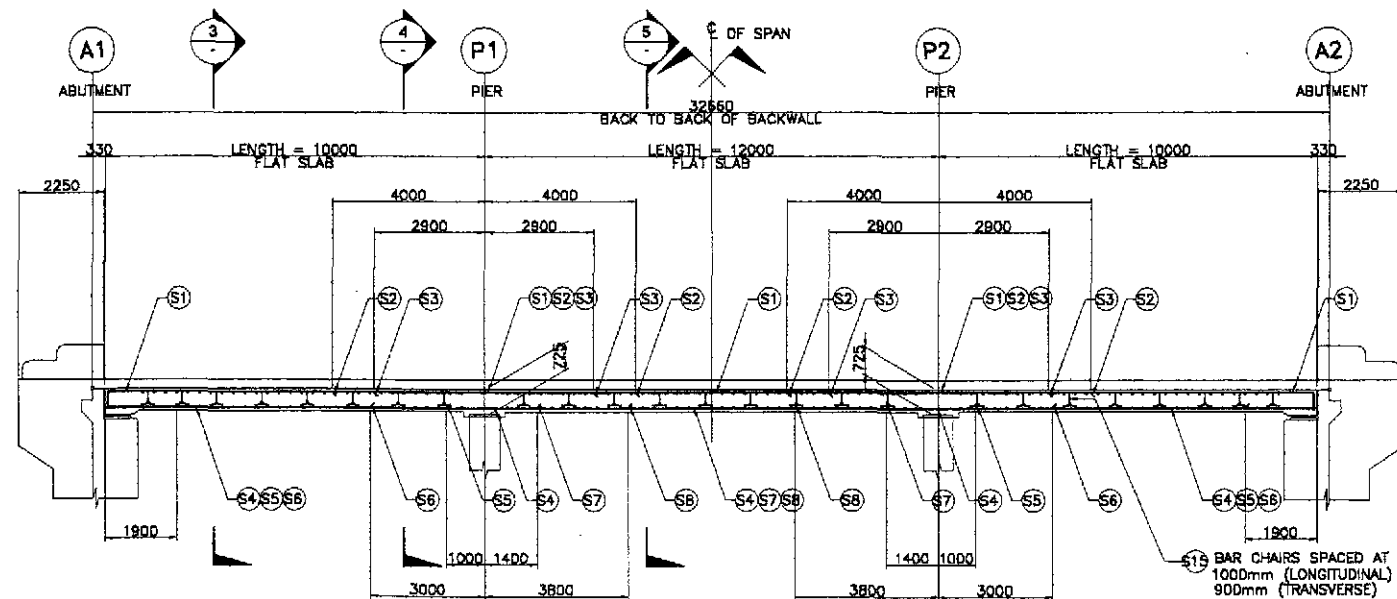
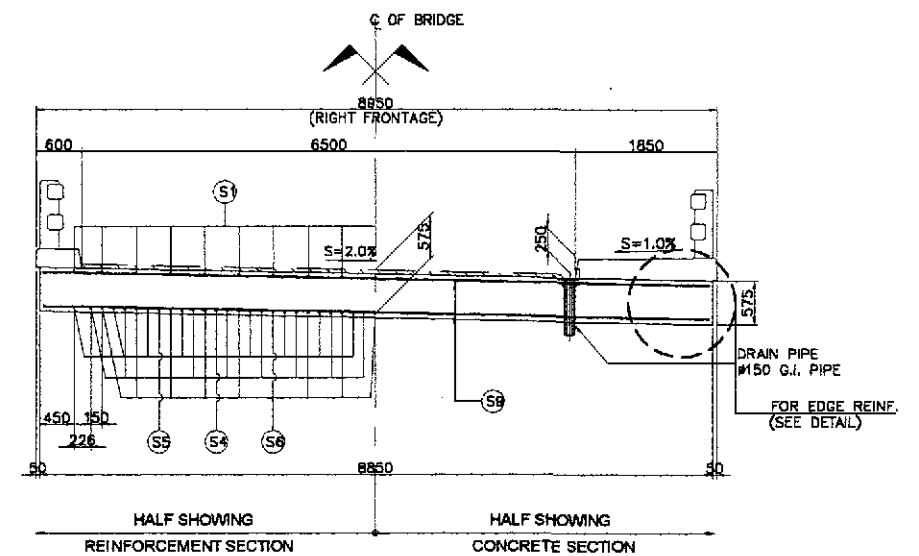


