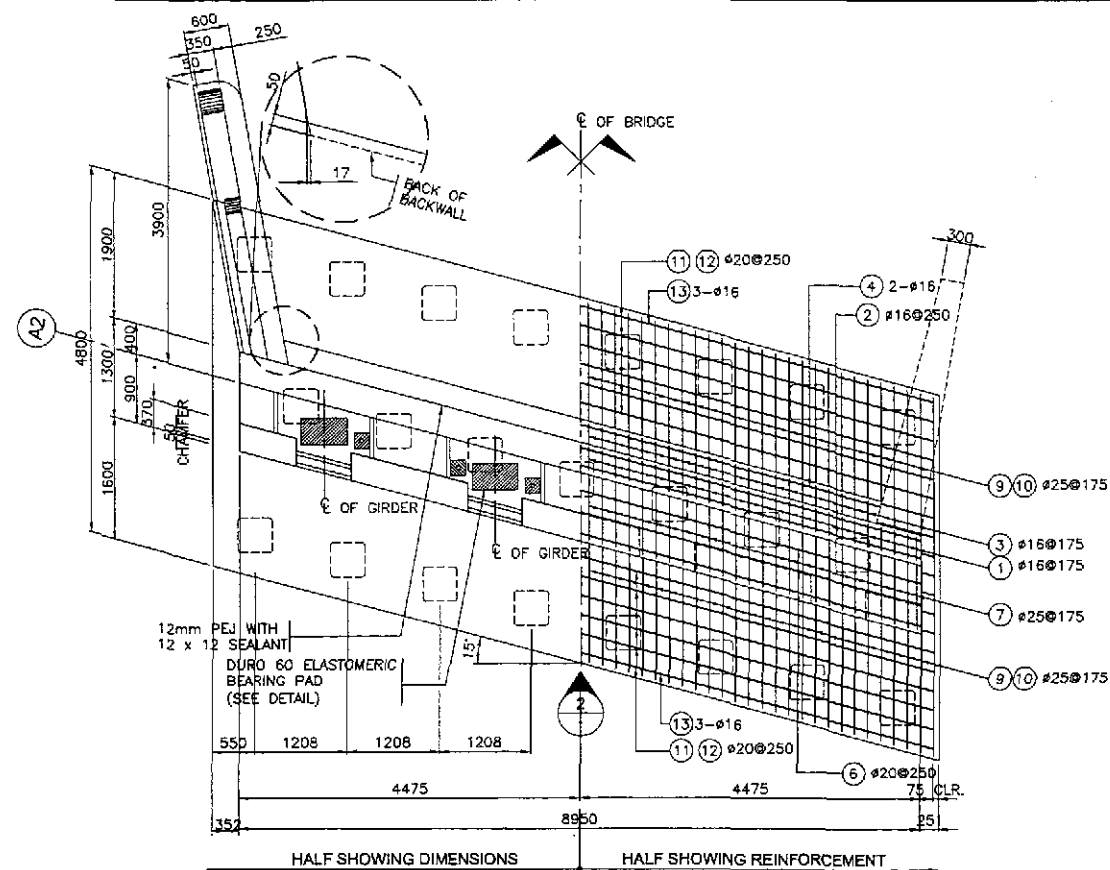
BAR BENDING DIAGRAM

(A)

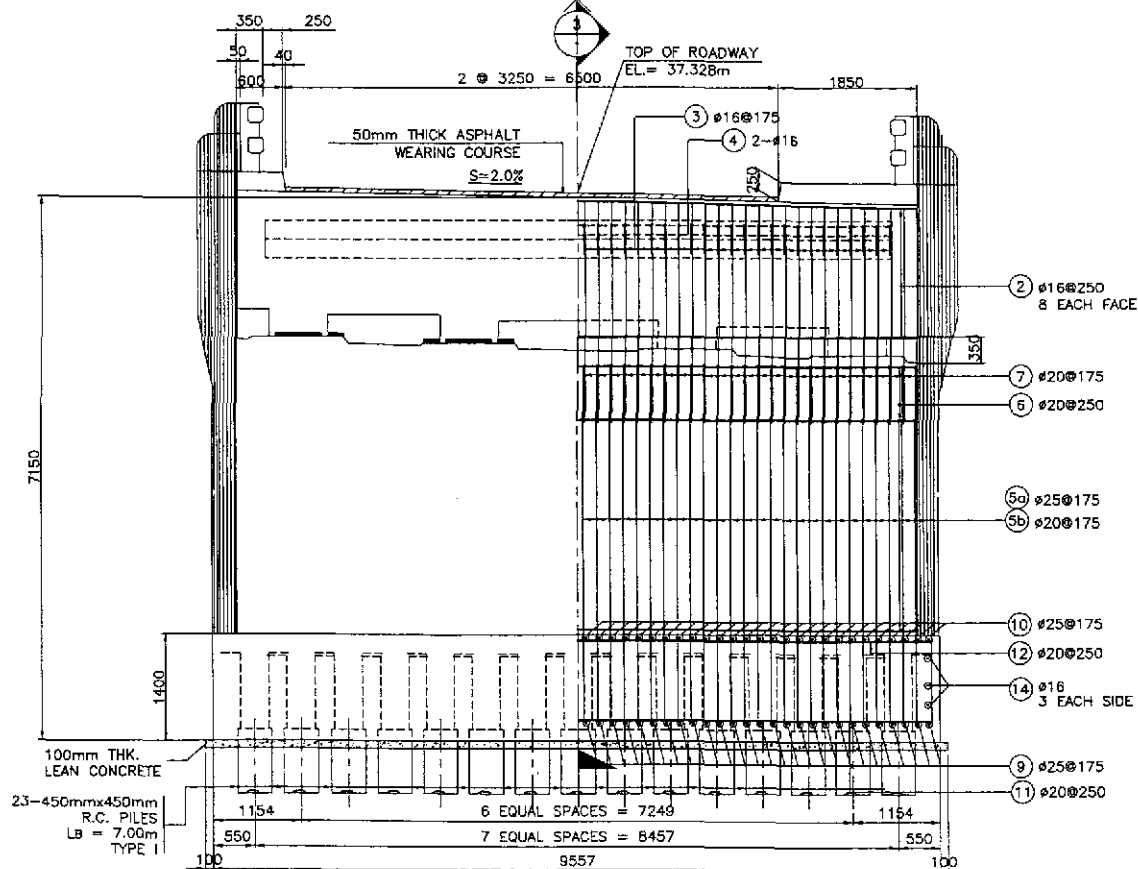
(B)

SCHEDULE OF REINFORCEMENT

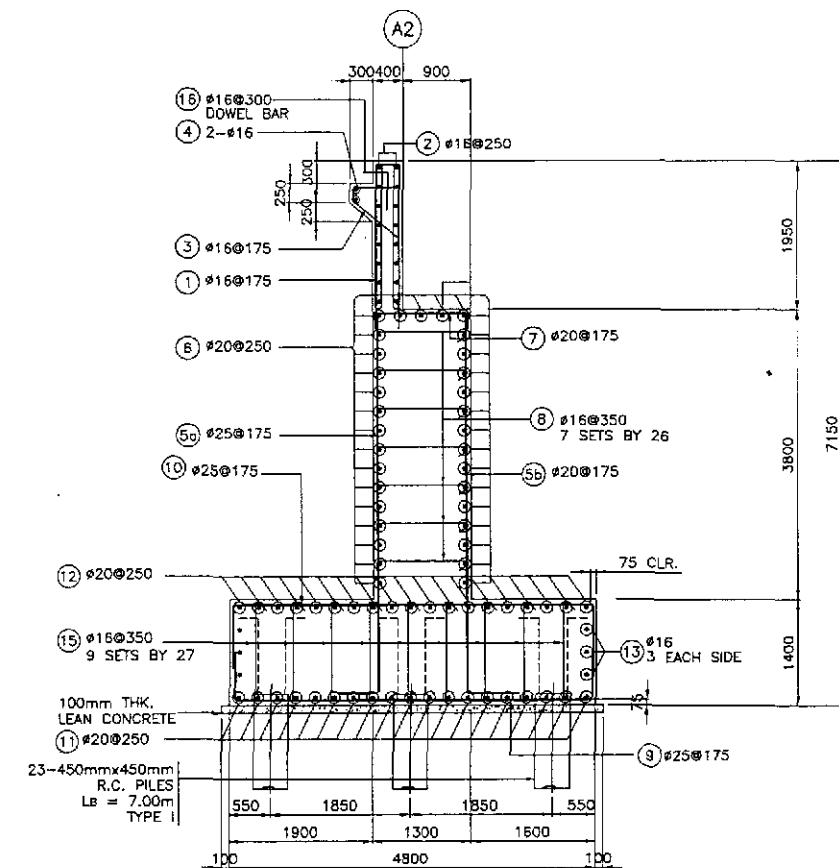
STRUCTURE COMPONENT	LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT				LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	TOTAL WEIGHT IN (kg)	REBAR RATIO (kg/m ³)
								a	b	c	d					
DIAPHRAGM	INTERMEDIATE DIAPHRAGM	6.19	D1	28	6	AS SHOWN	A	6750	-	-			6750	4.833	196	116.55
			D2	28	18	AS SHOWN	A	2045	-	-			2045	4.833	178	
			D3	28	18	AS SHOWN	A	2045	-	-			2045	4.833	178	
			D4	12	54	250	B	150	1200	150			3000	0.888	144	
	END DIAPHRAGM	5.25	D4a	12	18	200	B	150	500	150			1600	0.888	26	164.50
			D5	28	6	AS SHOWN	A	6750	-	-			6750	4.833	196	
			D6	28	36	AS SHOWN	A	1740	-	-			1740	4.833	303	
			D7	28	18	AS SHOWN	A	1740	-	-			1740	4.833	152	
	TOTAL	11.45			63	250	B	200	1550	150			3600	0.888	213	
													GRADE 60 TOTAL = 1,203 kgs.			
													GRADE 40 TOTAL = 383 kgs.			



1 PLAN
SCALE 1:50

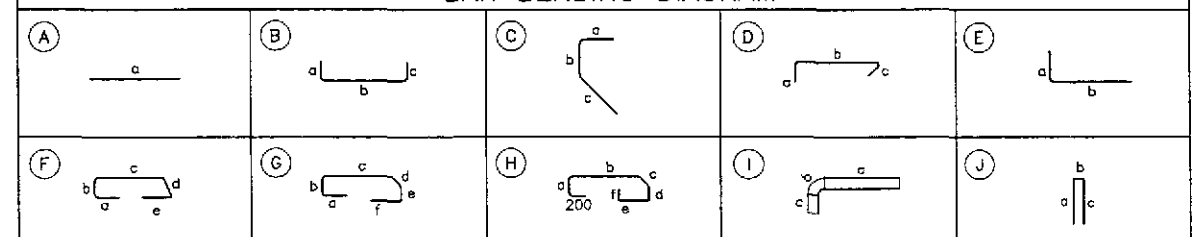


2 ELEVATION
SCALE 1:50



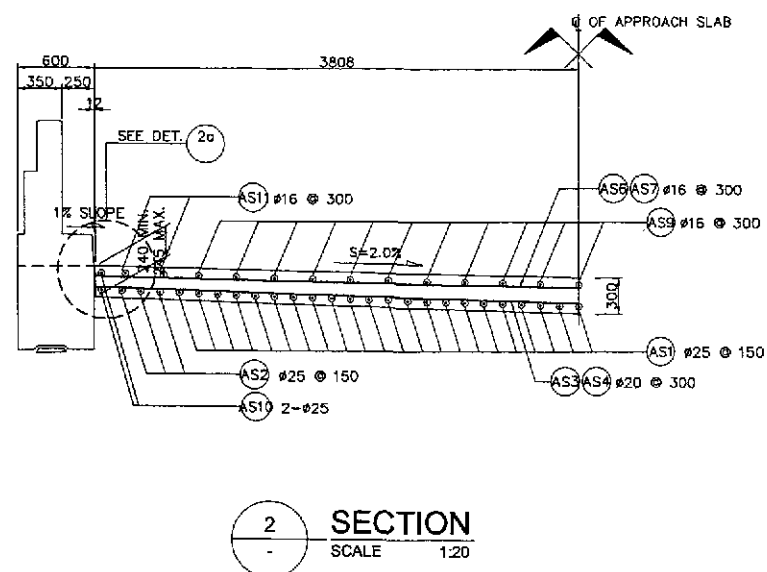
3 SECTION
SCALE 1:50

BAR BENDING DIAGRAM



SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT						LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m³)
							a	b	c	d	e	f					
BACKWALL	7.71	1	16	52	175	(B)	2200	300	2200	-	-	-	4700	244.40	1.579	386	94.78
		2	16	16	250	(A)	9175	-	-	-	-	-	9175	146.80	1.579	232	
		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	44.21	5a	25	52	175	(E)	400	4950	-	-	-	-	5350	278.20	3.854	1073	72.69
		5b	20	52	175	(E)	400	4950	-	-	-	-	5350	278.20	2.466	687	
		6	20	33	250	(A)	9175	-	-	-	-	-	9175	302.78	2.466	747	
		7	20	52	175	(B)	250	1200	250	-	-	-	1700	88.40	2.466	218	
		8	16	182	400	(D)	250	1200	250	-	-	-	1700	309.40	1.579	489	
		9	25	55	175	(B)	700	4650	700	-	-	-	6050	332.75	3.854	1283	
FOOTING	64.22	10	25	55	175	(B)	700	4650	700	-	-	-	6050	332.75	3.854	1283	69.72
		11	20	20	250	(B)	700	9740	700	-	-	-	111.40	222.80	2.466	550	
		12	20	20	250	(B)	700	9740	700	-	-	-	111.40	222.80	2.466	550	
		13	16	6	AS SHOWN	(A)	9740	-	-	-	-	-	97.40	58.44	1.579	93	
		14	16	6	AS SHOWN	(A)	4650	-	-	-	-	-	46.50	27.90	1.579	45	
		15	16	243	400	(D)	250	1250	250	-	-	-	1750	425.25	1.579	672	
DOWEL		16	16	22	300	(E)	650	500	-	-	-	-	1150	25.30	1.579	40	
TOTAL	116.12																GRADE 40 TOTAL = 2,070 kgs. GRADE 60 TOTAL = 6,391 kgs.

[illegible]

BAR BENDING DIAGRAM

(A)

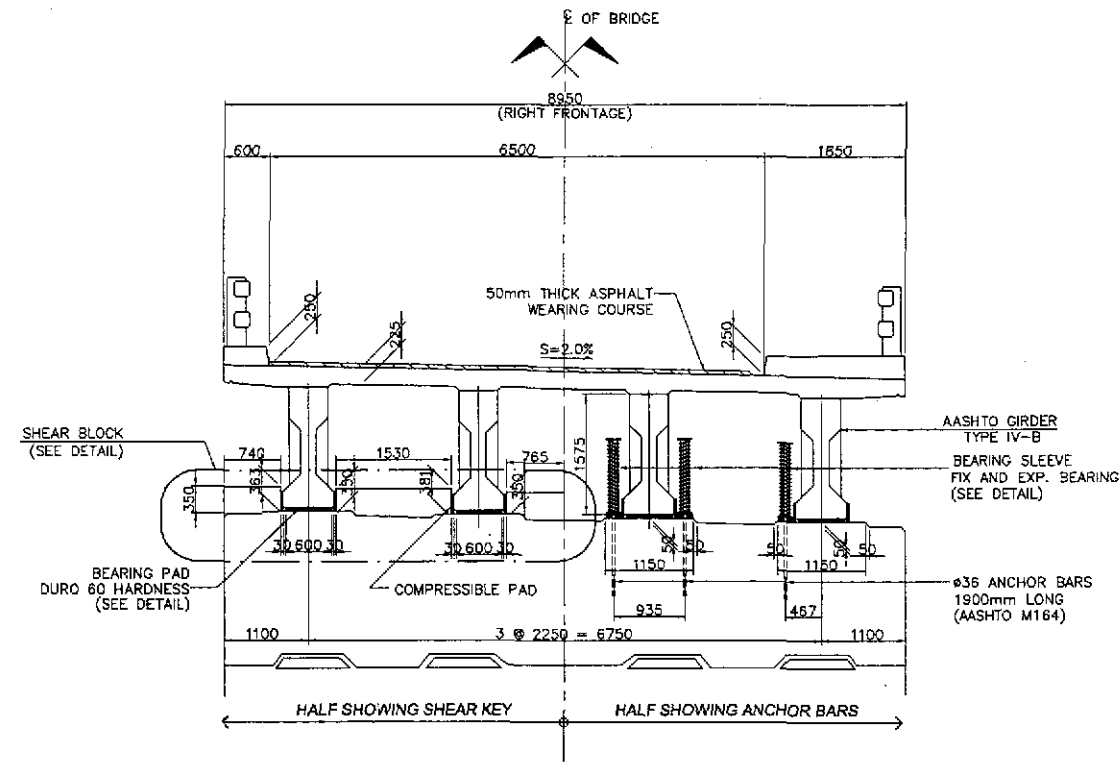
(B)

(C)

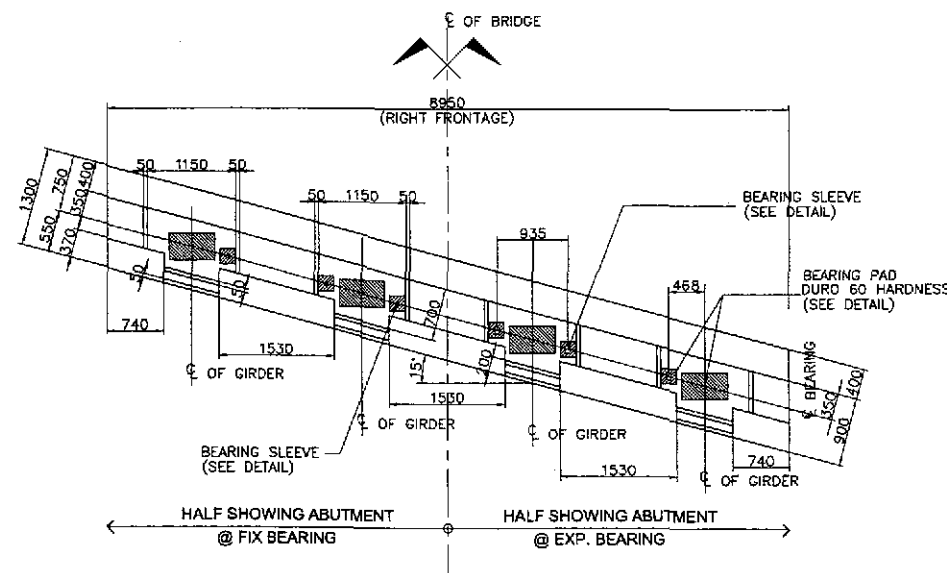
(D)

SCHEDULE OF REINFORCEMENT PER APPROACH SLAB

LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm)						OUT TO OUT	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/cu.m)
							a	b	c	d	e	f						
APPROACH SLAB	11.95	AS1	25	48	150	(B)	4900	200	-	-	-	-	5100	234.60	3.854	905	165.96	
		AS2	25	6	150	(B)	3600	200	-	-	-	-	3800	22.80	3.854	86		
		AS3	20	11	300	(A)	7000	-	-	-	-	-	7000	77.00	2.466	190		
		AS4	20	7	300	(A)	7600	-	-	-	-	-	7600	53.20	2.466	132		
		AS5	20	1	AS SHOWN	(A)	6500	-	-	-	-	-	6500	6.50	2.466	17		
		AS6	16	10	300	(A)	7050	-	-	-	-	-	7050	70.50	1.579	112		
		AS7	16	6	300	(A)	7600	-	-	-	-	-	7600	45.60	1.579	73		
		AS8	20	1	AS SHOWN	(A)	7600	-	-	-	-	-	7600	7.60	2.466	18		
		AS9	16	26	300	(B)	4900	200	-	-	-	-	5100	132.60	1.579	210		
		AS10	25	4	AS SHOWN	(C)	2000	3100	-	-	-	-	5100	20.40	3.854	79		
		AS11	15	2	300	(B)	3450	200	-	-	-	-	3650	14.60	1.579	24		
		AS12	25	2	AS SHOWN	(A)	7790	-	-	-	-	-	7790	15.58	3.854	61		
		AS13	15	38	300	(D)	400	500	200	700	-	-	1800	46.80	1.579	74		
TOTAL	11.95													GRADE 40 TOTAL = 493 kgs. GRADE 60 TOTAL = 1,491 kgs.				