1 FRAMING PLAN
SCALE 1:100

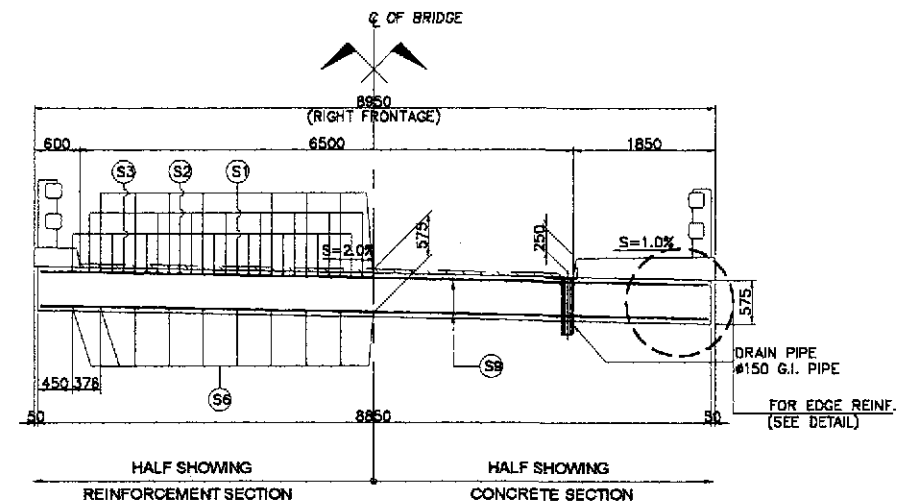


2 LONGITUDINAL SECTION
SCALE 1:100

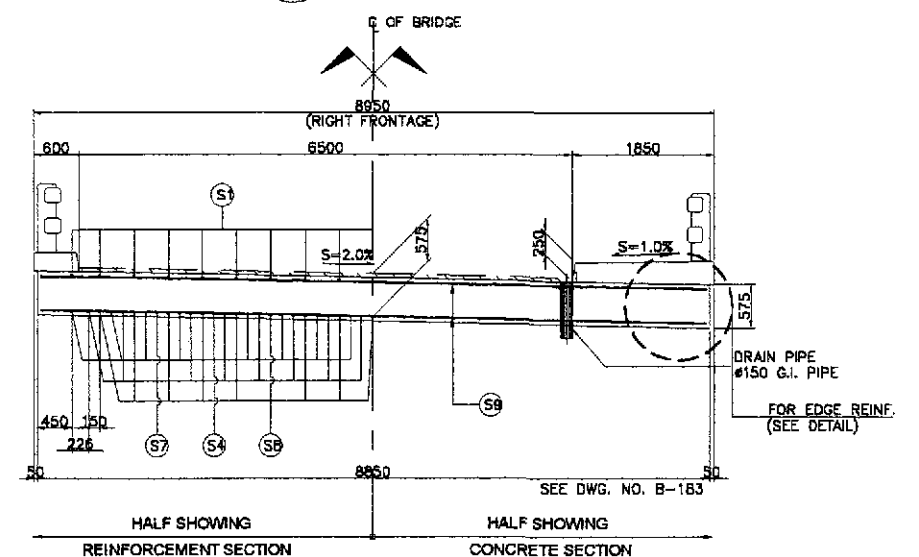
NOTE:
FOR LEFT FRONTAGE - IT IS MIRROR IMAGE OF THE
FRAMING PLAN, SECTIONS OF RIGHT FRONTAGE.



3 SECTION
SCALE 1:50

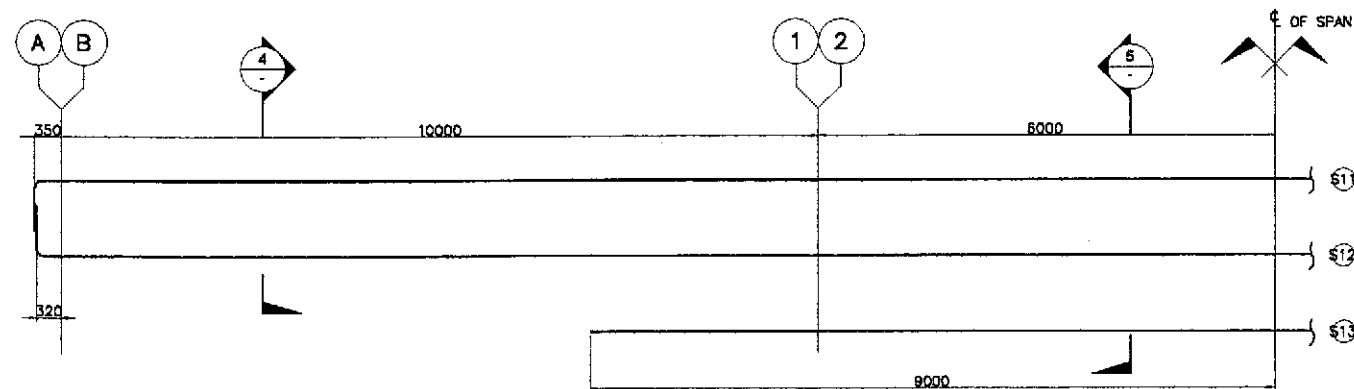


4 SECTION
SCALE 1:50

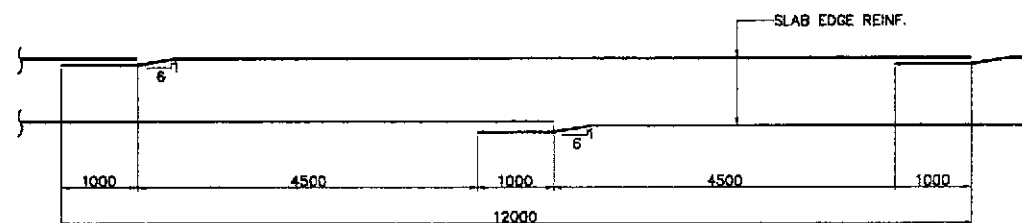


5 SECTION
SCALE 1:50

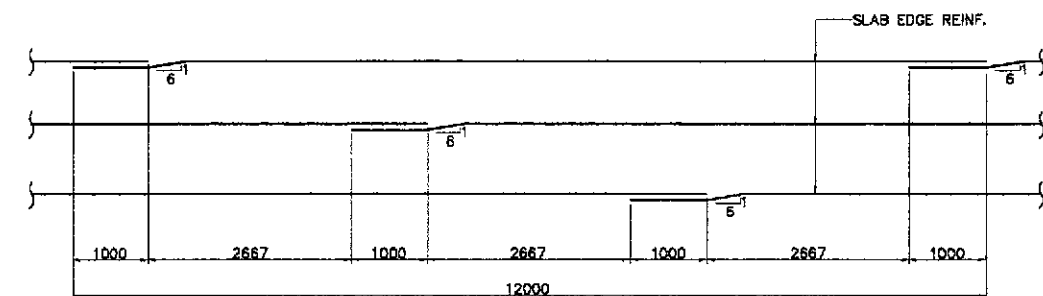
 JAPAN INTERNATIONAL COOPERATION AGENCY		 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS		PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) CABANATUAN BYPASS - CONTRACT PACKAGE II		SCALE : AS SHOWN FULL SIZE A1	SHEET CONTENTS : BRIDGE NO. 7 DECK FRAMING PLAN AND SECTIONS RIGHT & LEFT FRONTAGE (ULTIMATE STAGE)	SHEET NO. : B7-11
DESIGNED 10/29/02 A. P. GONZALEZ	DATE 10/29/02	SIGNATURE [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]
CHECKED 10/16/02 [Signature]	CHECKED 10/16/02 [Signature]	CHECKED 10/16/02 [Signature]	CHECKED 10/16/02 [Signature]	CHECKED 10/16/02 [Signature]	CHECKED 10/16/02 [Signature]	CHECKED 10/16/02 [Signature]	CHECKED 10/16/02 [Signature]	CHECKED 10/16/02 [Signature]
SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]	SUBMITTED 10/18/02 [Signature]
KATAHIRA & ENGINEERS INTERNATIONAL	YACHIYO ENGINEERING CO., LTD.	DANILLO C. TRAJANO Project Director	ADRIANO M. DOROS Chief, Bridges Division	GILBERTO S. REYES Director IV (CIC)	MANUEL M. BONGAON Undersecretary	SIMEON A. DATUMANG Secretary	[Signature]	[Signature]