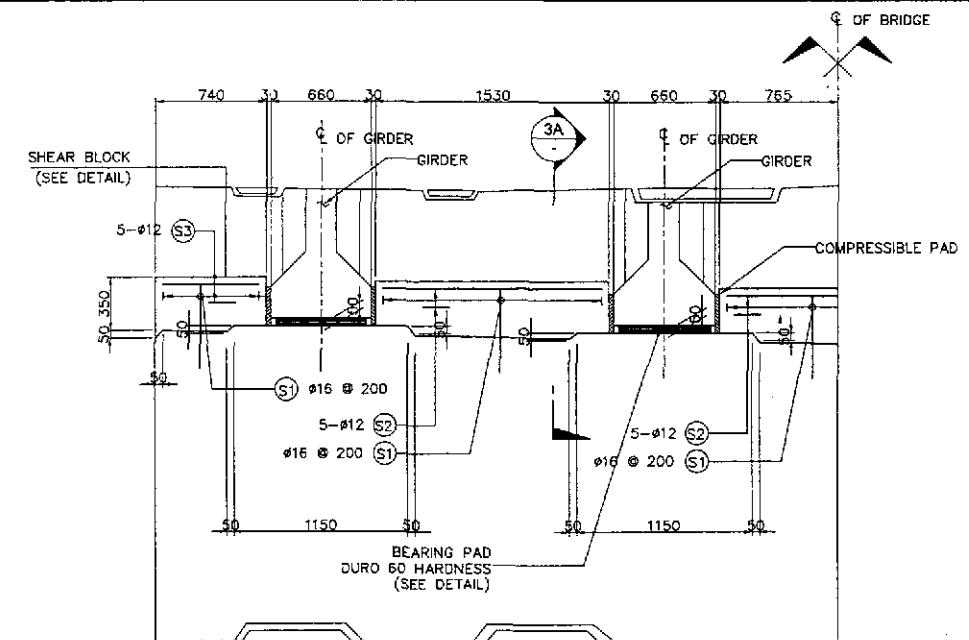


1 SECTION AT ABUTMENT SEAT
SCALE 1:50

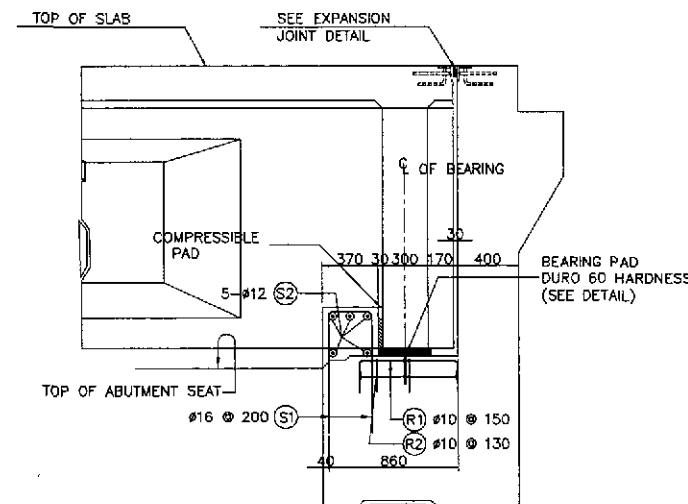


2 PLAN AT ABUTMENT SEAT
SCALE 1:50

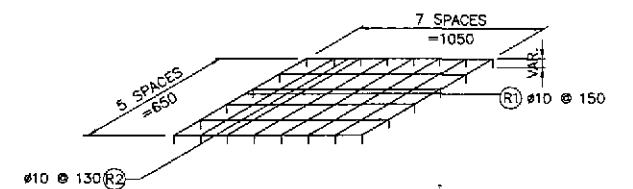
NOTE:
FOR LEFT FRONTAGE - IT IS THE MIRROR IMAGE OF THE SECTION, PLAN @ ABUTMENT SEAT OF RIGHT FRONTAGE.




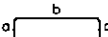
3 SHEAR BLOCK DETAIL
SCALE 1:25

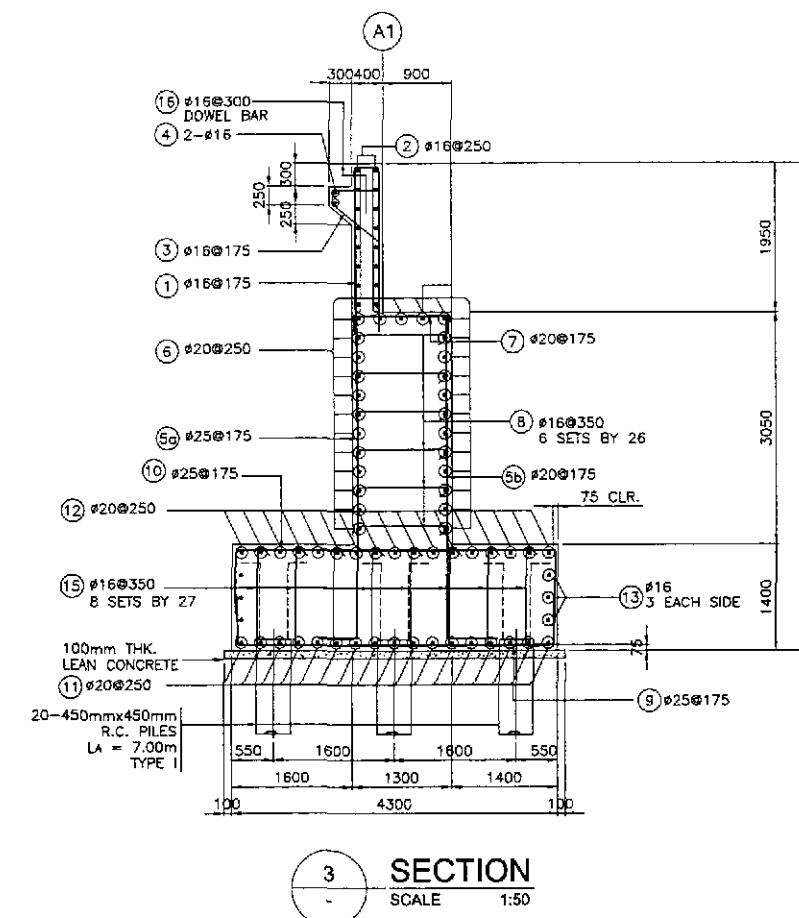
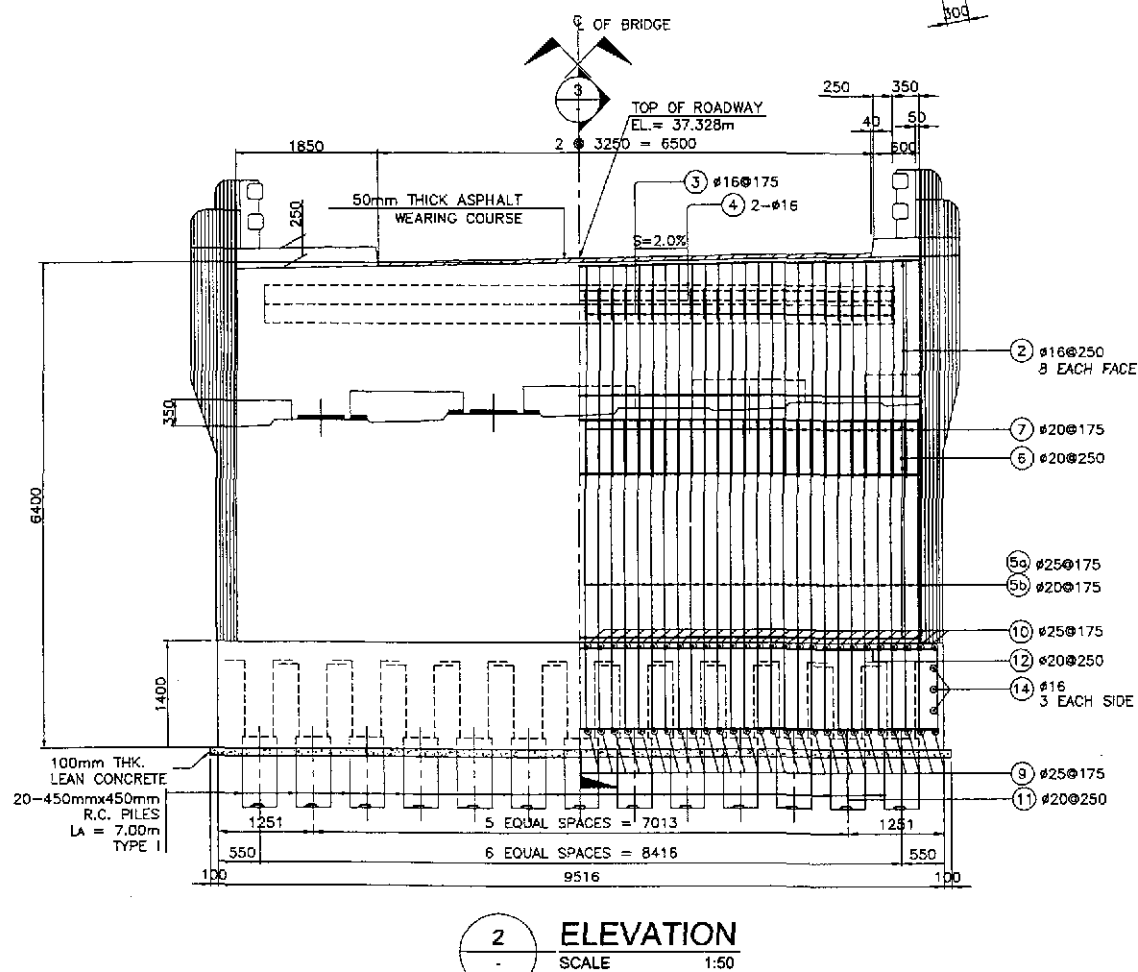
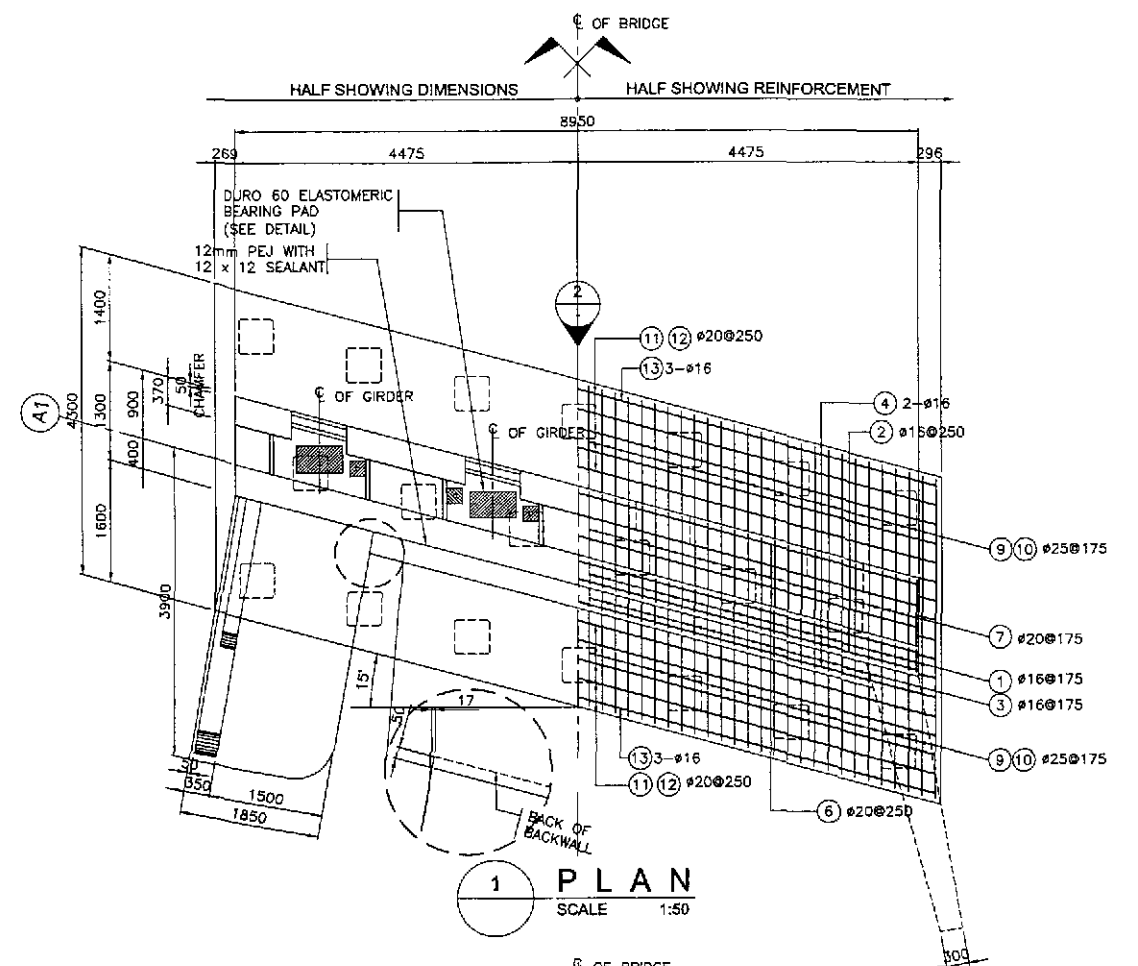


3A SECTION
SCALE 1:25



4 RISER REINFORCEMENT
SCALE NOT TO SCALE

BAR BENDING DIAGRAM																
<div>(A)</div> <div></div>							<div>(B)</div> <div></div>									
SCHEDULE OF REINFORCEMENT																
LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSION(mm) OUT TO OUT					LENGTH EACH BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m ³)
							a	b	c	d	e					
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.																



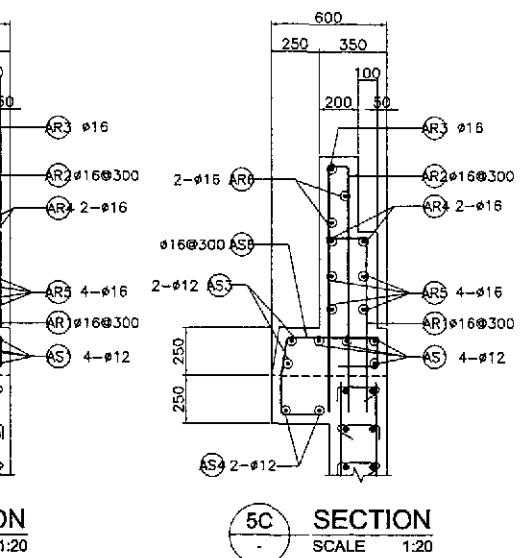
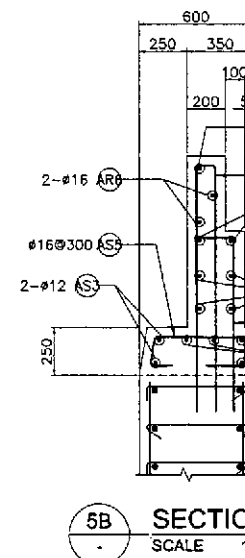
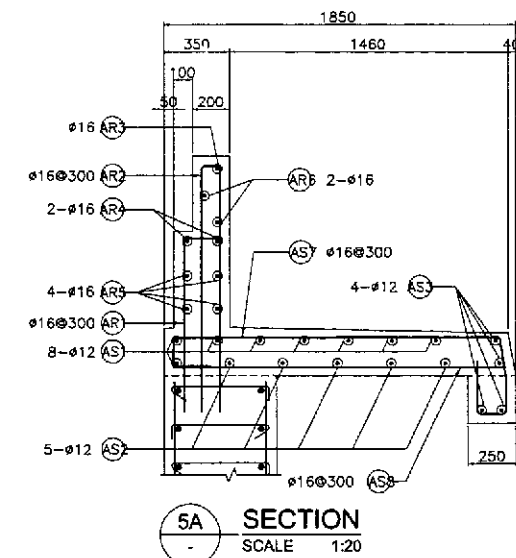
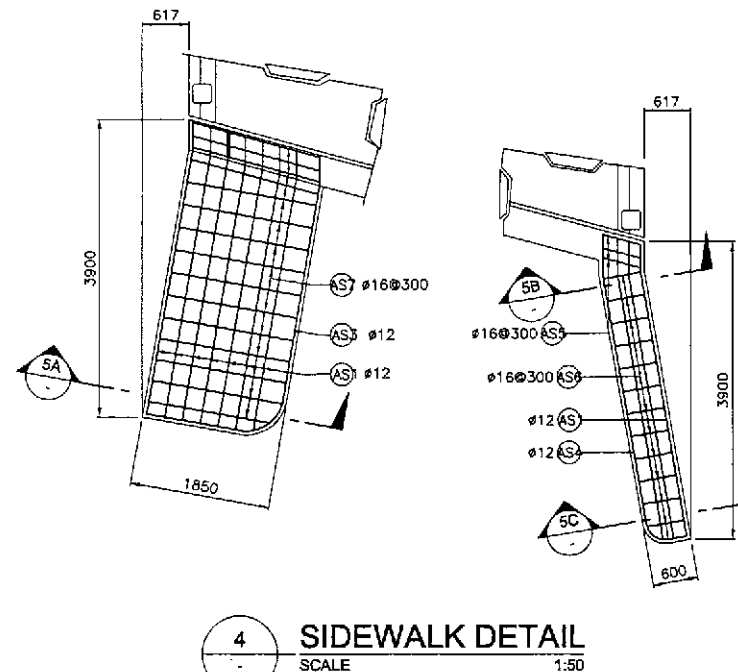
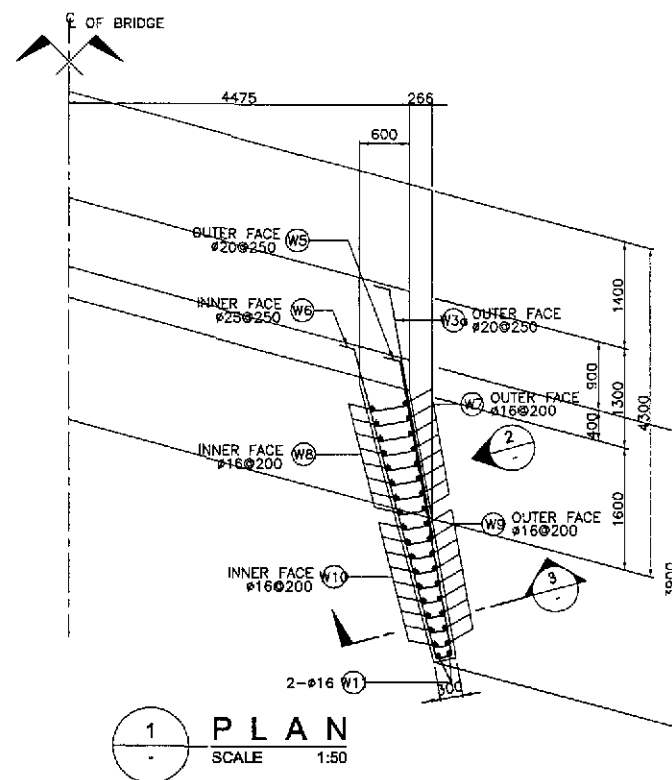
BAR BENDING DIAGRAM

SCHEDULE OF REINFORCEMENT PER ABUTMENT

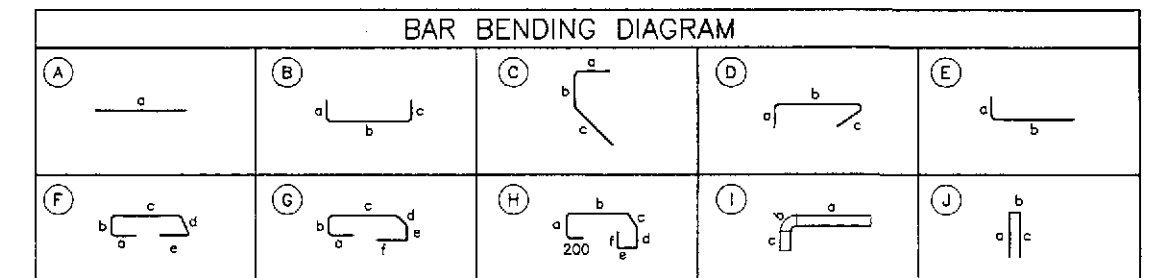
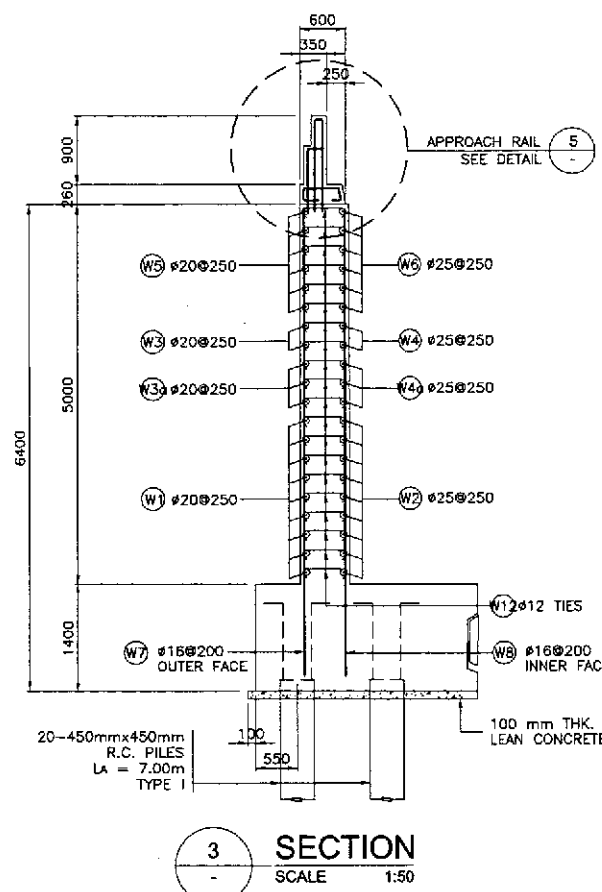
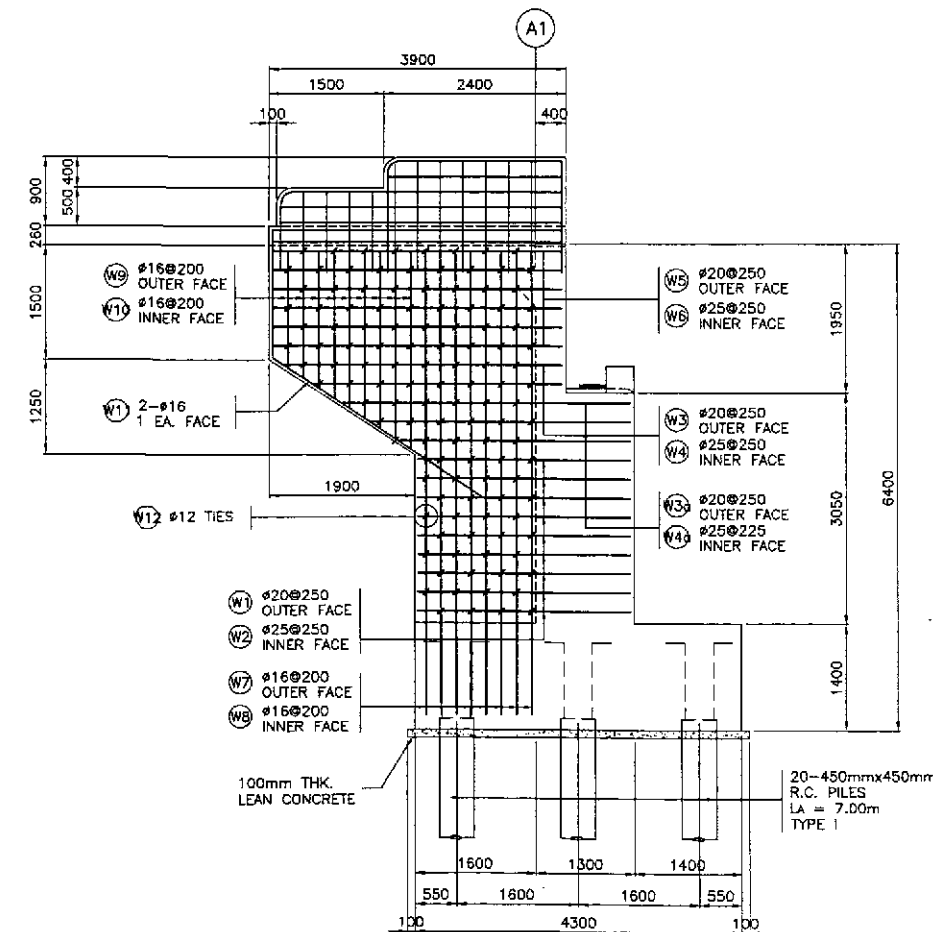
LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT						LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m ³)
							a	b	c	d	e	f					
BACKWALL	7.71	①	16	52	175	Ⓑ	2200	300	2200	-	-	-	4700	244.40	1.579	386	94.78
		②	16	16	250	Ⓐ	9175	-	-	-	-	-	9175	146.80	1.579	232	
		③	16	38	175	Ⓒ	600	150	750	-	-	-	1500	57.00	1.579	91	
		④	16	2	AS SHOWN	Ⓐ	6650	-	-	-	-	-	6650	13.30	1.579	22	
MAINWALL	35.49	⑤a	25	52	175	Ⓔ	400	4200	-	-	-	-	4600	239.20	3.854	922	77.78
		⑤b	20	52	175	Ⓔ	400	4200	-	-	-	-	4600	239.20	2.466	590	
		⑥	20	27	250	Ⓐ	9175	-	-	-	-	-	9175	247.73	2.466	611	
		⑦	20	52	200	Ⓑ	250	1200	250	-	-	-	1700	88.40	2.466	218	
		⑧	16	156	400	Ⓓ	250	1200	250	-	-	-	1700	265.20	1.579	419	
FOOTING	57.29	⑨	25	55	175	Ⓑ	700	4150	700	-	-	-	5550	305.25	3.854	1177	71.03
		⑩	25	55	175	Ⓑ	700	4150	700	-	-	-	5550	305.25	3.854	1177	
		⑪	20	18	250	Ⓑ	700	9700	700	-	-	-	11100	199.80	2.466	493	
		⑫	20	18	250	Ⓑ	700	9700	700	-	-	-	11100	199.80	2.466	493	
		⑬	16	6	AS SHOWN	Ⓐ	9700	-	-	-	-	-	9700	58.20	1.579	92	
		⑭	16	6	AS SHOWN	Ⓐ	4150	-	-	-	-	-	4150	24.90	1.579	40	
		⑮	16	216	400	Ⓓ	250	1250	250	-	-	-	1750	378.00	1.579	597	
		⑯	16	22	300	Ⓔ	650	500	-	-	-	-	1150	25.30	1.579	40	
DOWEL																	
TOTAL	100.49																