1 SCHEMATIC LAYOUT OF FLATSLAB EDGE REINF.
SCALE 1:50

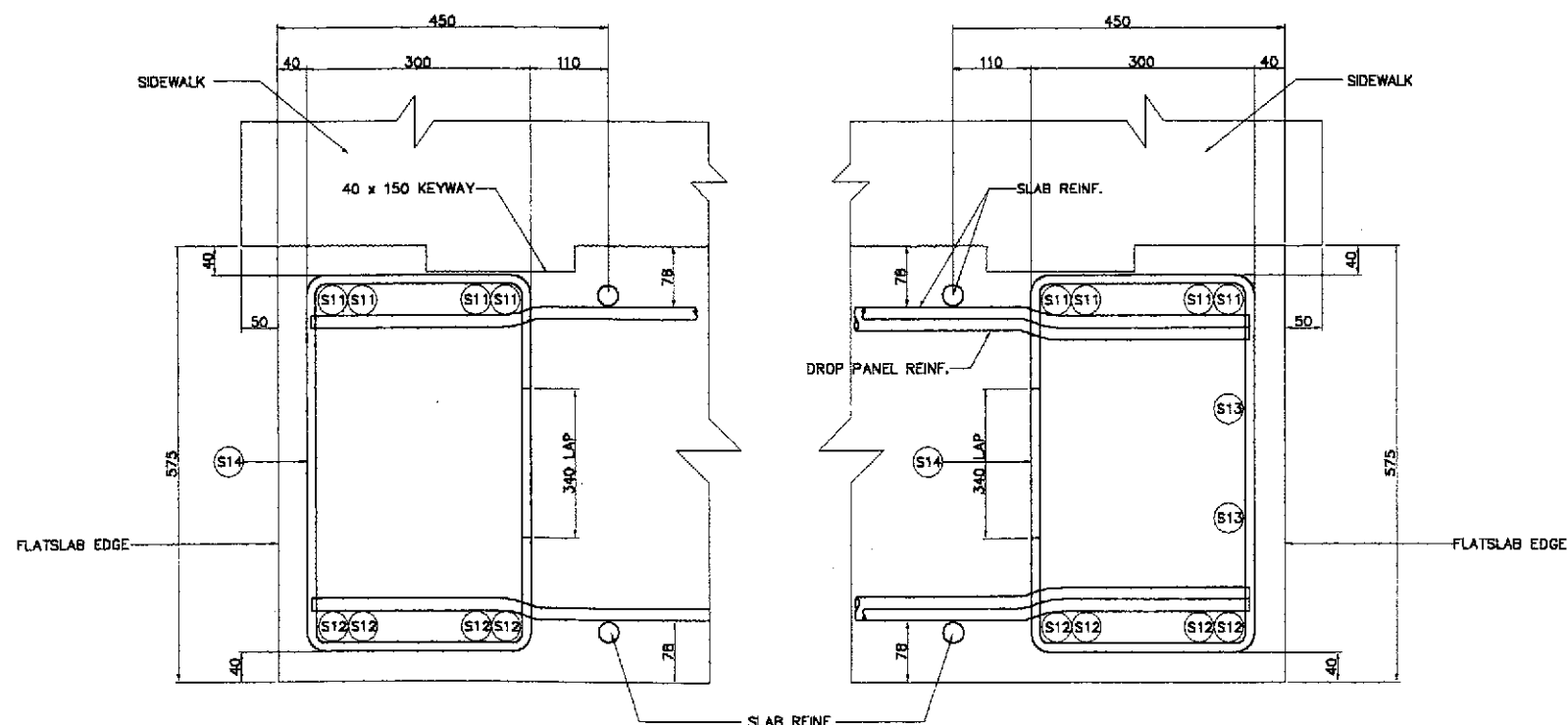


2 TYPICAL SPLICE LAYOUT OF 2-BAR BUNDLE
SCALE 1:50



3 TYPICAL SPLICE LAYOUT OF 3-BAR BUNDLE
SCALE 1:50

ESTIMATED QUANTITIES OF SUPERSTRUCTURE			
ITEM NO.	DESCRIPTION	UNIT	TOTAL
404(1)a	REINFORCING STEEL GRADE 40	kgs.	9721
	DECK SLAB	5197	
	SIDEWALK, RAILING, & POST	3610	
	APPROACH SLAB	914	
404(1)b	REINFORCING STEEL GRADE 60	kgs.	19930
	DECK SLAB	15448	
	SIDEWALK, RAILING, & POST	590	
	APPROACH SLAB	2892	
405(1)	STRUCTURAL CONCRETE	cu. m.	199.01
	DECK SLAB	149.08	
	SIDEWALK, RAILING, & POST	26.97	
	APPROACH SLAB	22.96	