GRADE 40 TOTAL = 1,919 kgs.
GRADE 60 TOTAL = 5,681 kgs.

 JAPAN INTERNATIONAL COOPERATION AGENCY		 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS		PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plandel, Cabanatuan and San Jose Bypasses)		SCALE : 1:50		SHEET CONTENTS : BRIDGE NO. 8 ABUTMENT A1 MAINWALL REINFORCEMENT DETAILS LEFT FRONTAGE(ULTIMATE STAGE)		SHEET NO. : B8-25	
DESIGNED	10/09/02	SIGNATURE	A. P. GONZALES	REVIEWED	10/16/02	SIGNATURE	MANUEL M. BONGAN	APPROVED	10/16/02	SIGNATURE	SIMEON A. DATUMANONG
CHECKED	10/16/02	SIGNATURE	DANLO C. TRAJANO	REVIEWED	10/16/02	SIGNATURE	ADRIANO M. DOROS	APPROVED	10/16/02	SIGNATURE	GILBERTO S. REYES
SUBMITTED	10/16/02	SIGNATURE	MANUEL M. BONGAN	REVIEWED	10/16/02	SIGNATURE	SIMEON A. DATUMANONG	APPROVED	10/16/02	SIGNATURE	ADRIANO M. DOROS



5 APPROACH RAIL DETAILS
SCALE 1:20








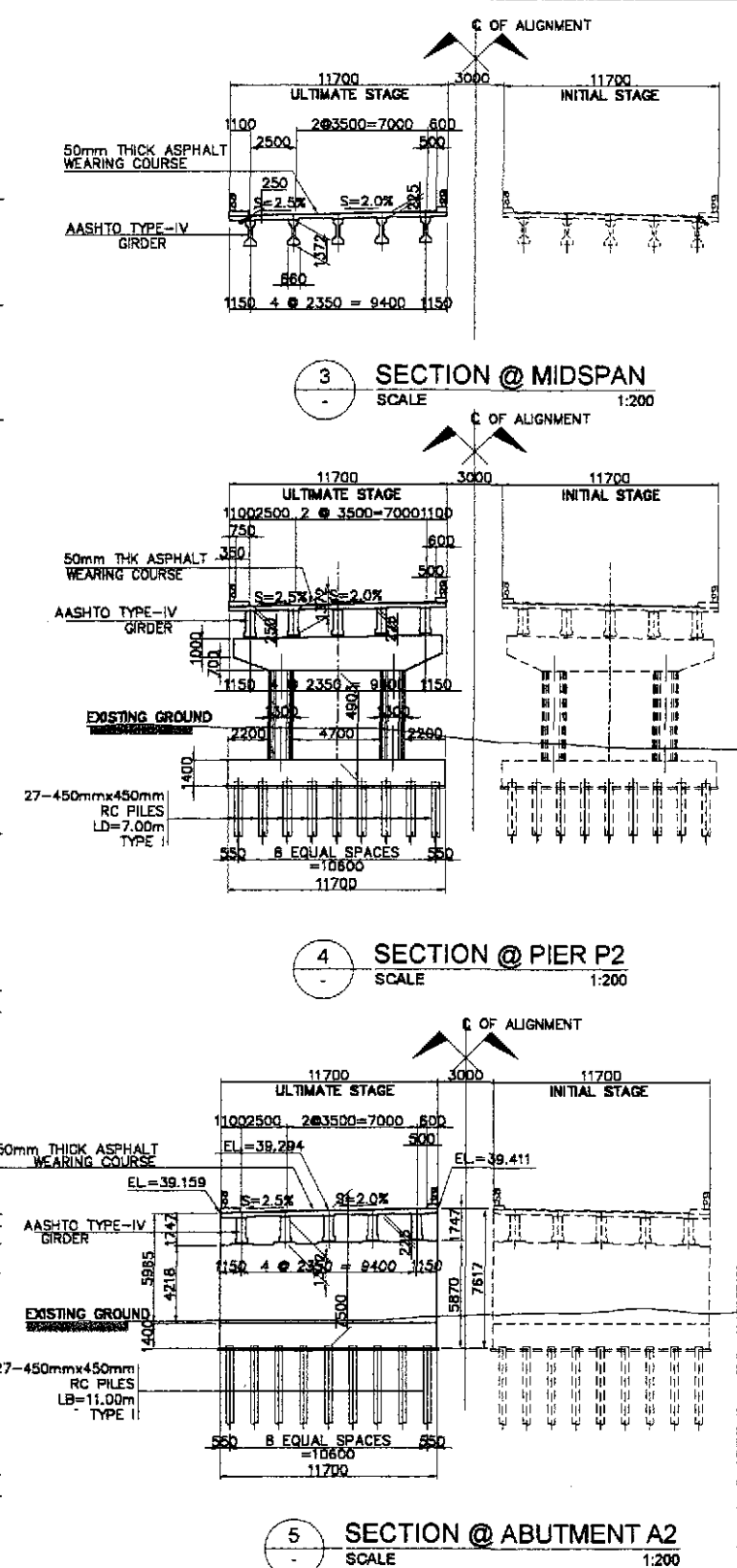
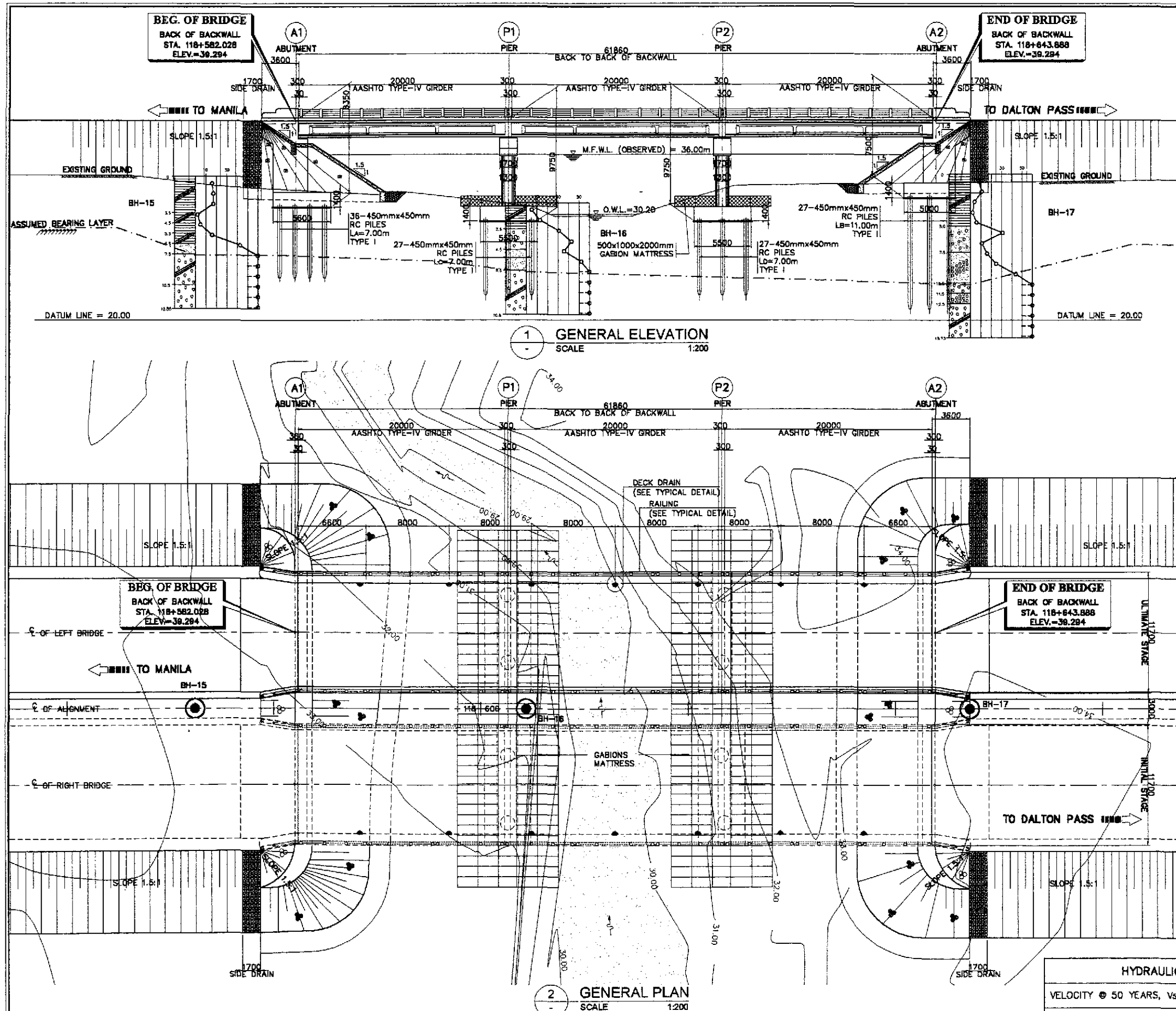
SCHEDULE OF REINFORCEMENT PER ABUTMENT																		
LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm)						OUT TO OUT	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m ³)
							a	b	c	d	e	f						
WINGWALL	10.83	W1	20	18	250	(B)	400	2800	150	-	-	-	3350	60.30	2.466	149	150.46	
		W2	25	18	250	(B)	400	2800	150	-	-	-	3350	60.30	3.854	233		
		W3	20	4	250	(B)	400	3475	150	-	-	-	4025	16.10	2.466	40		
		W3a	20	6	250	(B)	400	3450	150	-	-	-	4000	24.00	2.466	60		
		W4	25	4	250	(B)	400	3475	150	-	-	-	4025	16.10	3.854	63		
		W4a	25	6	250	(B)	400	3450	150	-	-	-	4000	24.00	3.854	93		
		W5	20	12	250	(B)	400	3800	150	-	-	-	4350	52.20	2.466	129		
		W6	25	12	250	(B)	400	3800	150	-	-	-	4350	52.20	3.854	202		
		W7	16	16	200	(E)	250	6150	-	-	-	-	6400	102.40	1.579	162		
		W8	16	16	200	(E)	250	6150	-	-	-	-	6400	102.40	1.579	162		
		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	240	AS SHOWN	(D)	170	450	170	-	-	-	790	189.60	0.888	169		
														GRADE 60 TOTAL = 969 kgs.				
														GRADE 40 TOTAL = 661 kgs.				
APPROACH RAILING AND SIDEWALK	4.65	AS1	12	12	AS SHOWN	(A)	3800	-	-	-	-	-	3800	45.60	0.888	41	90.71	
		AS2	12	5	AS SHOWN	(A)	3800	-	-	-	-	-	3800	19.00	0.888	17		
		AS3	12	6	AS SHOWN	(A)	3800	-	-	-	-	-	3800	22.80	0.888	21		
		AS4	12	2	AS SHOWN	(A)	3800	-	-	-	-	-	3800	7.60	0.888	7		
		AS5	16	3	300	(G)	200	170	480	200	170	200	1420	4.26	1.579	7		
		AS6	16	12	300	(F)	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	16	300	(J)	1300	120	1300	-	-	-	2720	43.52	1.579	69		
		AR3	16	2	AS SHOWN	(I)	2200	236	900	-	-	-	3336	6.67	1.579	11		
		AR4	16	4	AS SHOWN	(I)	3700	236	1300	-	-	-	5236	20.94	1.579	34		
		AR5	16	8	AS SHOWN	(A)	3700	-	-	-	-	-	3700	29.60	1.579	47		
		AR6	16	4	AS SHOWN	(A)	2300	-	-	-	-	-	2300	9.20	1.579	15		
														GRADE 60 TOTAL = 969 kgs.				
														GRADE 40 TOTAL = 1,083 kgs.				
TOTAL	4.52														GRADE 60 TOTAL = 969 kgs.		GRADE 40 TOTAL = 1,083 kgs.	



2 WINGWALL ELEVATION
SCALE 1:50



<div> JAPAN INTERNATIONAL COOPERATION AGENCY</div> <div> KATAHIRA & ENGINEERS INTERNATIONAL</div> <div> YACHIMO ENGINEERING CO., LTD.</div>		DATE 10/09/02	SIGNATURE  A. P. GONZALES	<div> REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</div> <div><div>PJHL – PMO</div><div>BUREAU OF DESIGN</div><div>OFFICE OF THE SECRETARY</div></div> <div>Submitted By: DANILLO C. TRAJANO Project Director</div> <div>Reviewed By: ADRIANO M. DORCY Chief, Bridges Division</div> <div>Recommended By: GILBERTO S. REYES Director IV (QC)</div> <div>Recommended By: (See cover sheet for Signature/Approval) MANUEL M. BONGDAN Undersecretary</div> <div>Approved By: (See cover sheet for Signature/Approval) SIMON A. DATUMANONG Secretary</div>					PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : AS SHOWN	SHEET CONTENTS : BRIDGE NO. 8 ABUTMENT A2 WINGWALL REINFORCEMENT DETAILS LEFT FRONTAGE (ULTIMATE STAGE)	SHEET NO. : B8-28
CHECKED 10/16/02		SUBMITTED 10/18/02		TEAM LEADER		CABANATUAN BYPASS - CONTRACT PACKAGE II		FULL SIZE A1				



NOTE : PRIOR TO CONSTRUCTION SOIL INVESTIGATION AT ABUTMENT A1 AND PIER P2 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.

HYDRAULIC DESIGN DATA	
VELOCITY @ 50 YEARS, V_{50}	2.097 m/sec
DISCHARGE @ 50 YEARS, Q_{50}	65,000 cu.m/sec
CATCHMENT AREA, CA	11,950 sq. km

CABANATUAN BRIDGE NO.9 (STA.118+582.028)
SCALE AS SHOWN

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

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS
INTERNATIONAL

YEO YACHIYO ENGINEERING
CO., LTD.

DATE	SIGNATURE
10/04/02	<i>[Signature]</i>
10/14/02	<i>[Signature]</i>
10/18/02	<i>[Signature]</i>

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

BUREAU OF DESIGN

OFFICE OF THE SECRETARY

Submitted By: *[Signature]*
Reviewed By: *[Signature]*
Recommended By: *[Signature]*
Approved By: *[Signature]*

DANILO C. TRAJANO
Project Director

ADRIANO M. OORDY
Chief, Bridges Division

GILBERTO S. REYES
Director IV (GIC)

MANUEL M. BONDAN
Undersecretary

SIMEON A. DATUMANONG
Secretary

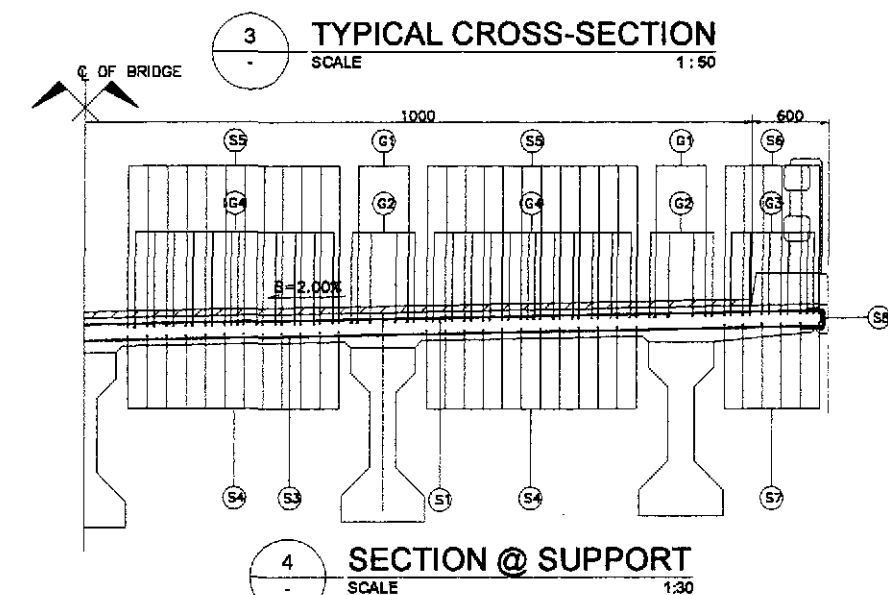
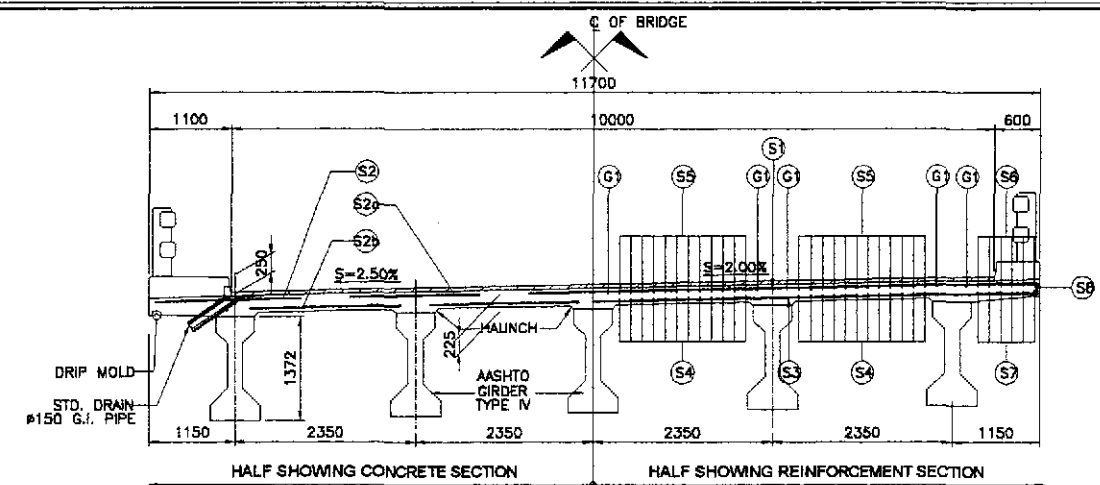
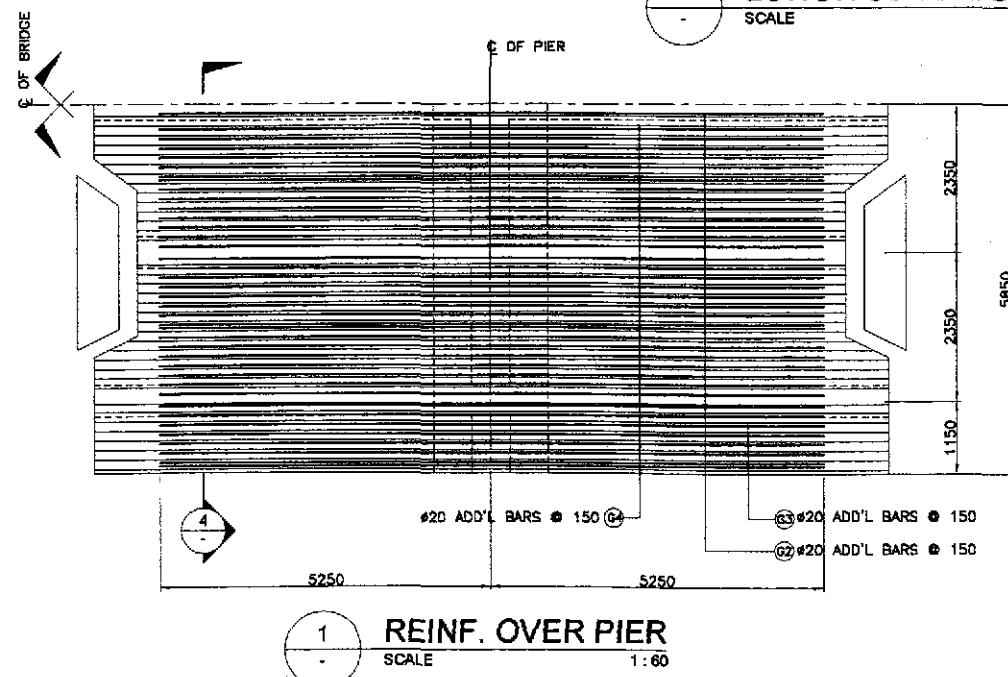
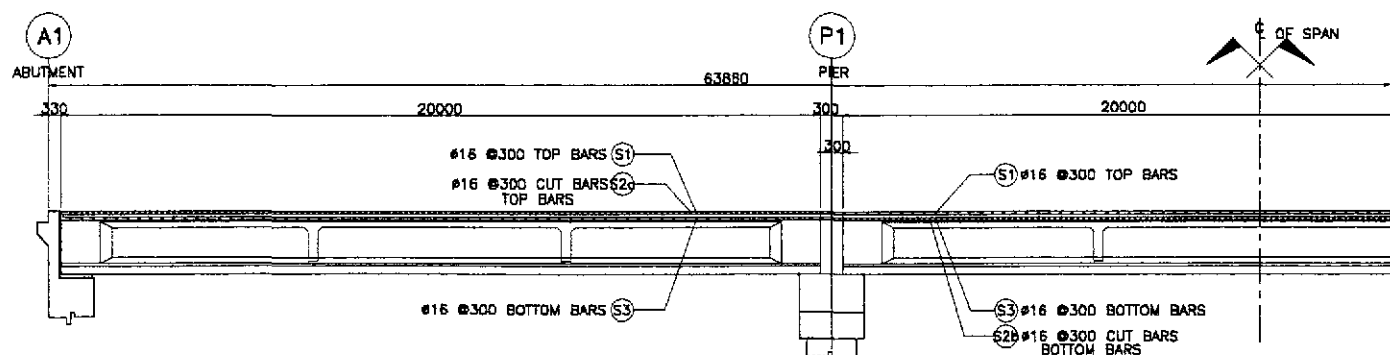
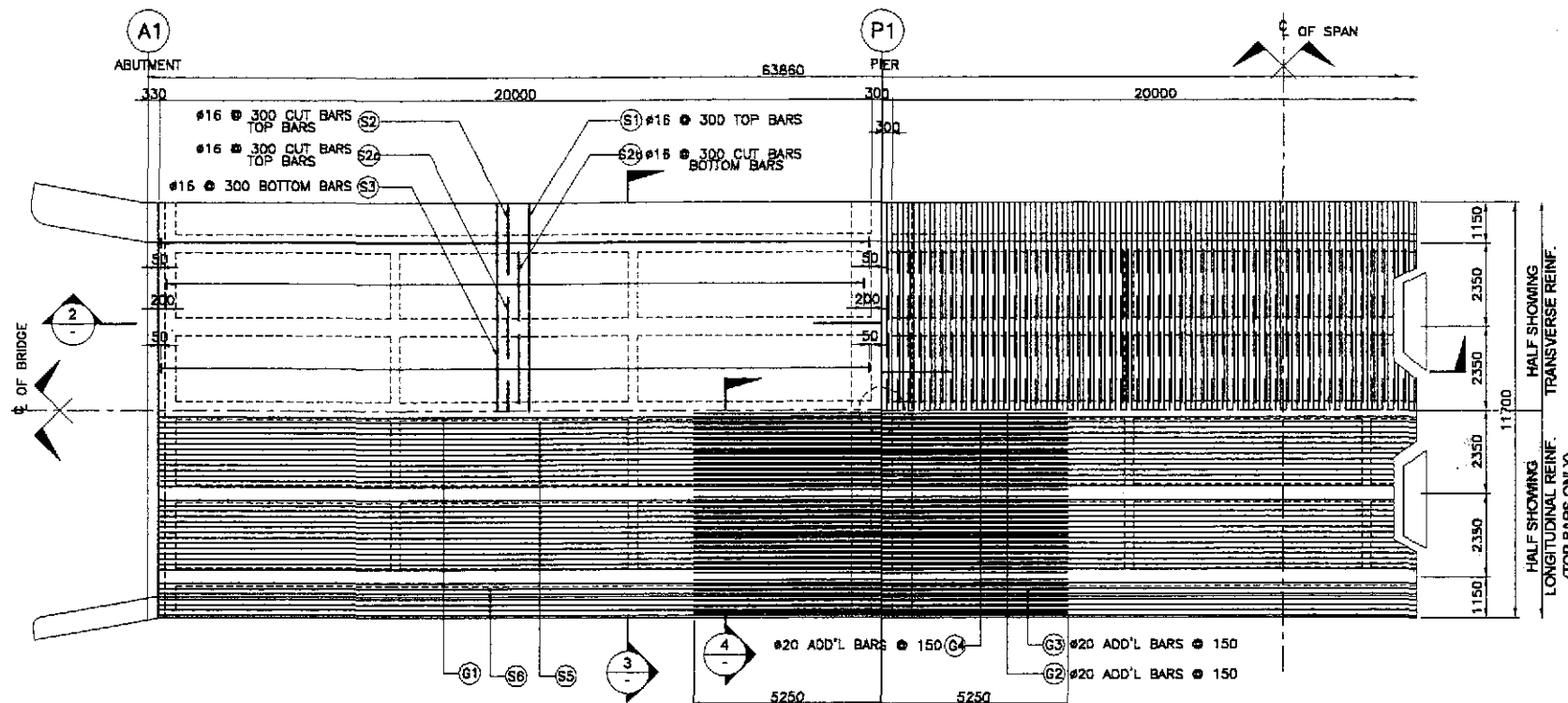
PROJECT AND LOCATION :
THE DETAILED DESIGN STUDY ON
UPGRADING INTER-URBAN HIGHWAY SYSTEM
ALONG THE PAN-PHILIPPINE HIGHWAY
(Plaridel, Cabanatuan and San Jose Bypasses)

CABANATUAN BYPASS - CONTRACT PACKAGE II

SCALE :
1 : 200
FULL SIZE A1

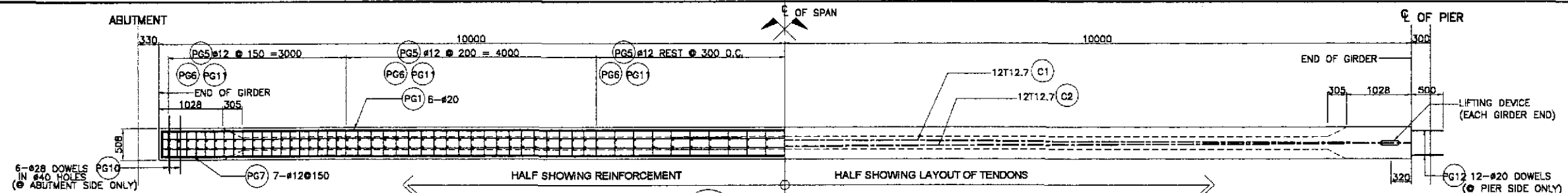
SHEET CONTENTS :
BRIDGE NO.9
GENERAL PLAN, ELEVATION
AND SECTIONS
(ULTIMATE STAGE)

SHEET NO. :
B9-01

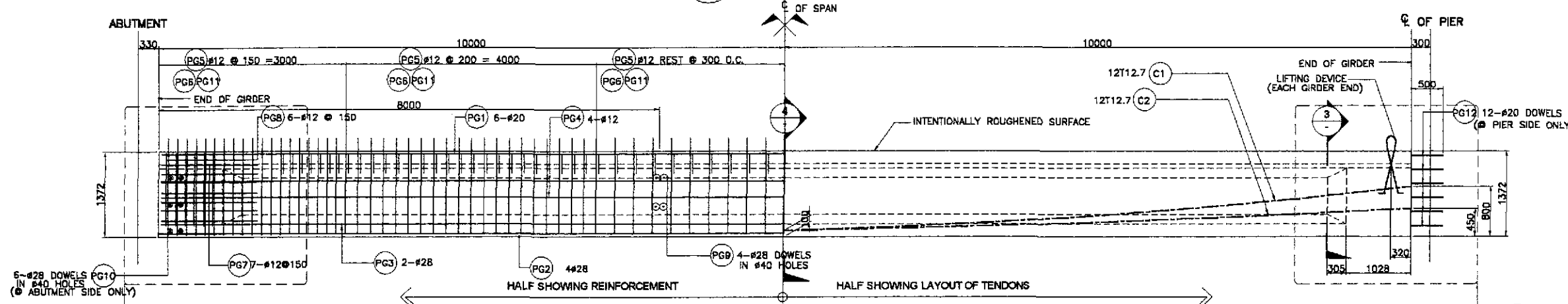


BAR BENDING DIAGRAM															
SCHEDULE OF REINFORCEMENT															
LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT				LENGTH EACH BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT IN (kg)	REBAR RATIO (kg/m³)
							a	b	c	d					
DECK SLAB	166.32	G1	16	10	AS SHOWN	(A)	61100	-	-	-	61100	611.00	1.579	965	180.27
		G2	20	40	150	(A)	10500	-	-	-	10500	420.00	2.466	1036	
		G3	20	24	150	(A)	10500	-	-	-	10500	252.00	2.466	622	
		G4	20	96	150	(A)	10500	-	-	-	10500	1008.00	2.466	2486	
		S1	16	201	300	(C)	145	11800	145	-	11890	2389.89	1.579	3774	
		S2	16	396	300	(B)	145	8590	-	-	2145	849.42	1.579	1342	
		S2a	16	584	300	(A)	1700	-	-	-	1700	1009.80	1.579	1595	
		S2b	16	792	300	(A)	1950	-	-	-	1950	1544.40	1.579	2439	
		S3	16	201	300	(A)	11600	-	-	-	11600	2331.60	1.579	3682	
		S4	16	48	150	(A)	61100	-	-	-	61100	2932.80	1.579	4631	
		S5	16	48	150	(A)	61100	-	-	-	61100	2932.80	1.579	4631	
		S6	16	12	AS SHOWN	(A)	61100	-	-	-	61100	733.20	1.579	1158	
		S7	16	12	AS SHOWN	(A)	61100	-	-	-	61100	733.20	1.579	1158	
		S8	12	268	450	(E)	145	900	600	300	1945	521.26	0.888	463	
TOTAL	166.32											GRADE 40 TOTAL = 25,838 kgs. GRADE 60 TOTAL = 4144 kgs.			

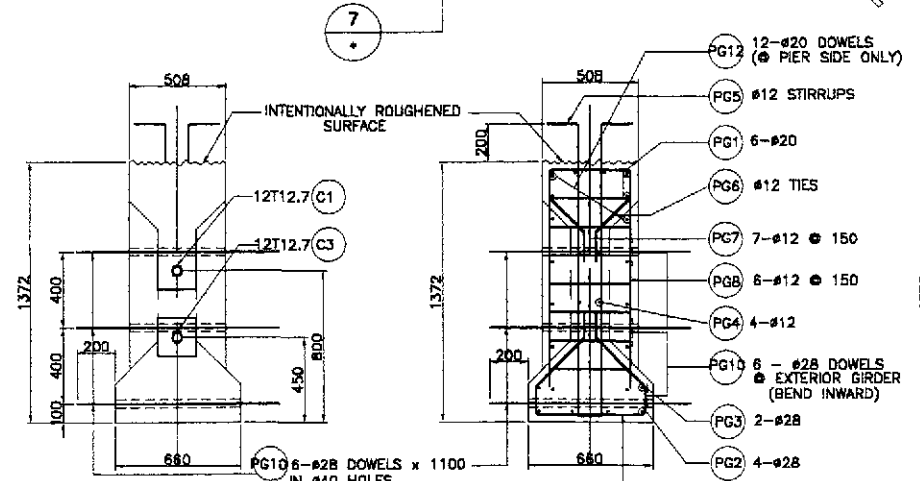
ESTIMATED QUANTITIES OF SUPERSTRUCTURE			
ITEM NO.	DESCRIPTION	UNIT	TOTAL
404(1)a	REINFORCING STEEL GRADE 40	kgs.	45267
	DECK SLAB	25838.00	
	DIAPHRAGM	1005.00	
	GIRDER	11415.00	
	SIDEWALK, RAILING, & POST	5693.00	
	APPROACH SLAB	1316.00	
404(1)b	REINFORCING STEEL GRADE 60	kgs.	27451
	DECK SLAB	4144.00	
	DIAPHRAGM	3406.00	
	GIRDER	14385.00	
	SIDEWALK, RAILING, & POST	1328.00	
	APPROACH SLAB	4188.00	
405(1)	STRUCTURAL CONCRETE	cu. m.	422.67
	DECK SLAB	166.32	
	DIAPHRAGM	20.97	
	GIRDER	159.58	
	SIDEWALK, RAILING, & POST	40.67	
	APPROACH SLAB	35.13	



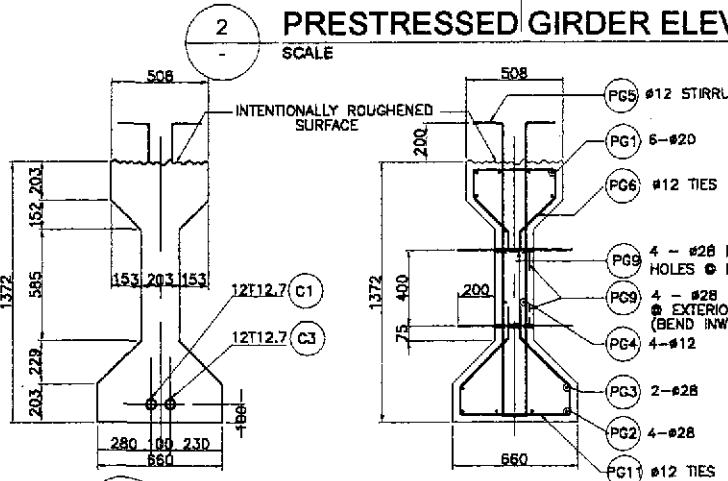
1 PLAN
SCALE 1:40



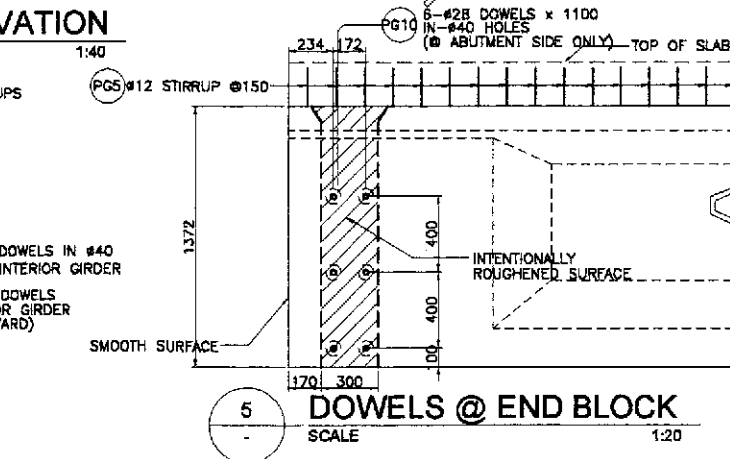
2 PRESTRESSED GIRDER ELEVATION
SCALE 1:40



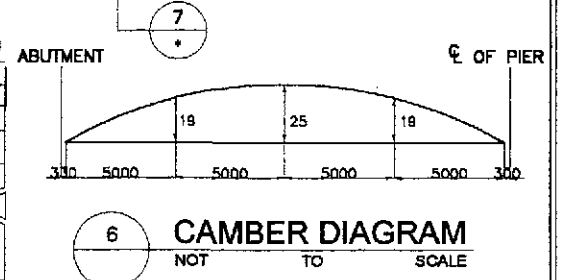
3 SECTION AT END
SCALE 1:20



4 SECTION AT MIDSPAN
SCALE 1:20



5 DOWELS @ END BLOCK
SCALE 1:20

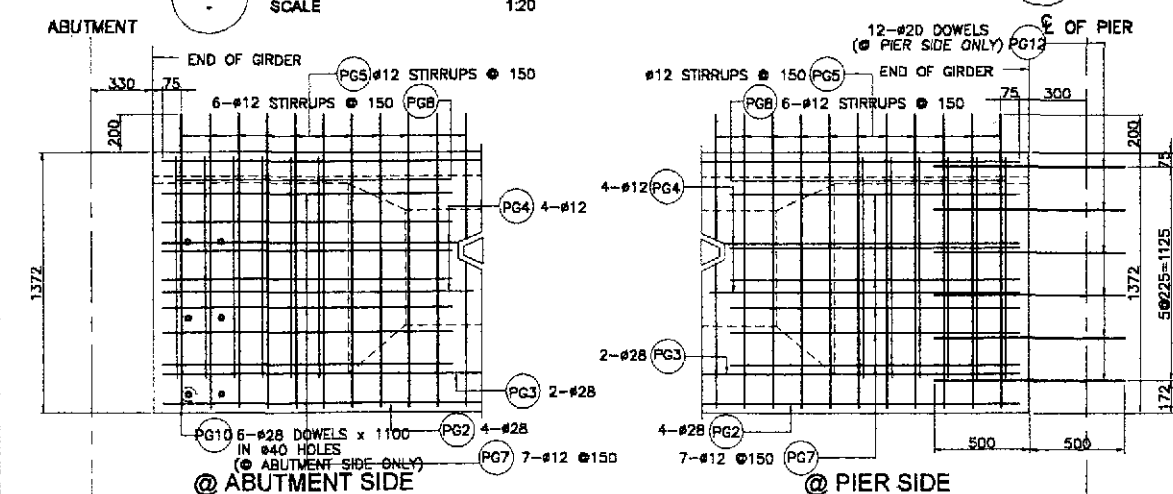


- NOTES:
- 1.) SEE GENERAL NOTES, -2, FOR GIRDER DESIGN GUIDE.
 - 2.) JACKING FORCE PER GIRDER, $P_j = 3,304$ KN.
 - 3.) JACKING WILL BE DONE AT BOTH ENDS.
 - 4.) FINAL PRESTRESSING FORCE @ MIDSPAN, $F_{net} = 2430$ KN.

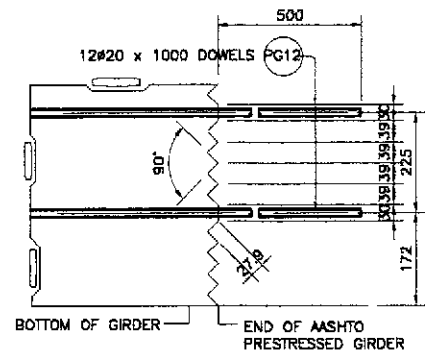
BAR BENDING DIAGRAM									
A	B	C	D	E	F	G	H		

SCHEDULE OF REINFORCEMENT																	
STRUCTURE COMPONENT	BAR MARK	SIZE (mm)	QTY.	SPACING	BAR SHAPE	DIMENSION (mm)					LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONC. VOLUME (cu.m)	REBAR RATIO (kg/cu.m)	REMARKS
						a	b	c	d	e							
GIRDER	PG1	20	6	AS SHOWN	(A)	19920	-	-	-	-	19920	119.52	2.466	295	10.64	161.68	QUANTITIES ARE FOR ONE (1) GIRDER ONLY
	PG2	28	4	AS SHOWN	(A)	18920	-	-	-	-	18920	79.68	4.833	386			
	PG3	28	2	AS SHOWN	(A)	19920	-	-	-	-	19920	39.84	4.833	193			
	PG4	12	4	AS SHOWN	(A)	18920	-	-	-	-	18920	79.68	0.888	71			
	PG5	12	100	150	(G)	100	1540	103	-	-	3383	338.30	0.888	301			
	PG6	12	100	150	(E)	430	160	150	260	-	1570	157.00	0.888	140			
	PG7	12	14	150	(D)	430	1000	550	-	-	3530	49.42	0.888	44			
	PG8	12	12	150	(C)	430	1230	150	-	-	3180	38.28	0.888	34			
	PG9	28	8	AS SHOWN	(A)	803	-	-	-	-	803	4.82	4.833	24			
	PG10	28	6	AS SHOWN	(A)	1060	-	-	-	-	1060	6.36	4.833	31			
	PG11	12	100	150	(E)	580	160	150	360	-	1920	192.00	0.888	171			
	PG12	20	12	AS SHOWN	(A)	1000	-	-	-	-	1000	12.00	2.466	30			

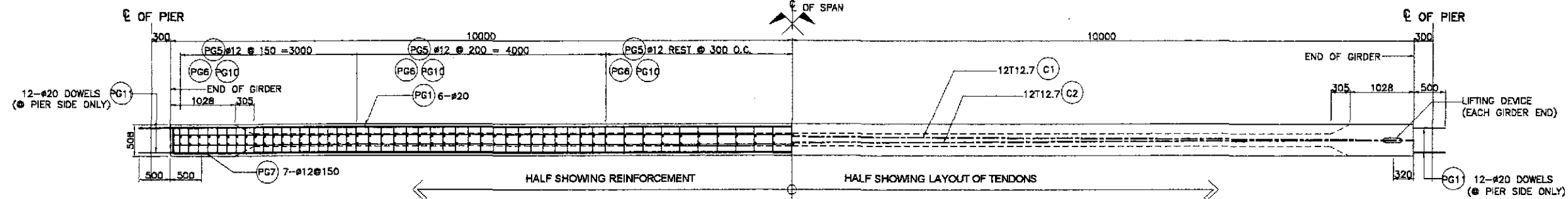
GRADE 40 TOTAL = 761 kgs.
GRADE 60 TOTAL = 959 kgs.