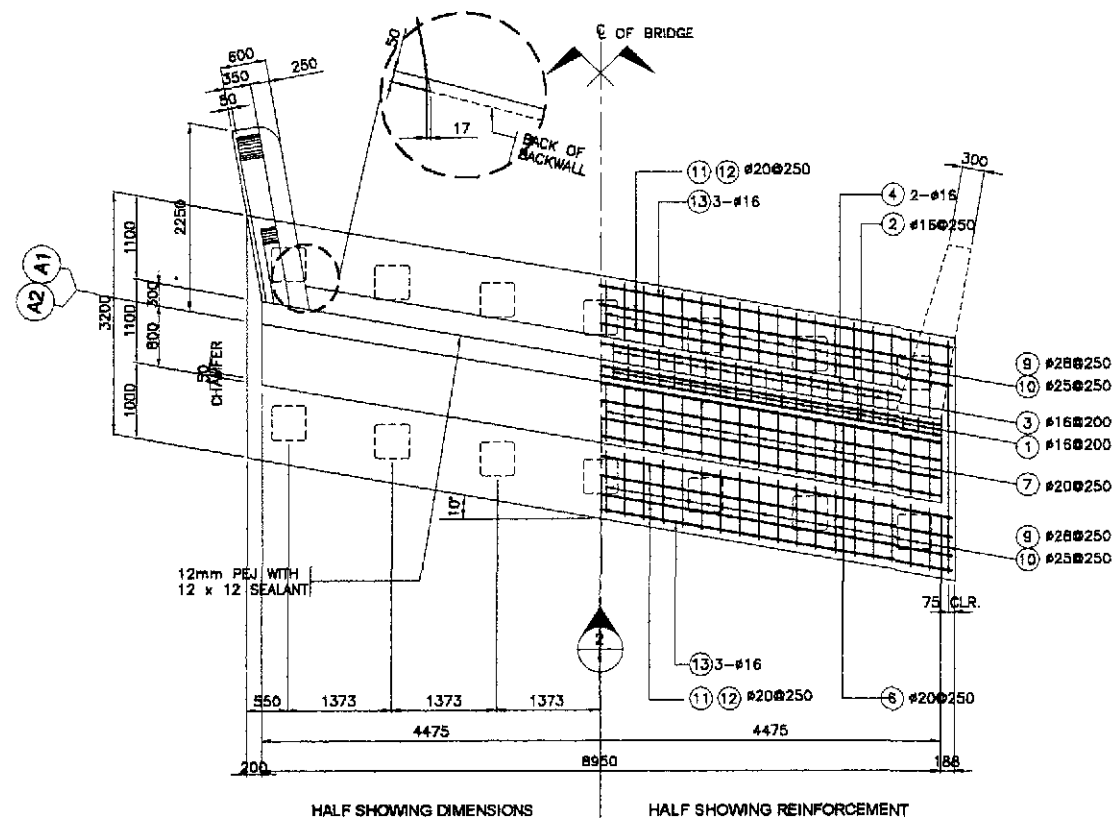
4 SECTION
NOT TO SCALE

5 SECTION
NOT TO SCALE

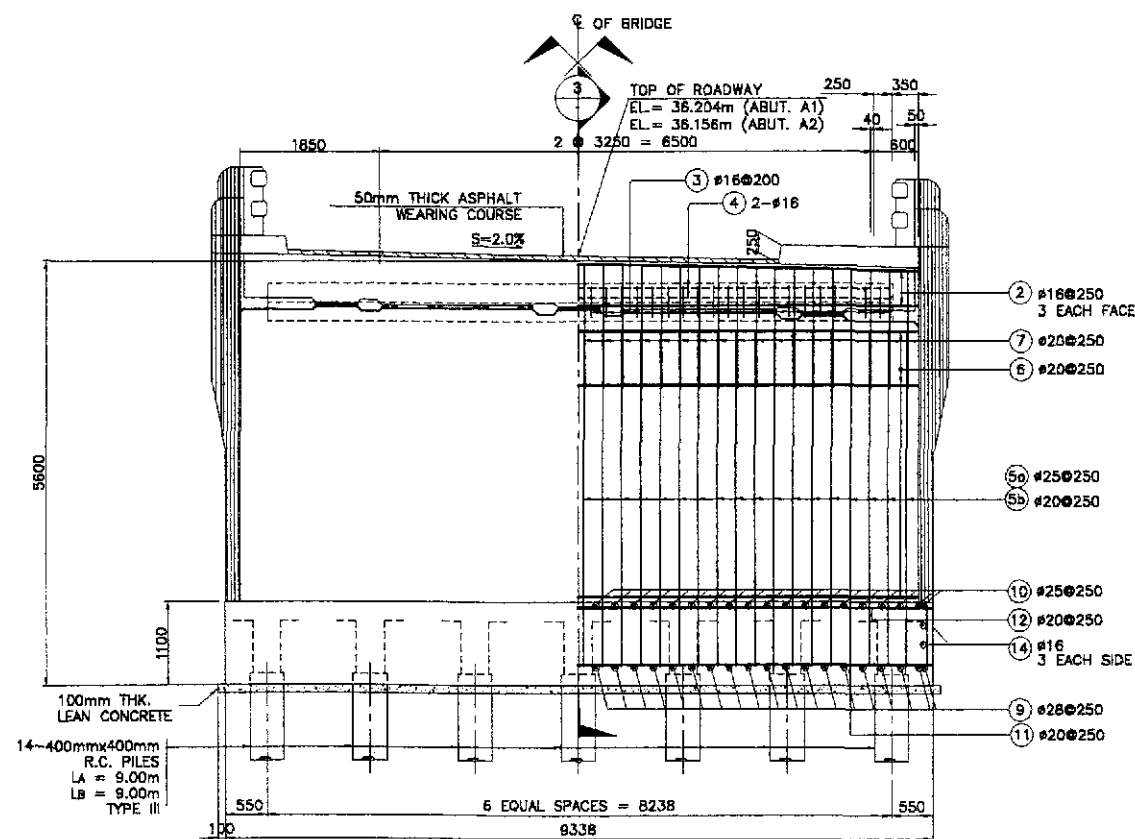
BAR BENDING DIAGRAM

SCHEDULE OF REINFORCEMENT

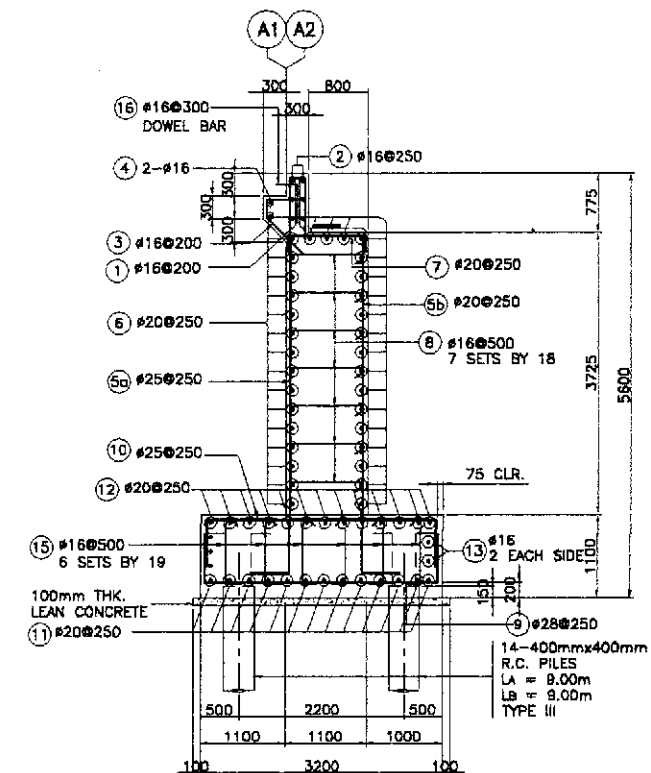
LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT				LENGTH EACH BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT IN (kg)	REBAR RATIO (kg/m³)
							a	b	c	d					
DECK SLAB	149.08	S1	28	19	450	(C)	450	31900	450	-	32800	623.20	4.833	3012	139.03
		S2	28	36	450	(A)	8000	-	-	-	8000	288.00	4.833	1392	
		S3	28	36	450	(A)	5800	-	-	-	5800	208.80	4.833	1010	
		S4	28	18	450	(C)	450	31900	450	-	32800	580.40	4.833	2854	
		S5	28	36	450	(B)	450	8950	-	-	9400	338.40	4.833	1636	
		S6	28	36	450	(A)	5100	-	-	-	5100	183.60	4.833	888	
		S7	28	18	450	(A)	9200	-	-	-	9200	165.60	4.833	801	
		S8	28	18	450	(A)	4400	-	-	-	4400	79.20	4.833	383	
		S9	16	258	250	(A)	8850	-	-	-	8850	2283.30	1.579	3606	
		S9a	16	28	250	(A)	5325	-	-	-	5325	149.10	1.579	236	
		S10	16	20	250	(A)	8990	-	-	-	11275	225.50	1.579	357	
		S11	36	8	AS SHOWN	(C)	450	31900	450	-	32800	262.40	7.991	2097	
		S12	36	8	AS SHOWN	(C)	450	31900	450	-	32800	262.40	7.991	2097	
		S13	25	4	AS SHOWN	(A)	1800	-	-	-	18000	72.00	3.854	278	
		S14	12	214	300	(D)	500	220	150	-	1740	372.36	0.888	331	
		S15	16	352	AS SHOWN	(E)	150	415	70	-	1200	422.40	1.579	667	
TOTAL	149.08	GRADE 40 TOTAL = 5,197 kgs. GRADE 60 TOTAL = 16,448 kgs.													



1 PLAN