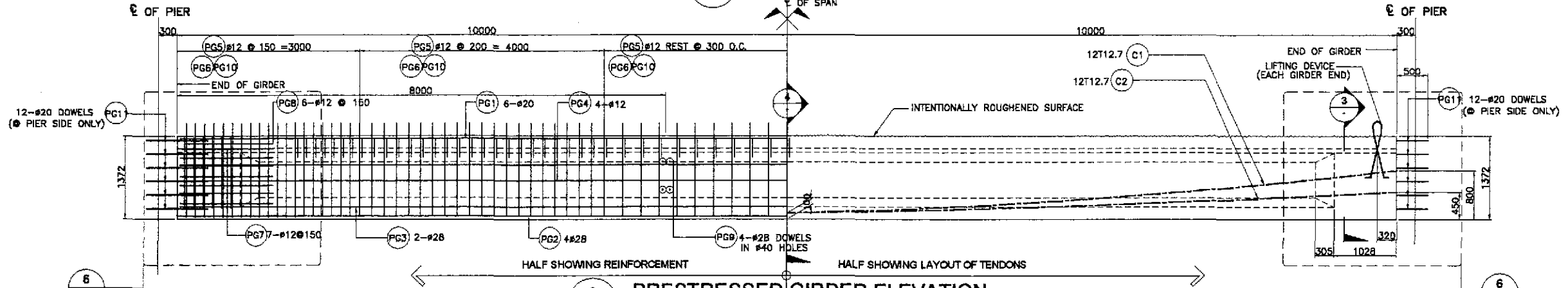
7 END BLOCK REINF. DETAIL
SCALE 1:20



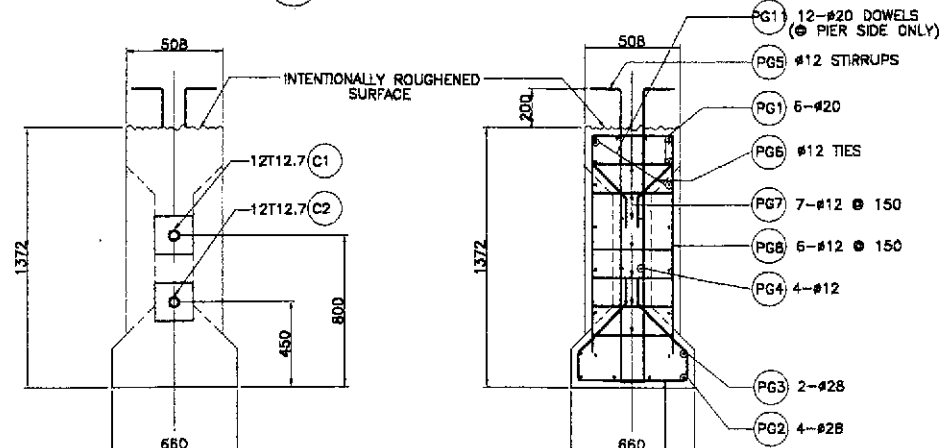
8 TOOTH DETAIL
SCALE N.T.S.



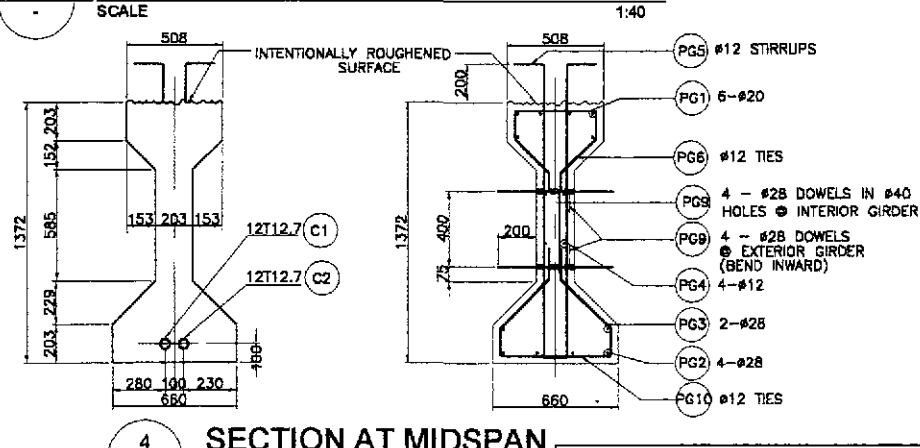
1 PLAN
SCALE 1:40



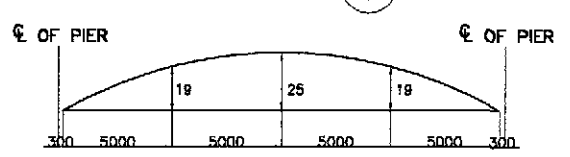
2 PRESTRESSED GIRDER ELEVATION
SCALE 1:40



3 SECTION AT END
SCALE 1:20

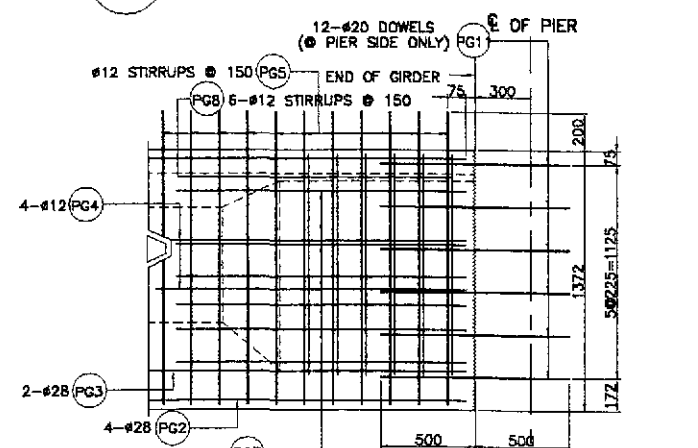


4 SECTION AT MIDSPAN
SCALE 1:20

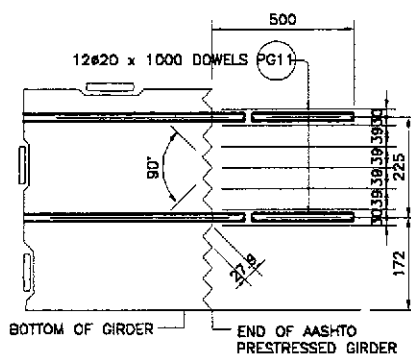


5 CAMBER DIAGRAM
NOT TO SCALE

- NOTES:
- SEE GENERAL NOTES, -2, FOR GIRDER DESIGN GUIDE.
 - JACKING FORCE PER GIRDER, $P_j = 3,304$ KN.
 - JACKING WILL BE DONE AT BOTH ENDS.
 - FINAL PRESTRESSING FORCE @ MIDSPAN, $P_{mid} = 2430$ kN.



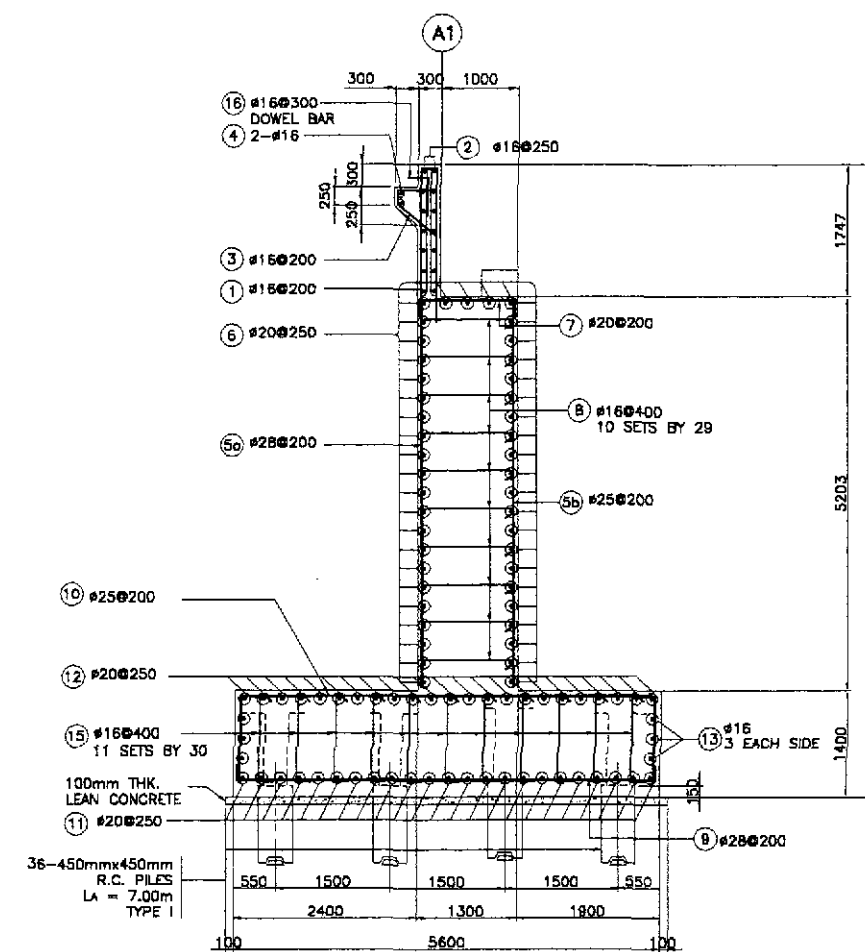
6 END BLOCK REINF. DETAIL @ PIER SIDE
SCALE 1:20



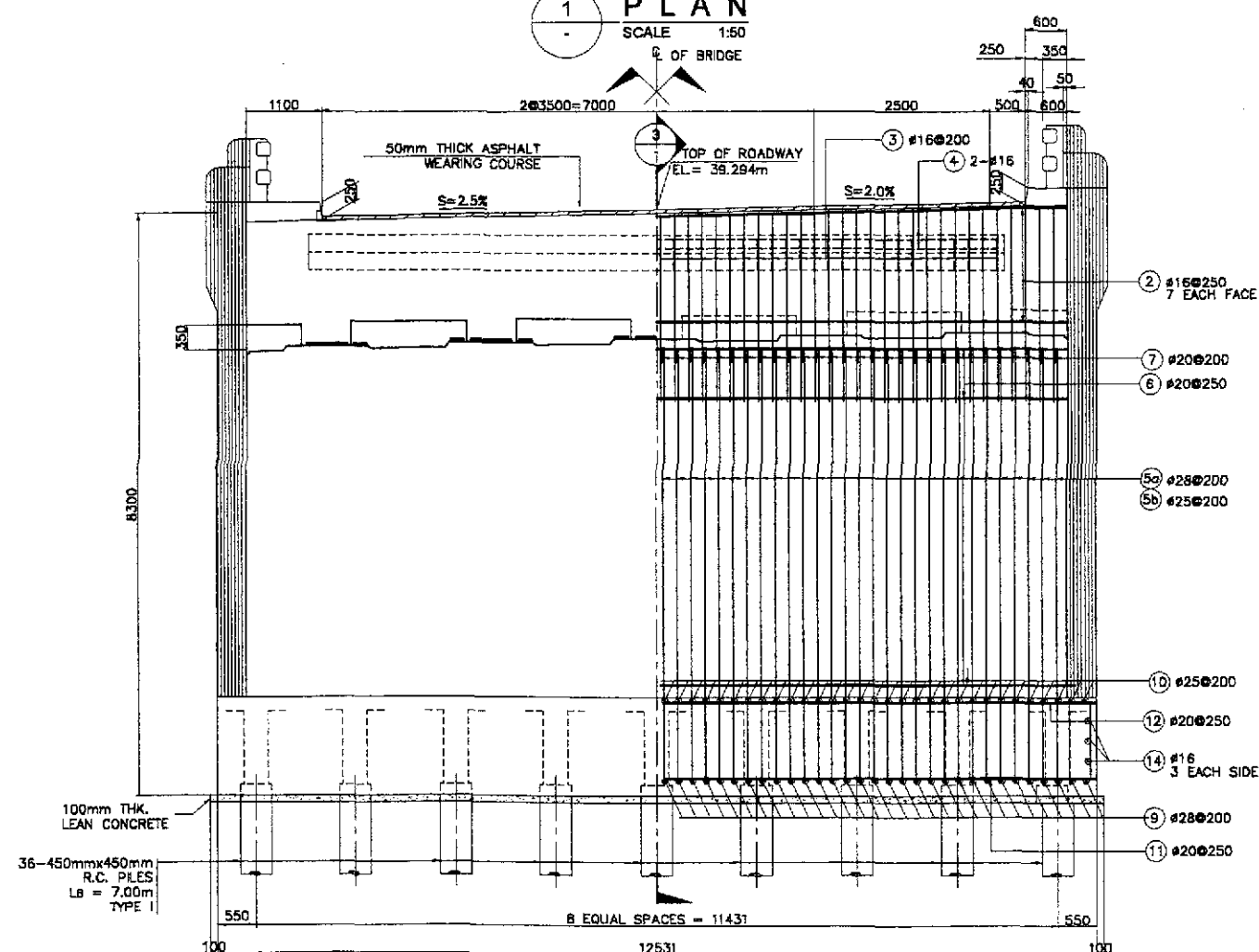
7 TOOTH DETAIL
SCALE N.T.S.

BAR BENDING DIAGRAM																	
SCHEDULE OF REINFORCEMENT																	
STRUCTURE COMPONENT	BAR MARK	SIZE (mm)	QTY.	SPACING	BAR SHAPE	DIMENSION(mm)					LENGTH PER BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONC. VOLUME (cu.m)	REBAR RATIO (kg/cu.m)	REMARKS
						a	b	c	d	e							
GIRDER	PG1	20	8	AS SHOWN	(A)	19920	-	-	-	-	19920	119.52	2.466	295	10.64	161.58	QUANTITIES ARE FOR ONE (1) GIRDER ONLY
	PG2	28	4	AS SHOWN	(A)	19920	-	-	-	-	19920	79.68	4.833	386			
	PG3	28	2	AS SHOWN	(A)	19920	-	-	-	-	19920	39.84	4.833	193			
	PG4	12	4	AS SHOWN	(A)	19920	-	-	-	-	19920	79.68	0.888	71			
	PG5	12	100	150	(C)	100	1540	103	-	-	3383	338.30	0.888	301			
	PG6	12	100	150	(E)	430	160	150	260	-	1570	157.00	0.888	140			
	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	12	100	150	(E)	580	160	150	360	-	1920	192.00	0.888	171			
	PG11	20	24	AS SHOWN	(A)	1000	-	-	-	-	1000	24.00	2.466	60			

QUANTITIES ARE FOR ONE (1) GIRDER ONLY




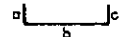
3 SECTION
SCALE 1:50




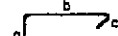
2 ELEVATION
- SCALE 1:50

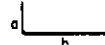
BAR BENDING DIAGRAM

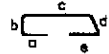
(A) 

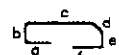
(B) 

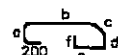
(C) 

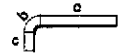
(D) 


(E) 

(F) 

(G) 

(H) 

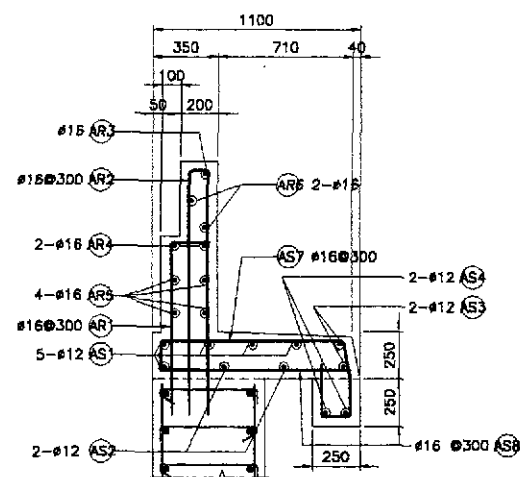
(I) 

(J) 

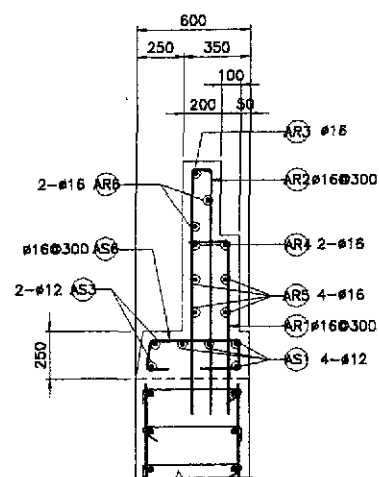
SCHEDULE OF REINFORCEMENT PER ABUTMENT

LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT						LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m ³)
							a	b	c	d	e	f					
BACKWALL	7.26	①	16	59	200	(B)	2000	200	2000	-	-	-	4200	247.80	1.579	392	110.5
		②	16	14	250	(A)	11600	-	-	-	-	-	11600	162.40	1.579	257	
		③	16	51	200	(C)	600	150	750	-	-	-	1500	76.50	1.579	121	
		④	16	2	AS SHOWN	(A)	9900	-	-	-	-	-	9900	19.80	1.579	32	
MAINWALL	79.14	⑤a	28	58	200	(E)	400	6350	-	-	-	-	6750	398.25	3.854	1535	61.07
		⑤b	25	59	200	(E)	400	6350	-	-	-	-	6750	398.25	2.466	963	
		⑥	20	45	250	(A)	11800	-	-	-	-	-	11800	522.00	2.466	1288	
		⑦	20	59	200	(B)	250	1200	250	-	-	-	1700	100.30	2.466	248	
		⑧	16	290	400	(D)	250	1200	250	-	-	-	1700	493.00	1.579	779	
		⑨	28	63	200	(B)	700	5450	700	-	-	-	6850	431.55	4.833	2086	
		⑩	25	63	200	(B)	700	5450	700	-	-	-	6850	431.55	3.854	1664	
		⑪	20	23	250	(B)	700	12400	700	-	-	-	13800	317.40	2.466	783	
FOOTING	98.24	⑫	20	23	250	(B)	700	12400	700	-	-	-	13800	317.40	2.466	783	65.1
		⑬	16	6	AS SHOWN	(A)	12400	-	-	-	-	-	12400	74.40	1.579	118	
		⑭	16	6	AS SHOWN	(A)	5450	-	-	-	-	-	5450	32.70	1.579	52	
		⑮	16	330	400	(D)	250	1250	250	-	-	-	1750	577.50	1.579	912	
		⑯	16	34	300	(E)	650	500	-	-	-	-	1150	39.10	1.579	82	
		⑰	16	34	300	(E)	650	500	-	-	-	-	1150	39.10	1.579	82	
		⑱	16	34	300	(E)	650	500	-	-	-	-	1150	39.10	1.579	82	
		⑲	16	34	300	(E)	650	500	-	-	-	-	1150	39.10	1.579	82	
TOTAL	184.64																

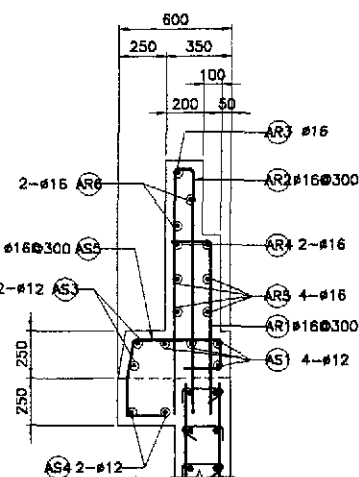
GRADE 40 TOTAL = 2,725 kgs.
 GRADE 60 TOTAL = 9,370 kgs.



5A SECTION
SCALE 1:20

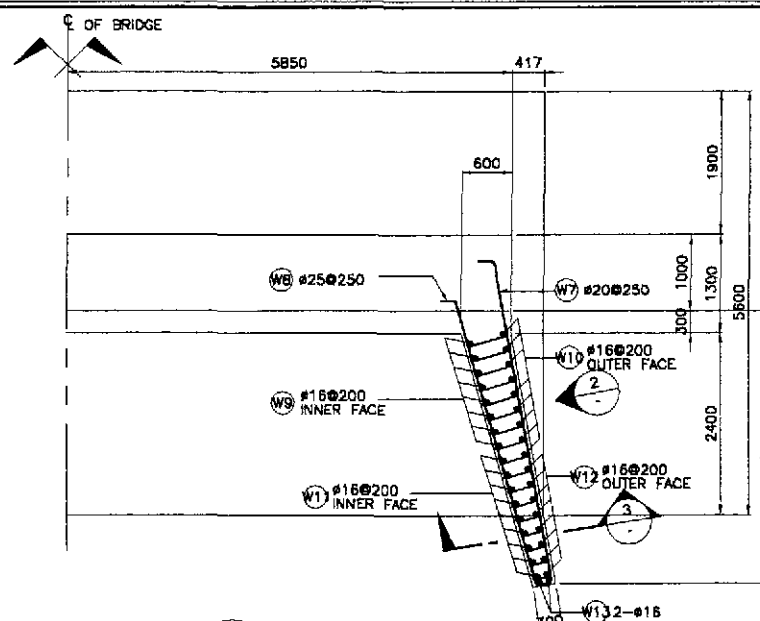


5B SECTION
SCALE 1:20

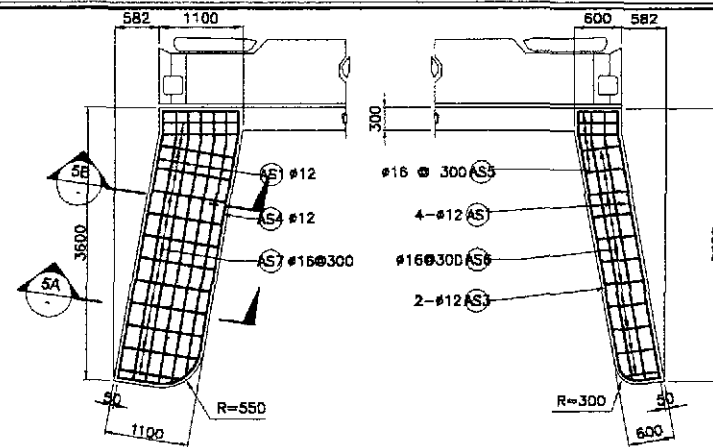


5C SECTION
SCALE 1:20

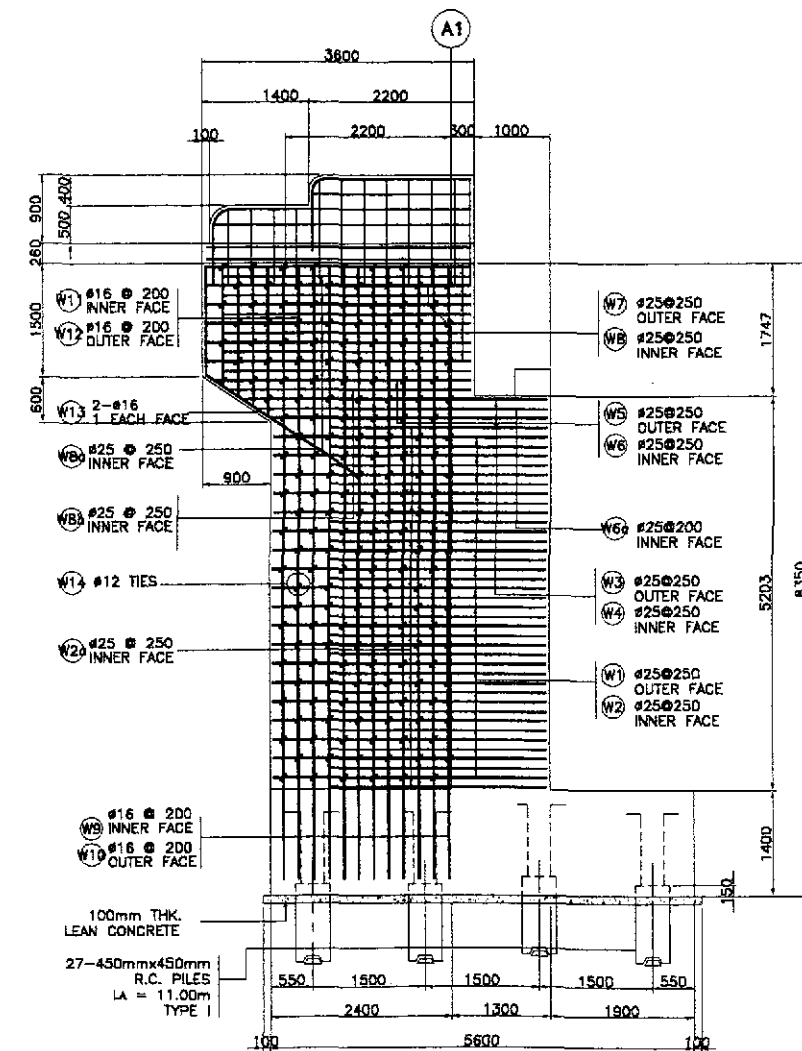
5 APPROACH RAIL DETAILS
SCALE 1:20



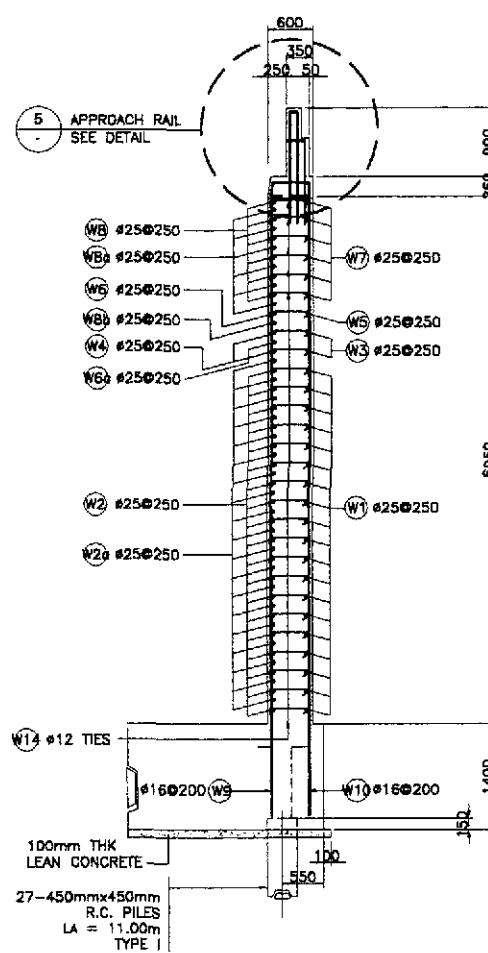
1 PLAN
SCALE 1:50



LEFT SIDE
RIGHT SIDE
4 SIDEWALK DETAIL
SCALE 1:50



2 WINGWALL ELEVATION
SCALE 1:50

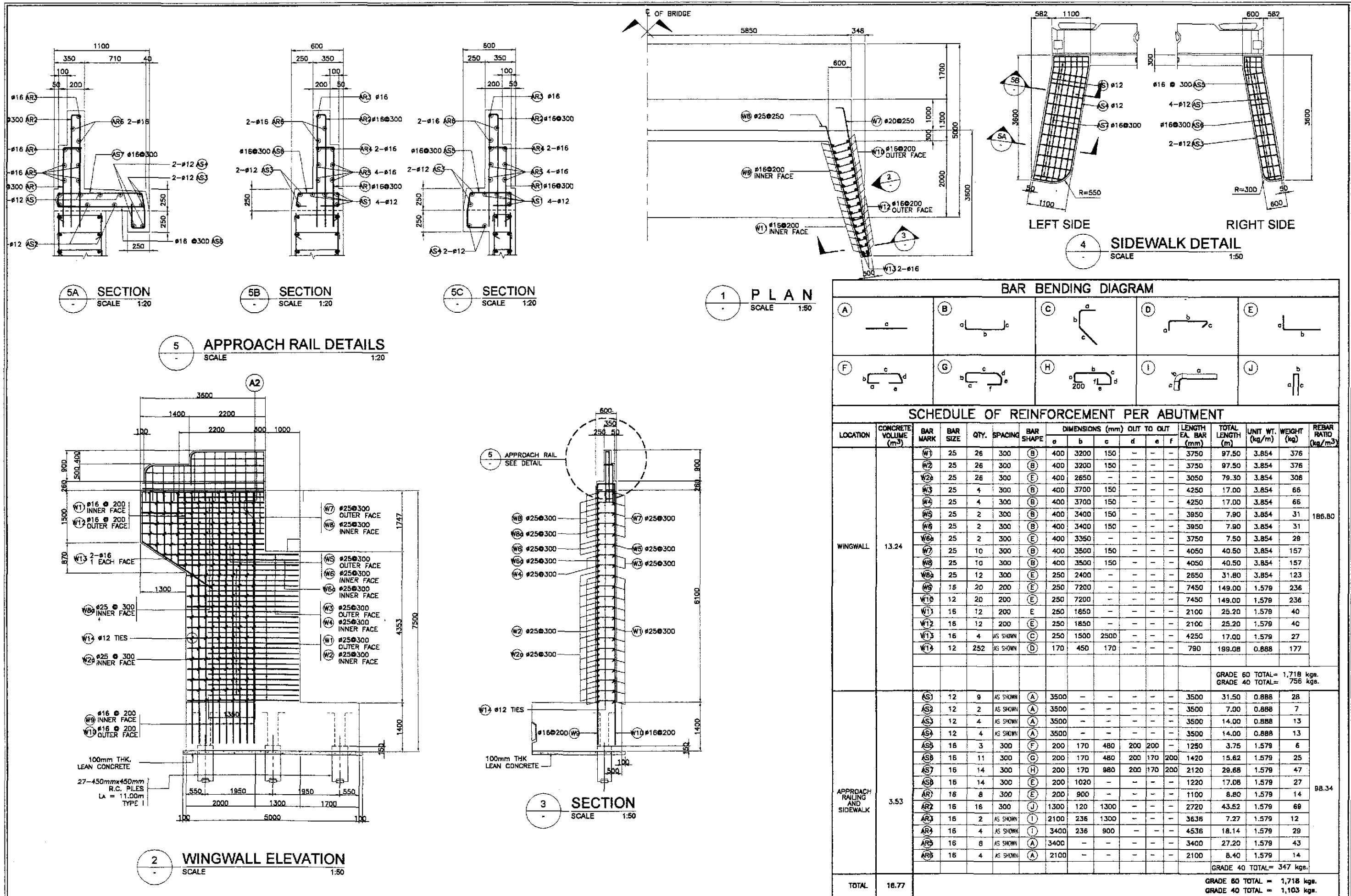


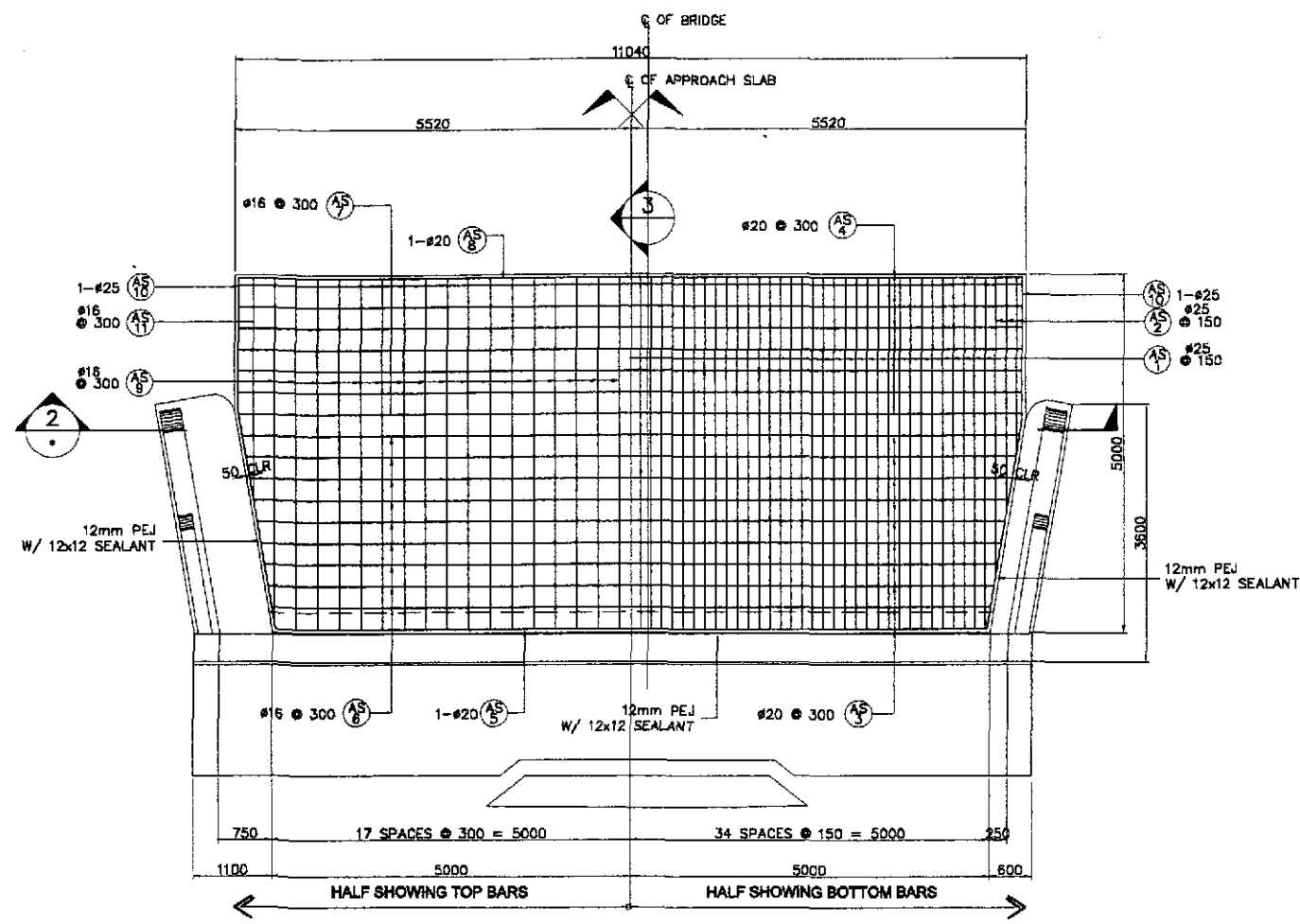
3 SECTION
SCALE 1:50

BAR BENDING DIAGRAM				
A	B	C	D	E
F	G	H	I	J

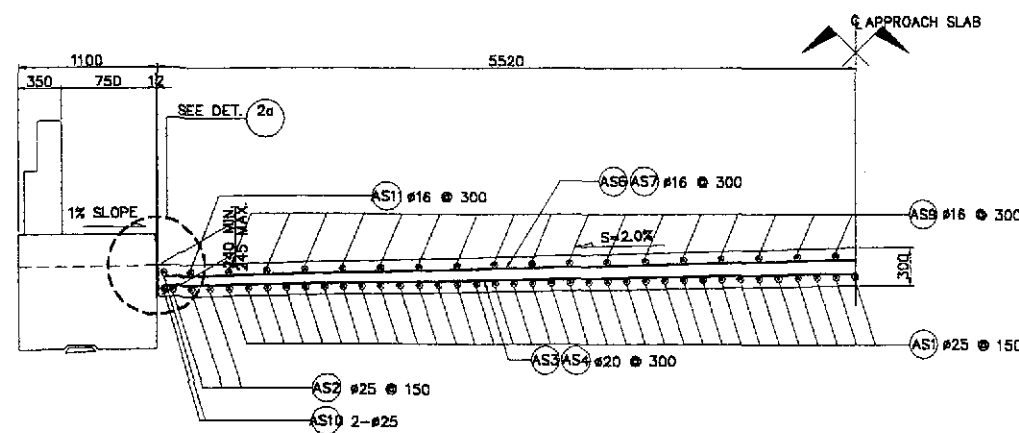
SCHEDULE OF REINFORCEMENT PER ABUTMENT																		
LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm)						OUT TO OUT	LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m ³)
							a	b	c	d	e	f						
WINGWALL	16.47	W1	25	38	300	(B)	400	3600	150	-	-	-	4150	157.70	3.854	608	209.65	
		W2	25	38	300	(B)	400	3600	150	-	-	-	4150	157.70	3.854	608		
		W2a	25	40	300	(E)	400	2800	-	-	-	-	3300	132.00	3.854	509		
		W3	25	4	300	(B)	400	3800	150	-	-	-	4350	17.40	3.854	68		
		W4	25	4	300	(B)	400	3800	150	-	-	-	4350	17.40	3.854	68		
		W5	25	2	300	(B)	400	3350	150	-	-	-	3900	7.80	3.854	31		
		W6	25	2	300	(B)	400	3350	150	-	-	-	3900	7.80	3.854	31		
		W6a	25	2	300	(E)	400	3850	-	-	-	-	4250	8.50	3.854	33		
		W7	25	12	300	(B)	400	3500	150	-	-	-	4050	48.60	3.854	188		
		W8	25	12	300	(B)	400	3500	150	-	-	-	4050	48.60	3.854	188		
		W8a	25	12	300	(E)	250	2400	-	-	-	-	2850	31.80	3.854	123		
		W8b	25	2	300	(E)	250	3350	-	-	-	-	3600	7.20	3.854	28		
		W9	16	24	200	(E)	250	8100	-	-	-	-	8350	200.40	1.579	317		
		W10	12	24	200	(E)	250	8100	-	-	-	-	8350	200.40	1.579	317		
W11	16	8	200	(E)	250	1750	-	-	-	-	2000	16.00	1.579	26				
W12	16	8	200	(E)	250	1750	-	-	-	-	2000	16.00	1.579	26				
W13	16	4	AS SHOWN	(C)	250	1500	2500	-	-	-	4250	17.00	1.579	27				
W14	12	366	AS SHOWN	(D)	170	450	170	-	-	-	790	288.14	0.888	257				
													GRADE 60 TOTAL = 2,483 kgs. GRADE 40 TOTAL = 970 kgs.					
APPROACH RAILING AND SIDEWALK	3.53	AS1	12	9	AS SHOWN	(A)	3500	-	-	-	-	-	3500	31.50	0.888	28	98.34	
		AS2	12	2	AS SHOWN	(A)	3500	-	-	-	-	-	3500	7.00	0.888	7		
		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	(F)	200	170	480	200	200	-	1250	3.75	1.579	6		
		AS6	16	11	300	(G)	200	170	480	200	170	200	1420	15.62	1.579	25		
		AS7	16	14	300	(H)	200	170	980	200	170	200	2120	29.68	1.579	47		
		AS8	16	14	300	(E)	200	1020	-	-	-	-	1220	17.08	1.579	27		
		AS9	16	8	300	(E)	200	900	-	-	-	-	1100	8.80	1.579	14		
		AS10	16	16	300	(J)	1300	120	1300	-	-	-	2720	43.52	1.579	69		
		AS11	16	2	AS SHOWN	(I)	2100	236	1300	-	-	-	3636	7.27	1.579	12		
		AS12	16	4	AS SHOWN	(I)	3400	236	900	-	-	-	4536	18.14	1.579	29		
		AS13	16	8	AS SHOWN	(A)	3400	-	-	-	-	-	3400	27.20	1.579	43		
		AS14	16	4	AS SHOWN	(A)	2100	-	-	-	-	-	2100	8.40	1.579	14		
													GRADE 40 TOTAL = 347 kgs.					
TOTAL	20.00														GRADE 60 TOTAL = 2,483 kgs. GRADE 40 TOTAL = 1,317 kgs.			

JICA JAPAN INTERNATIONAL COOPERATION AGENCY		DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS		PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Palarod, Cabanatuan and San Jose Bypasses)		SCALE : AS SHOWN		SHEET CONTENTS : BRIDGE NO. 9 ABUTMENT A1 WINGWALL REINFORCEMENT DETAILS (ULTIMATE STAGE)		SHEET NO. : B9-07	
DESIGNED	DATE	SIGNATURE	REVIEWED	DATE	SIGNATURE	APPROVED	DATE	SIGNATURE	REVIEWED	DATE	SIGNATURE
CHECKED	10/09/02	P. GONZALES	REVIEWED	10/10/02	MANUEL M. BONDAN	APPROVED	10/10/02	SIMEON A. DATUMANONG	REVIEWED	10/10/02	MANUEL M. BONDAN
SUBMITTED	10/10/02	MANUEL M. BONDAN	SUBMITTED	10/10/02	MANUEL M. BONDAN	SUBMITTED	10/10/02	MANUEL M. BONDAN	SUBMITTED	10/10/02	MANUEL M. BONDAN
KATAHIRA & ENGINEERS INTERNATIONAL		YACHIYO ENGINEERING CO., LTD.		DANILO C. TRAJANO		ADRIANO M. DORY		GILBERTO S. REYES		MANUEL M. BONDAN	
				Project Director		Chief, Bridges Division		Director IV (CIC)		Undersecretary	