SCALE 1:50



2 ELEVATION
SCALE 1:50



3 SECTION
SCALE 1:50

BAR BENDING DIAGRAM

Diagram A: A straight horizontal bar of length 'a'.

Diagram B: A U-shaped bar with horizontal segments of length 'a' and 'c', and a vertical segment of length 'b'.

Diagram C: A bent bar with a vertical segment of length 'b', a horizontal segment of length 'c', and a diagonal segment of length 'a'.

Diagram D: A bent bar with a horizontal segment of length 'b', a vertical segment of length 'a', and a diagonal segment of length 'c'.

Diagram E: A bent bar with a horizontal segment of length 'b' and a vertical segment of length 'a'.

Diagram F: A bent bar with horizontal segments of length 'a' and 'd', a vertical segment of length 'b', and a diagonal segment of length 'c'.

Diagram G: A bent bar with horizontal segments of length 'a' and 'e', a vertical segment of length 'b', and a diagonal segment of length 'd'.

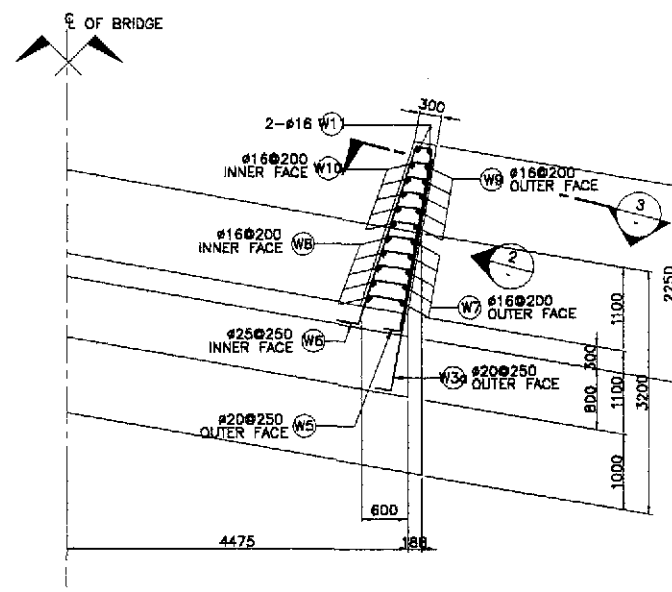
Diagram H: A bent bar with horizontal segments of length 'a' and 'c', a vertical segment of length 'b', and a diagonal segment of length 'd'. A dimension of 200 is shown for the vertical segment.

Diagram I: A bent bar with a horizontal segment of length 'a', a vertical segment of length 'b', and a diagonal segment of length 'c'.

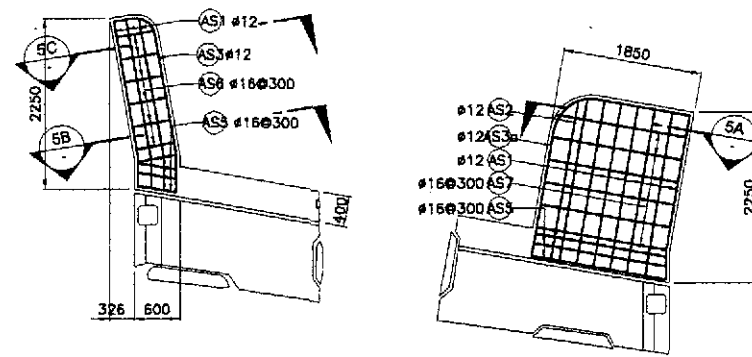
Diagram J: A bent bar with a horizontal segment of length 'a' and a vertical segment of length 'b'.