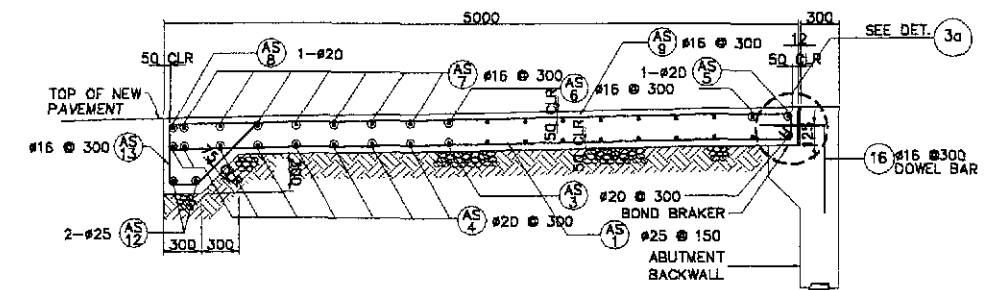




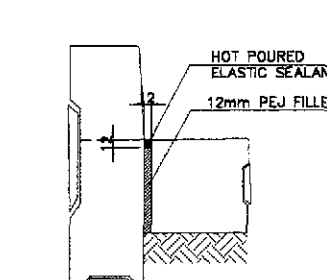
1 PLAN
SCALE 1:50



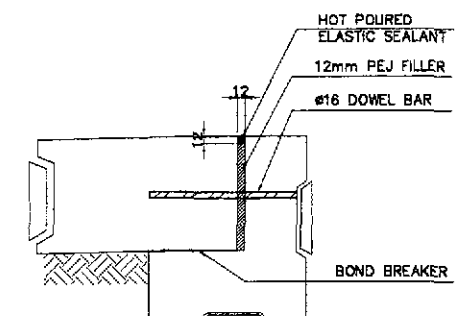
2 SECTION
SCALE 1:30



3 SECTION
SCALE 1:30

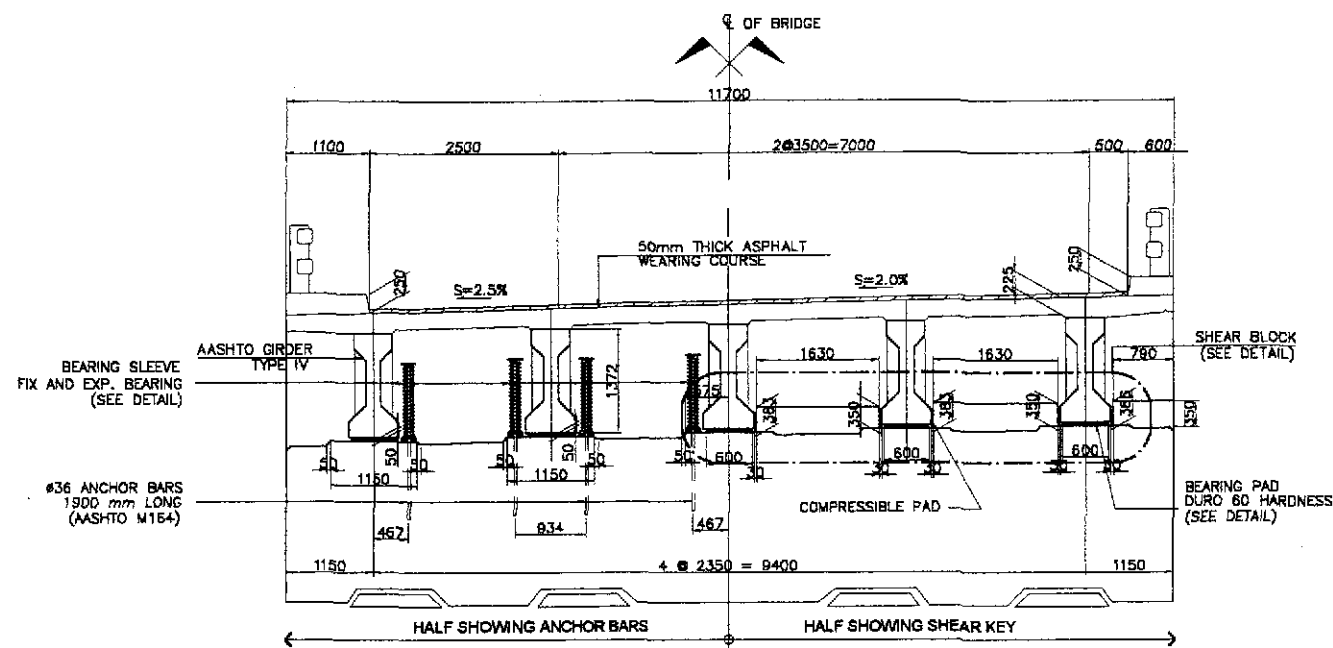


2a DETAIL
SCALE 1:10

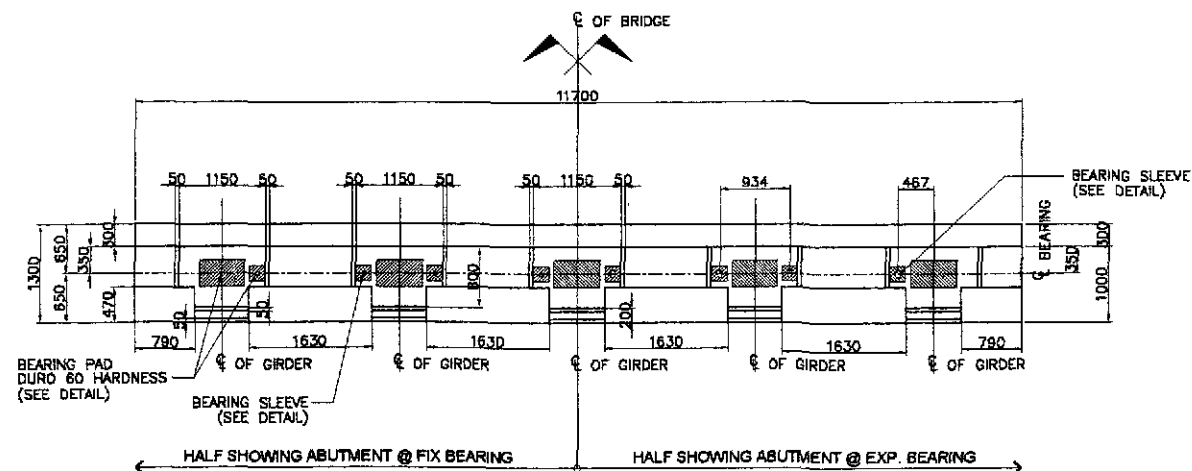


3a DETAIL
SCALE 1:10

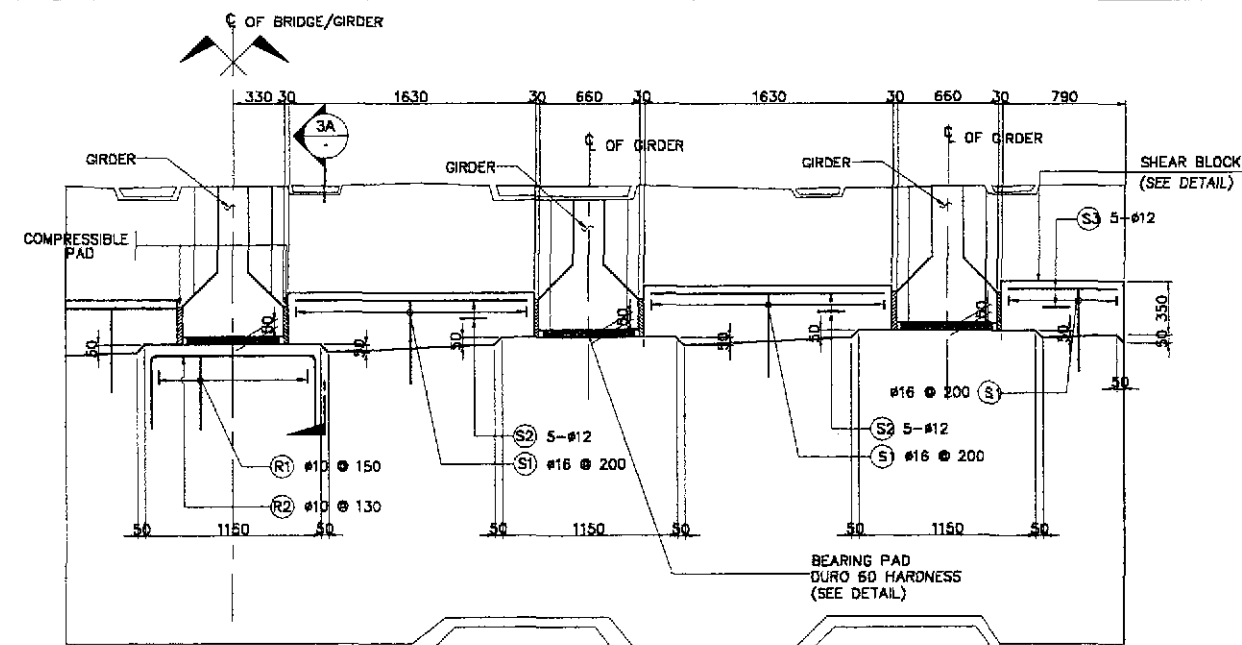
BAR BENDING DIAGRAM																							
(A)						(B)						(C)						(D)					
SCHEDULE OF REINFORCEMENT PER APPROACH SLAB																							
LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT						LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/cu.m)						
							a	b	c	d	e	f											
APPROACH SLAB	17.57	AS1	25	68	150	(B)	4900	200	-	-	-	-	5100	346.80	3.854	1337	156.66						
		AS2	25	6	150	(B)	3200	200	-	-	-	-	3400	20.40	3.854	79							
		AS3	20	10	300	(A)	9900	-	-	-	-	-	9900	99.90	2.466	247							
		AS4	20	8	300	(A)	10940	-	-	-	-	-	10940	87.52	2.466	216							
		AS5	20	1	AS SHOWN	(A)	9900	-	-	-	-	-	9900	9.90	2.466	25							
		AS6	16	9	300	(A)	10040	-	-	-	-	-	10040	90.36	1.579	143							
		AS7	16	7	300	(A)	10940	-	-	-	-	-	10940	76.58	1.579	121							
		AS8	20	1	AS SHOWN	(A)	10940	-	-	-	-	-	10940	10.94	2.466	27							
		AS9	16	34	300	(B)	4900	200	-	-	-	-	5100	173.40	1.579	274							
		AS10	25	4	AS SHOWN	(C)	2000	3000	-	-	-	-	5000	20.00	3.854	78							
		AS11	16	2	300	(B)	3100	200	-	-	-	-	3300	6.60	1.579	11							
		AS12	25	2	AS SHOWN	(A)	10940	-	-	-	-	-	10940	21.88	3.854	85							
		AS13	16	38	300	(D)	400	500	200	700	-	-	1800	68.40	1.579	109							
TOTAL	17.57												GRADE 40 TOTAL = 658 kgs. GRADE 60 TOTAL = 2,094 kgs.										



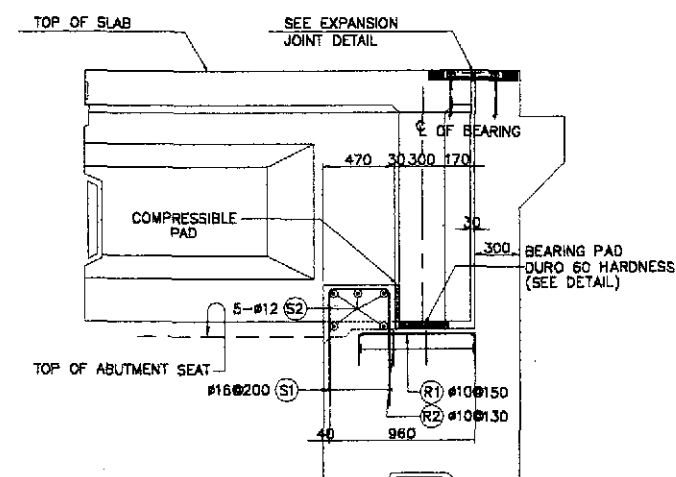
1 SECTION AT ABUTMENT SEAT
SCALE 1:50



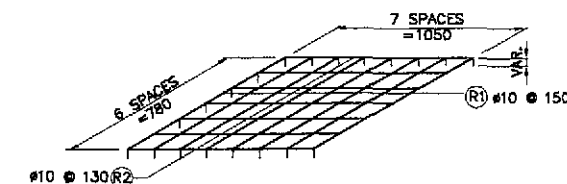
2 PLAN AT ABUTMENT SEAT
SCALE 1:50



3 SHEAR BLOCK DETAIL
SCALE 1:25



3A SECTION
SCALE 1:25

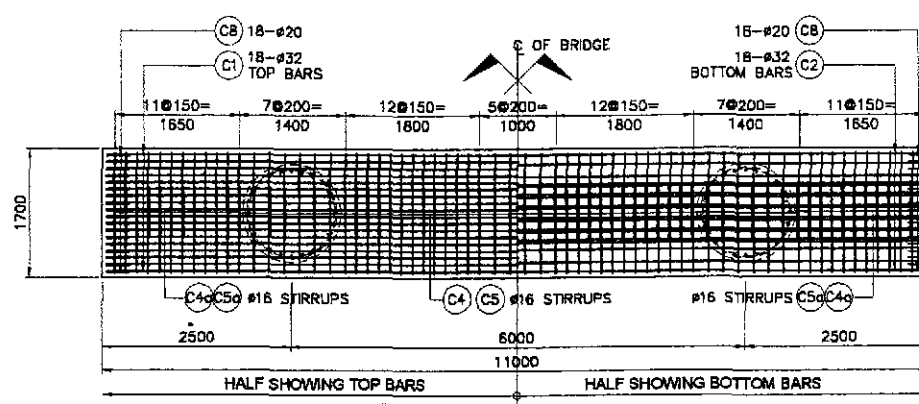


4 RISER REINFORCEMENT
SCALE NOT TO SCALE

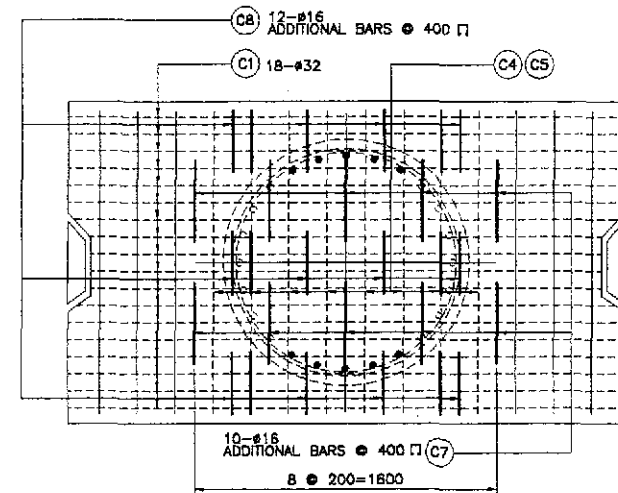
BAR BENDING DIAGRAM																
<div><div>A</div><div>a</div></div>								<div><div>B</div><div>a b c</div></div>								
SCHEDULE OF REINFORCEMENT																
LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSION(mm) OUT TO OUT					LENGTH EACH BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m³)
SHEAR KEY & RISER	1.55	S1	16	46	200	(B)	580	380	560			1510	68.46	1.579	110	150.97
		S2	12	20	AS SHOWN	(A)	1550					1550	31.00	0.888	28	
		S3	12	10	AS SHOWN	(A)	710					710	71.00	0.888	7	
		R1	10	40	150	(B)	500	780	500			1780	71.20	0.616	44	
		R2	10	35	130	(B)	500	1050	500			2050	71.75	0.616	45	
TOTAL	1.55	GRADE 40 TOTAL = 234 kgs.														
THE REINFORCEMENT SHOWN ON THIS TABLE IS FOR REFERENCE ONLY. THE CONTRACTOR SHOULD CHECK AND VERIFY ALL DIMENSIONS, SIZES AND QUANTITIES OF REINFORCEMENT.																

GRADE 40 TOTAL = 234 kgs.

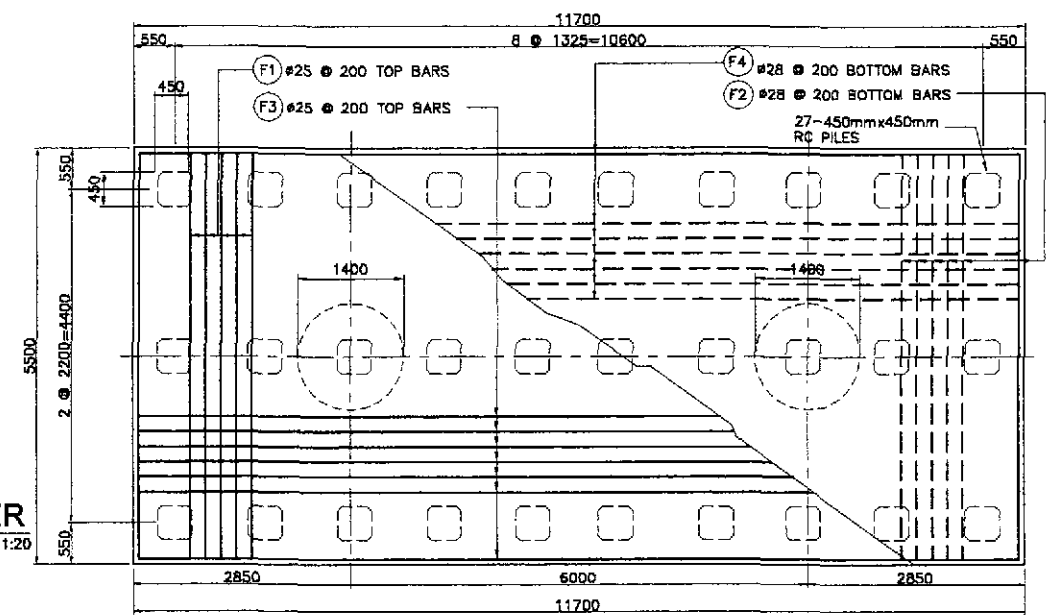
THE REINFORCEMENT SHOWN ON THIS TABLE IS FOR REFERENCE ONLY. THE CONTRACTOR SHOULD CHECK AND VERIFY ALL DIMENSIONS, SIZES AND QUANTITIES OF REINFORCEMENT.



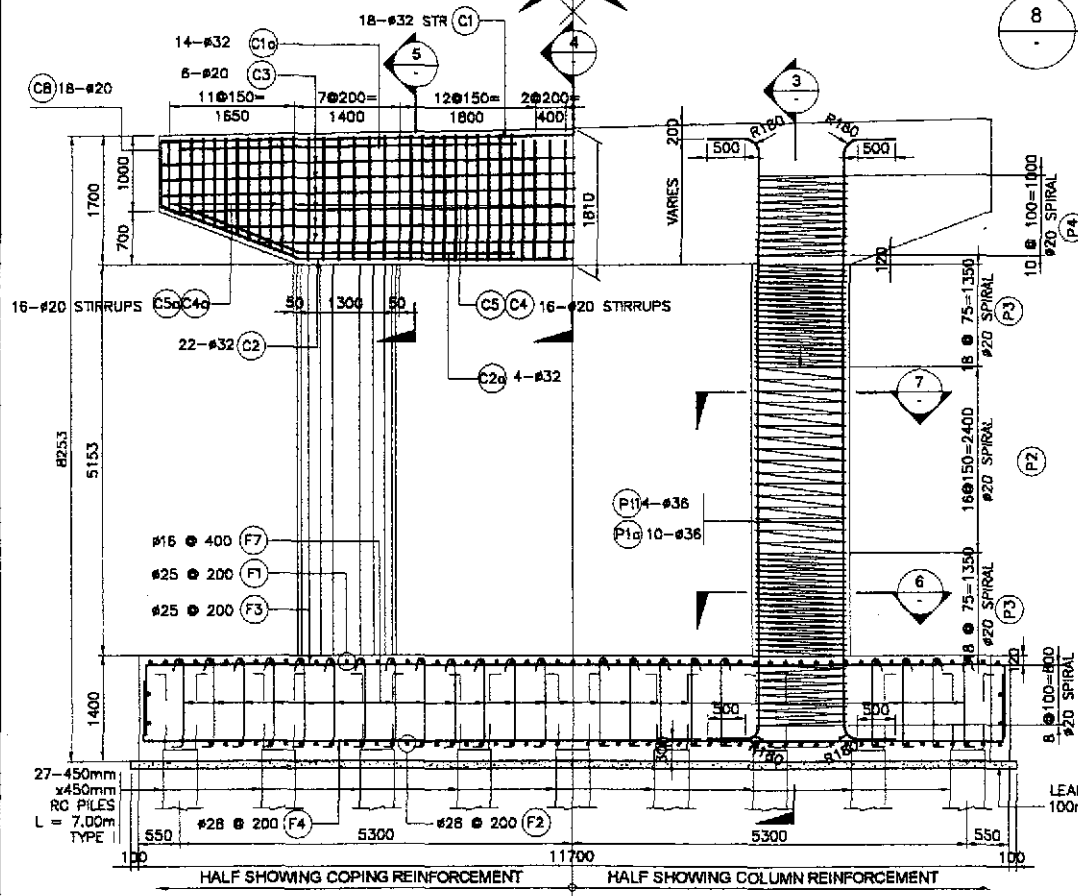
1 COPING PLAN
SCALE 1:50



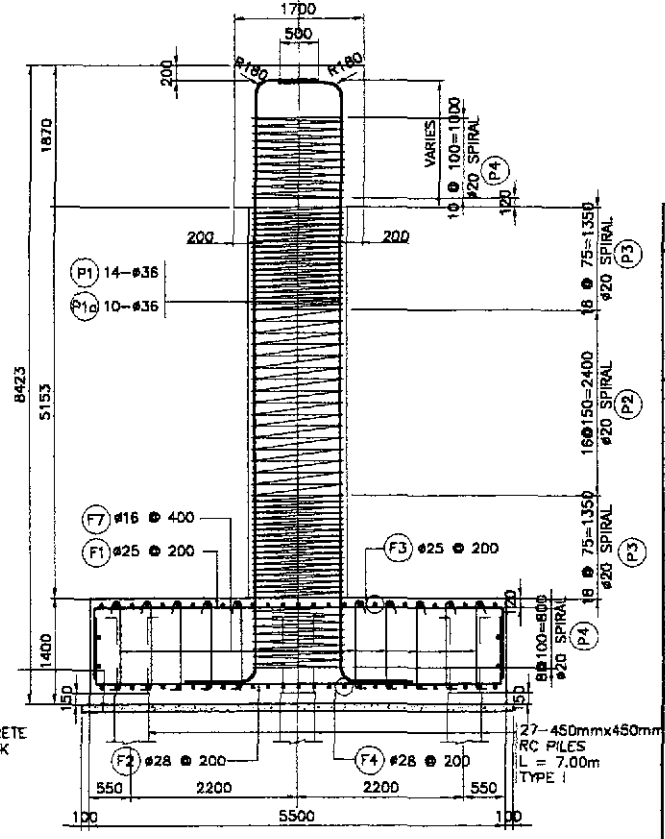
8 DETAIL OF ADDITIONAL REINFORCEMENT @ PIER
SCALE 1:20