SCHEDULE OF REINFORCEMENT PER ABUTMENT

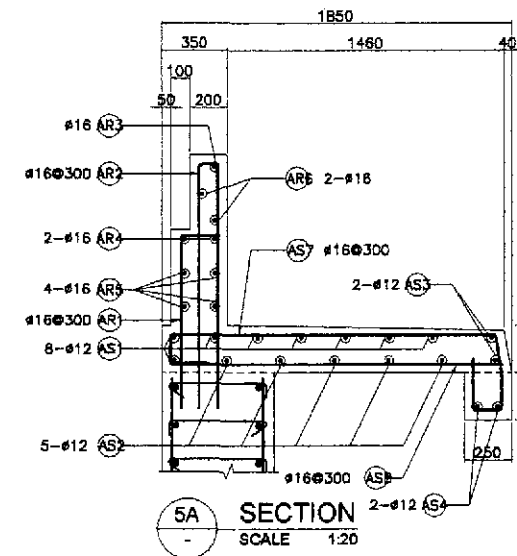
LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT						LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m ³)
							a	b	c	d	e	f					
BACKWALL	2.96	①	16	46	200	(B)	1050	200	1050	-	-	-	2300	105.80	1.579	168	121.35
		②	16	6	250	(A)	8990	-	-	-	-	-	8990	53.94	1.579	86	
		③	16	34	200	(C)	600	200	750	-	-	-	1550	52.70	1.579	84	
		④	16	2	AS SHOWN	(A)	6500	-	-	-	-	-	6500	13.00	1.579	21	
MAINWALL	36.67	5a	25	36	250	(E)	400	4580	-	-	-	-	4980	179.28	3.854	691	62.69
		5b	20	36	250	(E)	400	4580	-	-	-	-	4980	179.28	2.466	443	
		⑥	20	33	250	(A)	8990	-	-	-	-	-	8990	296.67	2.466	732	
		⑦	20	36	250	(B)	250	1000	250	-	-	-	1500	54.00	2.466	134	
		⑧	16	126	500	(D)	250	1000	250	-	-	-	1500	189.00	1.579	299	
		⑨	28	38	250	(B)	700	3050	700	-	-	-	4450	169.10	4.833	818	
		⑩	25	38	250	(B)	700	3050	700	-	-	-	4450	169.10	3.854	652	
		⑪	20	13	250	(B)	700	9335	700	-	-	-	10735	139.56	2.466	345	
FOOTING	32.87	⑫	20	13	250	(B)	700	9335	700	-	-	-	10735	139.56	2.466	345	76.09
		⑬	16	4	AS SHOWN	(A)	9335	-	-	-	-	-	9335	37.34	1.579	58	
		⑭	16	4	AS SHOWN	(A)	3050	-	-	-	-	-	3050	12.20	1.579	20	
		⑮	16	114	500	(D)	250	950	250	-	-	-	1450	165.30	1.579	262	
DOWEL		⑯	16	22	300	(E)	650	500	-	-	-	-	1150	25.30	1.579	40	
TOTAL	72.50																GRADE 40 TOTAL = 1,039 kgs. GRADE 80 TOTAL = 4,180 kgs.