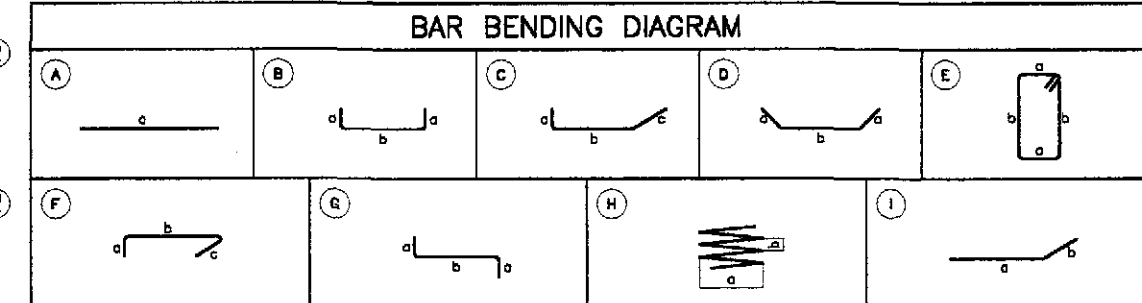
9 FOOTING PLAN
SCALE 1:50



2 ELEVATION
SCALE 1:50

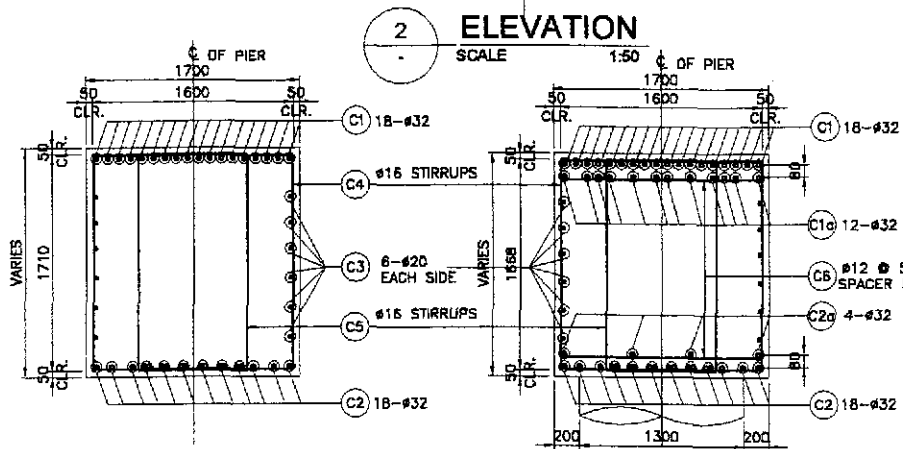


3 SECTION
SCALE 1:50



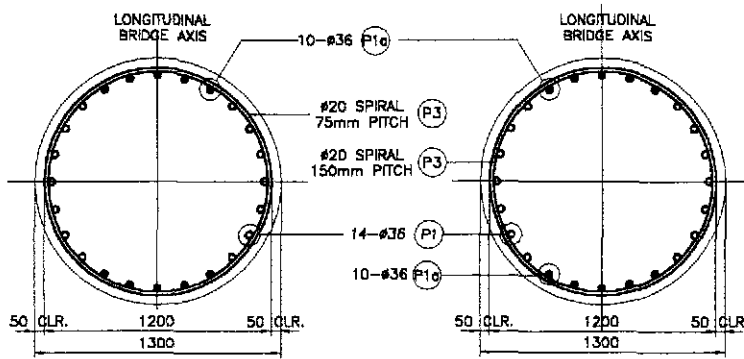
SCHEDULE OF REINFORCEMENT FOR ONE PIER

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)	TOTAL WEIGHT (kg)	REBAR RATIO (kg/m ³)
COPING	31.29	C1	32	18	AS SHOWN	(A)	10900	-	10900	196.20	6.313	1239	172.38
		C1a	32	24	AS SHOWN	(A)	4500	-	4500	108.00	6.313	682	
		C2	32	18	AS SHOWN	(D)	2000	7200	11200	201.60	6.313	1273	
		C2a	32	8	AS SHOWN	(D)	1800	3200	5000	40.00	6.313	253	
		C3	20	6	AS SHOWN	(A)	10900	-	10900	65.40	2.466	162	
		C3a	20	6	AS SHOWN	(A)	9500	-	9500	57.00	2.466	141	
		C4	16	44	150	(E)	1600	1725	6950	305.80	1.579	483	
		C4a	16	22	150	(E)	1600	1425	6350	139.70	1.579	221	
		C5	16	44	150	(E)	800	1725	5550	244.20	1.579	386	
		C5a	16	22	150	(E)	800	1425	4850	108.90	1.579	172	
		C6	12	40	150	(B)	150	1500	1900	76.00	0.888	68	
		C7	20	36	AS SHOWN	(C)	350	900	1600	57.60	2.466	143	
		C8a	16	24	400	(B)	330	1700	2360	56.64	1.579	90	
		C8b	16	20	400	(B)	430	1700	2560	51.20	1.579	81	
		P1	36	28	AS SHOWN	(B)	600	7750	8950	250.60	7.991	2003	346.29
COLUMN	13.68	P1a	36	20	AS SHOWN	(B)	600	7750	8950	179.00	7.991	1431	
		P2	20	32	150	(H)	1200	150	3770	120.84	2.466	298	
		P3	20	72	75	(H)	1200	75	3770	271.43	2.466	670	
FOOTING	90.09	P4	20	36	100	(H)	1200	100	3770	135.72	2.466	335	87.99
		F1	25	59	200	(B)	925	5350	7200	424.80	3.854	1638	
		F2	28	59	200	(B)	925	5350	7200	424.80	4.833	2054	
		F3	25	28	200	(B)	925	11550	13400	375.20	3.854	1447	
		F4	28	28	200	(B)	925	11550	13400	375.20	4.833	1814	
		F5	16	4	AS SHOWN	(A)	11550	-	11550	46.20	1.579	73	
		F6	16	4	AS SHOWN	(A)	5350	-	5350	21.40	1.579	34	
		F7	16	364	400	F	200	1250	1500	582.40	1.579	920	
TOTAL	125.47												GRADE 40 TOTAL = 2,528 kgs. GRADE 60 TOTAL = 15,583 kgs.



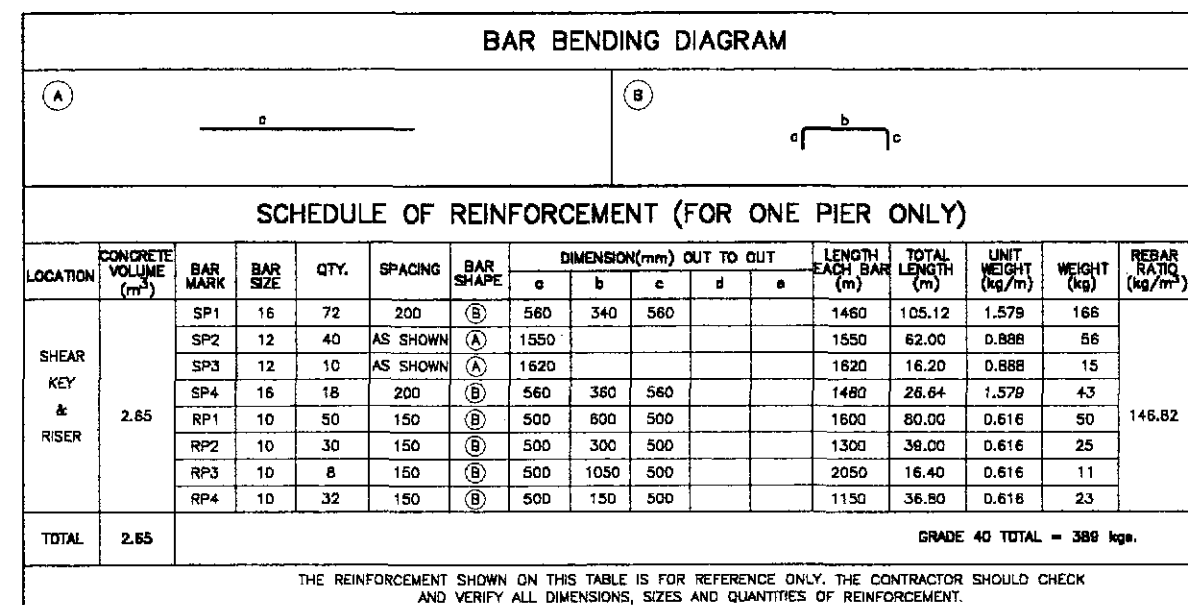
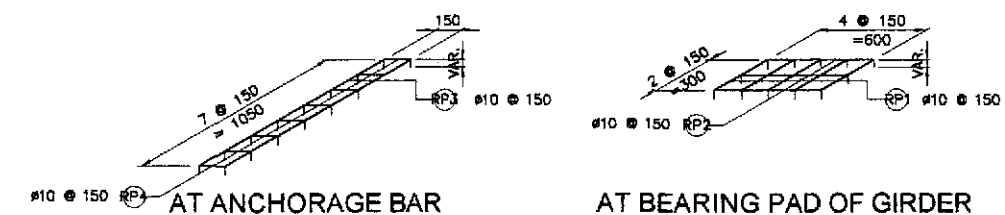
4 SECTION
SCALE 1:30

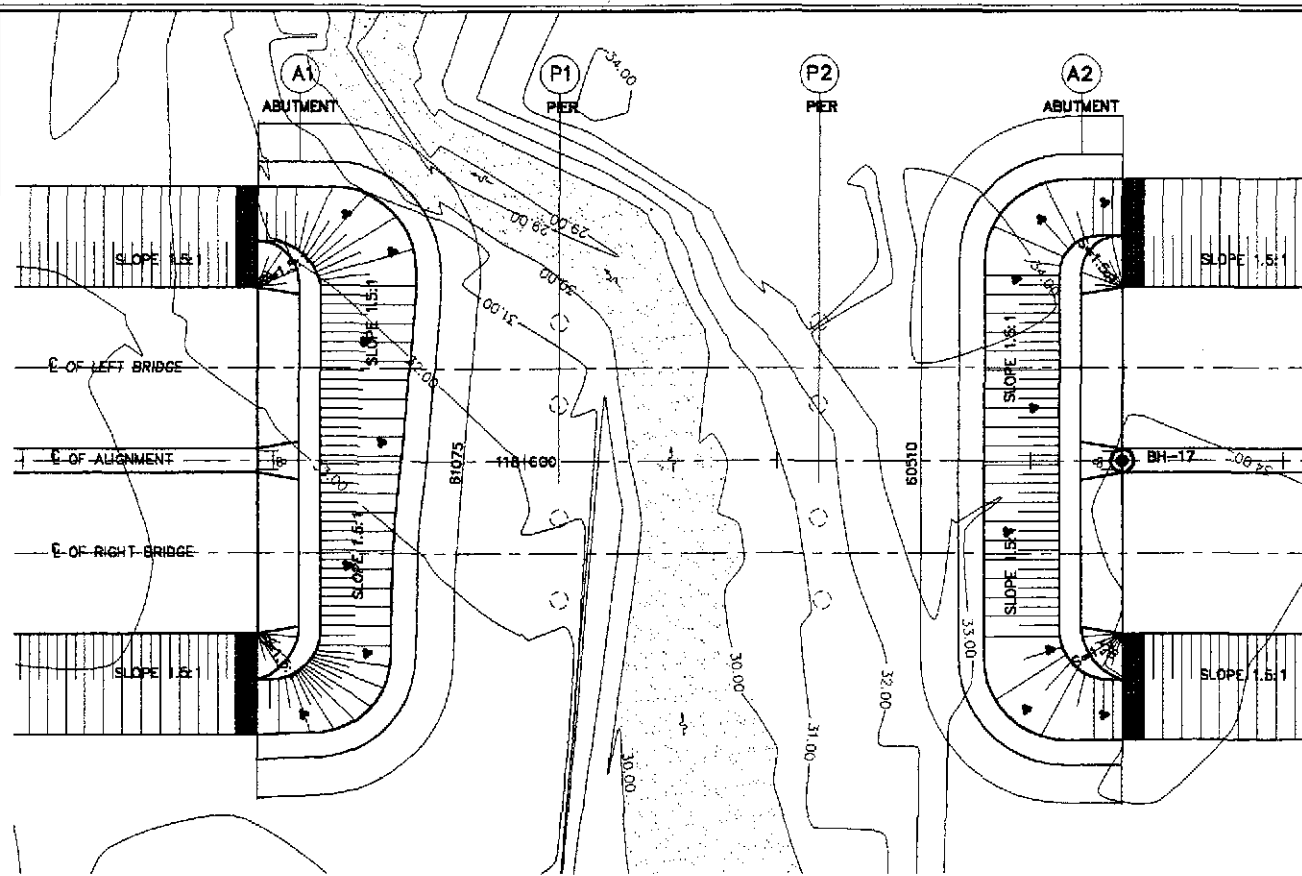
5 SECTION
SCALE 1:30



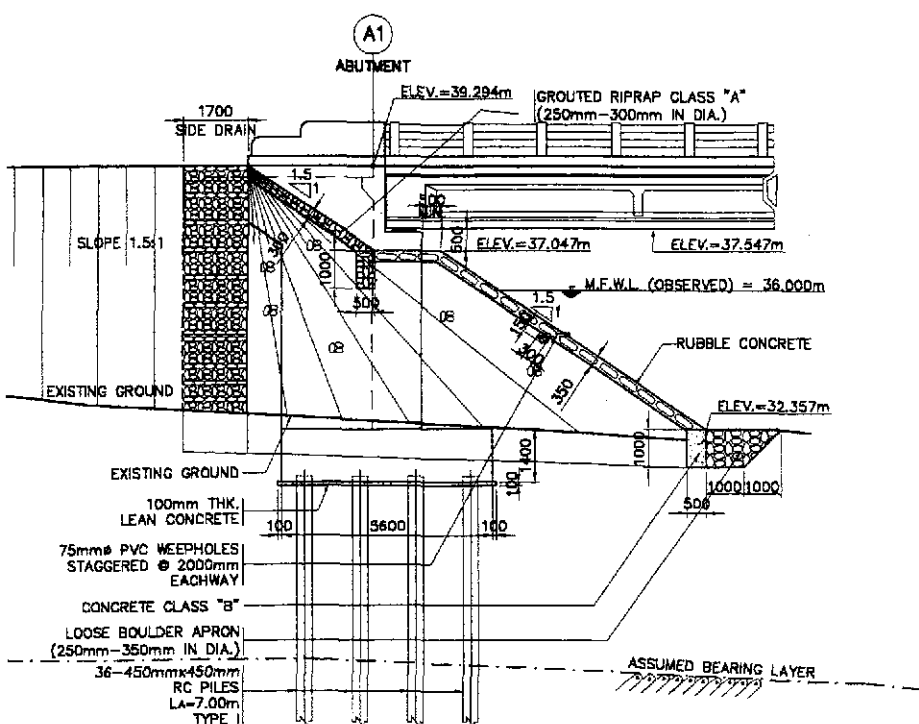
6 SECTION
SCALE 1:20

7 SECTION
SCALE 1:20



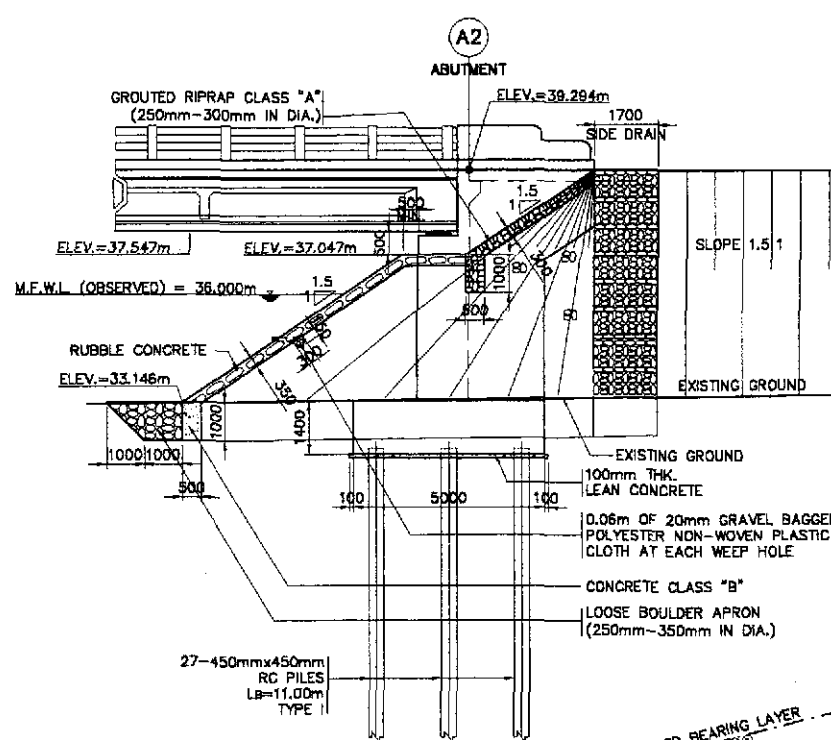


1A PLAN
SCALE 1:300



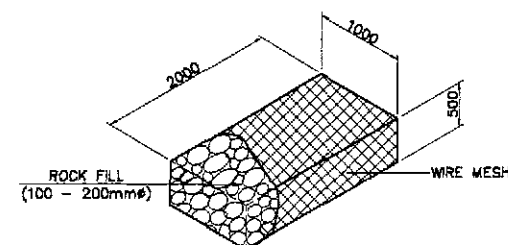
1B ELEVATION
SCALE 1:100

1 ABUTMENT SLOPE PROTECTION
SCALE AS SHOWN

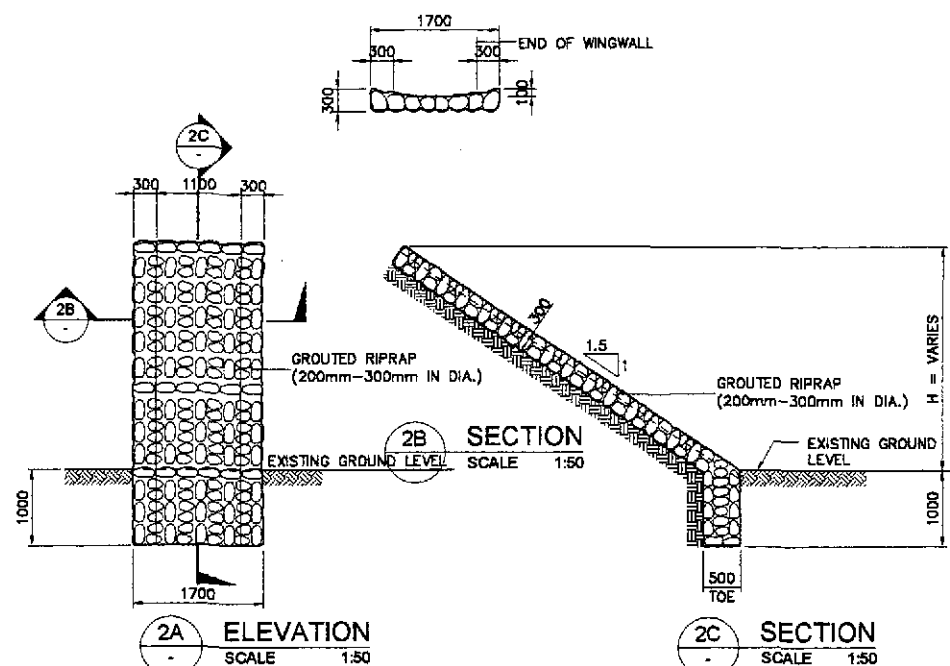


GENERAL NOTES:

1. GROUTED RIPRAP (250mm-300mm DIA.) 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 SWEEPED WITH A STIFF BROOM.
2. WIRE MESH GABIONS/MATTRESS
 - A. WIRE-MESH SHALL BE MADE OF GALVANIZED STEEL HAVING A MINIMUM SIZE OF 3.40mm DIAMETER (U.S. WIRE GAUGE NO.11) THE TENSILE STRENGTH OF THE WIRE SHALL BE IN THE RANGE OF 413.70 TO 586.10 MPa. (60,000 TO 85,000 Psi) THE MINIMUM ZINC COATING OF THE WIRE SHALL BE 22.70 GRAMS PER 0.0929m² OF UNCOATED WIRE SURFACES AS DETERMINED BY TEST CONDUCTED IN ACCORDANCE WITH AASHTO T85.
 - B. ROCK FILL - ROCK USED IN THE GABIONS SHALL CONSIST OF HARD, DURABLE ROCK PIECES THAT WILL NOT DETERIORATE WHEN SUBMERGED IN WATER OR EXPOSED TO SEVERE WEATHER CONDITIONS. ROCK PIECES SHALL BE GENERALLY UNIFORMLY GRADED IN SIZES RANGING FROM 100mm TO 200mm. FILLED GABIONS SHALL HAVE A MINIMUM DENSITY OF 1,400kg/m³. VOIDS SHALL BE EVENLY DISTRIBUTED. THE ROCKS SHALL MEET THE REQUIREMENTS OF AASHTO M63 EXCEPT THAT THE SODIUM SULFATE SOUNDNESS LOSS SHALL NOT EXCEED 9% AFTER 5 CYCLES.
3. GEOTEXTILE THE FOLLOWING SPECIFICATIONS ARE REQUIRED:
 1. POLYESTER OR POLYPROPYLENE - 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
4. GRAVEL FILTER SHALL BE COARSE AGGREGATES MATERIALS WHICH SATISFY THE REQUIREMENTS FOR ITEM 405, STRUCTURAL CONCRETE, GRADING B OF TABLE 405.1 AS REVISED.



3 GABION DETAIL
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

LOCATION	SIZES	QUANTITY	
		ABUT. A1	ABUT. A2
CONC. CLASS "B"	1000 x 500 x LENGTH	15.44 cu. m.	14.89 cu. m.
BOULDER APRON	250mm-350mm IN DIA.	46.32 cu. m.	44.67 cu. m.
RUBBLE CONCRETE	250mm-300mm IN DIA.	73.61 cu. m.	80.96 cu. m.
SIDE DRAIN	200mm-300mm IN DIA.	5.75 cu. m.	6.00 cu. m.
GROUTED RIPRAP	250mm-300mm IN DIA.	11.56 cu. m.	12.14 cu. m.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY		DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS		PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Paridel, Cabanatuan and San Jose Bypasses)		SCALE : AS SHOWN	SHEET CONTENTS : BRIDGE NO. 8 ABUTMENT PROTECTION AND SIDE DRAIN DETAILS (ULTIMATE STAGE)	SHEET NO. : B9-14	
DESIGNED : 10/09/02 A. P. GONZALES	CHECKED : 10/14/02 [Signature]	SUBMITTED : 10/15/02 [Signature]	DATE : 10/15/02	SIGNATURE : [Signature]	REVIEWED BY : DANILLO C. TRAJANO Project Director	REVIEWED BY : PERFECTO L. ZAPLAN JR. Chief, Hydraulics Division (OIC)	REVIEWED BY : GILBERTO S. REYES Director IV (OIC)	REVIEWED BY : MANUEL M. BONOAN Undersecretary	REVIEWED BY : SIMEON A. DATUMANONG Secretary