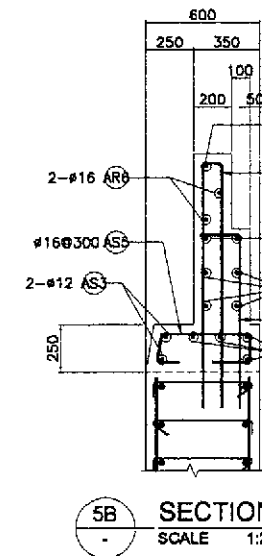
1 PLAN
SCALE 1:50



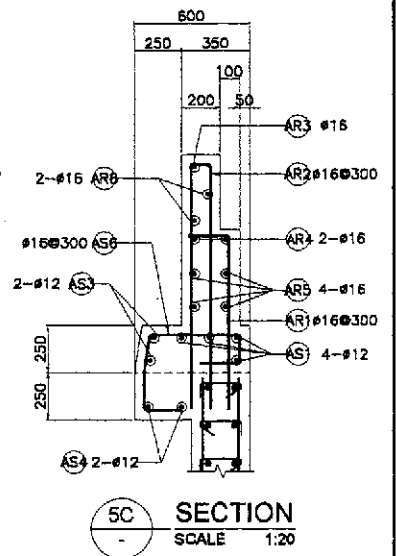
4 SIDEWALK DETAIL
SCALE 1:50



5A SECTION
SCALE 1:20

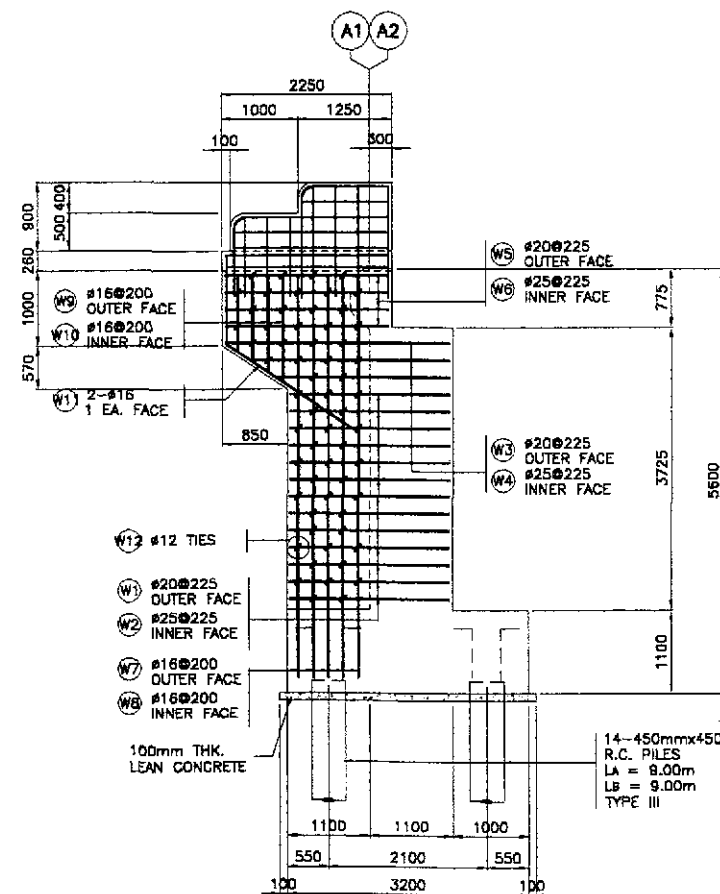


5B SECTION
SCALE 1:20

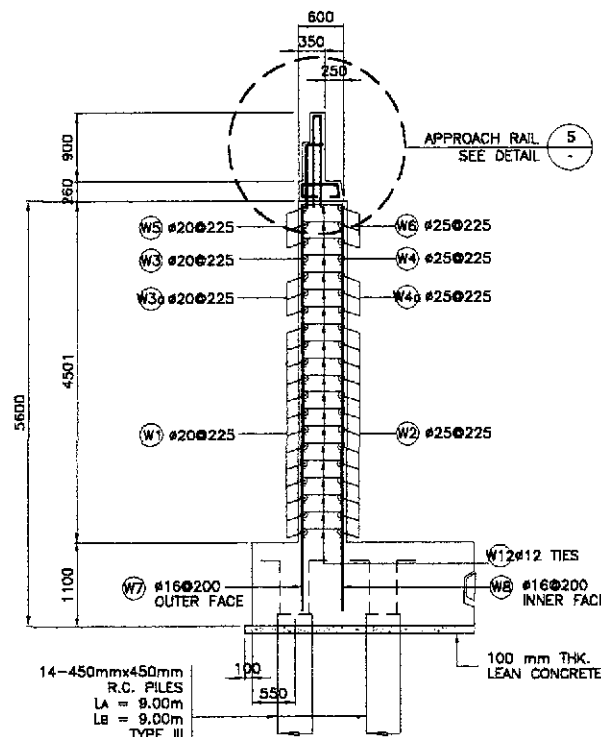


5C SECTION
SCALE 1:20

5 APPROACH RAIL DETAILS
SCALE 1:20

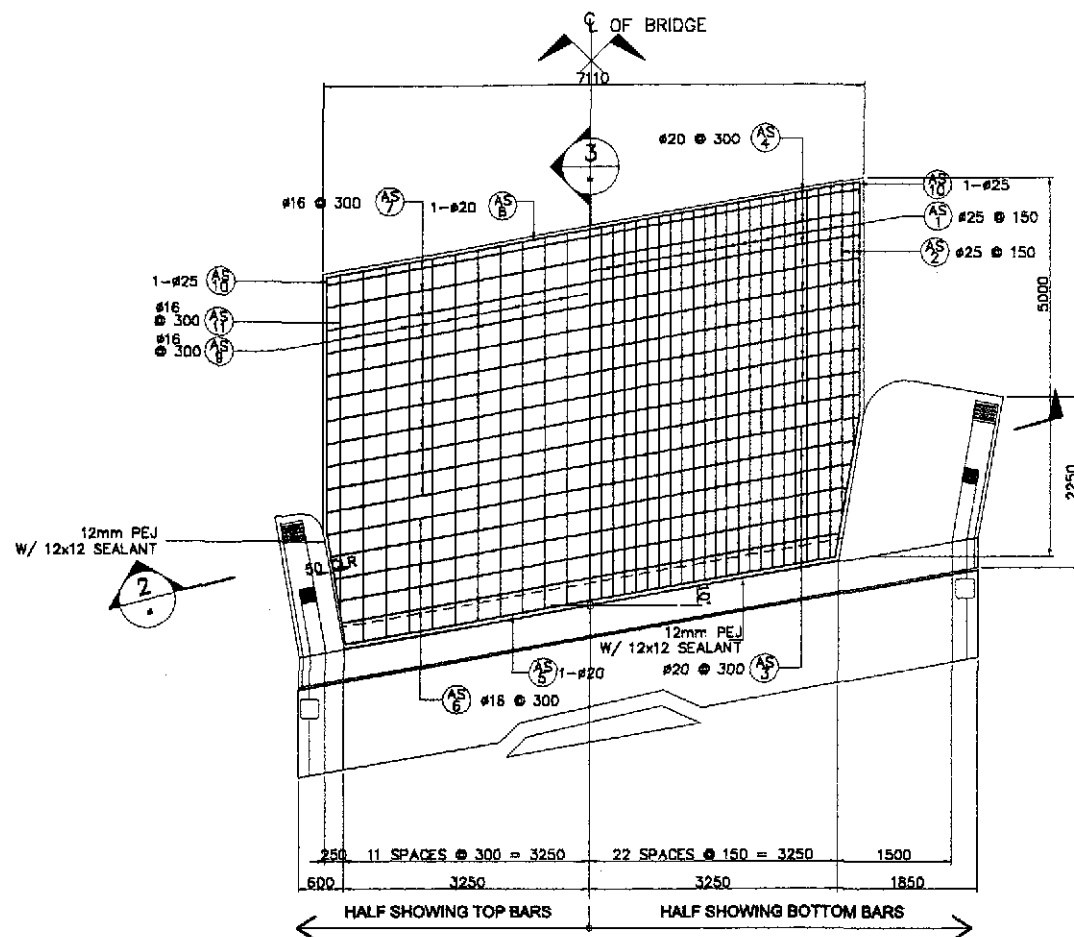


2 WINGWALL ELEVATION
SCALE 1:50



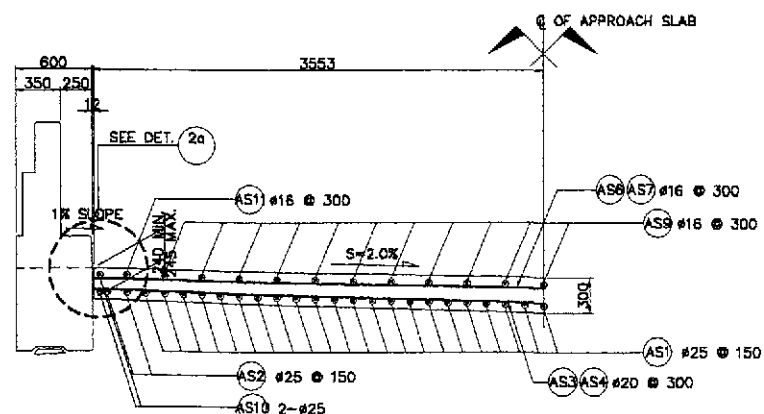
3 SECTION
SCALE 1:50

BAR BENDING DIAGRAM																			
(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	g						
WINGWALL	5.44	(W1)	20	26	225	(B)	400	2100	150	-	-	-	2650	68.90	2.466	170	193.08		
		(W2)	25	26	225	(B)	400	2100	150	-	-	-	2650	68.90	3.854	266			
		(W3)	20	6	225	(B)	400	2700	150	-	-	-	3250	19.50	2.466	49			
		(W4)	25	6	225	(B)	400	2700	150	-	-	-	3250	19.50	3.854	76			
		(W5)	20	8	225	(B)	400	2150	150	-	-	-	2700	21.60	2.466	54			
		(W6)	25	8	225	(B)	400	2150	150	-	-	-	2700	21.60	3.854	84			
		(W7)	16	10	200	(E)	250	5250	-	-	-	-	5600	56.00	1.579	89			
		(W8)	16	10	200	(E)	250	5250	-	-	-	-	5600	56.00	1.579	89			
		(W9)	16	12	200	(E)	250	1200	-	-	-	-	1500	18.00	1.579	29			
		(W10)	16	12	200	(E)	250	1200	-	-	-	-	1500	18.00	1.579	29			
		(W11)	16	4	AS SHOWN	(C)	250	1000	1700	-	-	-	2950	11.80	1.579	19			
		(W12)	12	136	AS SHOWN	(D)	170	450	170	-	-	-	790	107.44	0.888	96			
														GRADE 60 TOTAL = 699 kgs.					
														GRADE 40 TOTAL = 351 kgs.					
APPROACH RAILING AND SIDEWALK	2.71	(AS1)	12	12	AS SHOWN	(A)	2150	-	-	-	-	-	2150	25.80	0.888	23	91.82		
		(AS2)	12	5	AS SHOWN	(A)	2150	-	-	-	-	-	2150	10.75	0.888	10			
		(AS3)	12	4	AS SHOWN	(A)	2150	-	-	-	-	-	2150	8.60	0.888	8			
		(AS4)	12	4	AS SHOWN	(A)	2150	-	-	-	-	-	2150	8.60	0.888	8			
		(AS5)	16	3	300	(G)	200	170	480	200	170	200	1420	4.26	1.579	7			
		(AS6)	16	6	300	(F)	200	170	480	200	200	-	1250	7.50	1.579	12			
		(AS7)	16	9	300	(H)	200	170	1730	200	170	200	2670	24.03	1.579	38			
		(AS8)	16	9	300	(E)	200	1770	-	-	-	-	1970	17.73	1.579	28			
		(AR1)	16	8	300	(E)	200	900	-	-	-	-	1100	8.80	1.579	14			
		(AR2)	16	8	300	(J)	1300	120	1300	-	-	-	2720	21.76	1.579	35			
		(AR3)	16	2	AS SHOWN	(I)	1300	236	1300	-	-	-	2836	5.67	1.579	9			
		(AR4)	16	4	AS SHOWN	(I)	2050	236	900	-	-	-	3186	12.74	1.579	21			
		(AR5)	16	8	AS SHOWN	(A)	2050	-	-	-	-	-	2050	16.40	1.579	26			
		(AR6)	16	4	AS SHOWN	(A)	1300	-	-	-	-	-	1300	5.20	1.579	9			
																GRADE 40 TOTAL = 248 kgs.			
		TOTAL	8.15															GRADE 60 TOTAL = 699 kgs. GRADE 40 TOTAL = 599 kgs.	

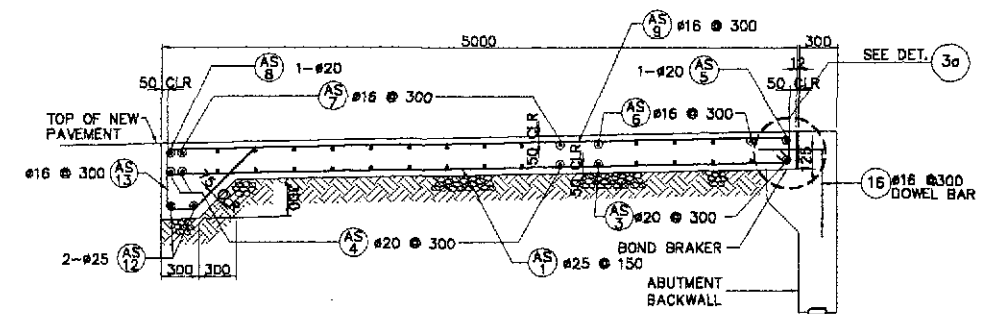


1 PLAN
SCALE 1:50

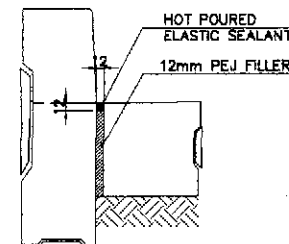
NOTE:
FOR LEFT FRONTAGE - IT IS THE
MIRROR IMAGE OF THE SECTION,
PLAN OF RIGHT FRONTAGE.



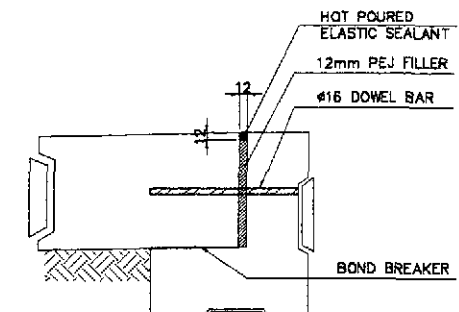
2 SECTION
SCALE 1:30



3 SECTION
SCALE 1:30

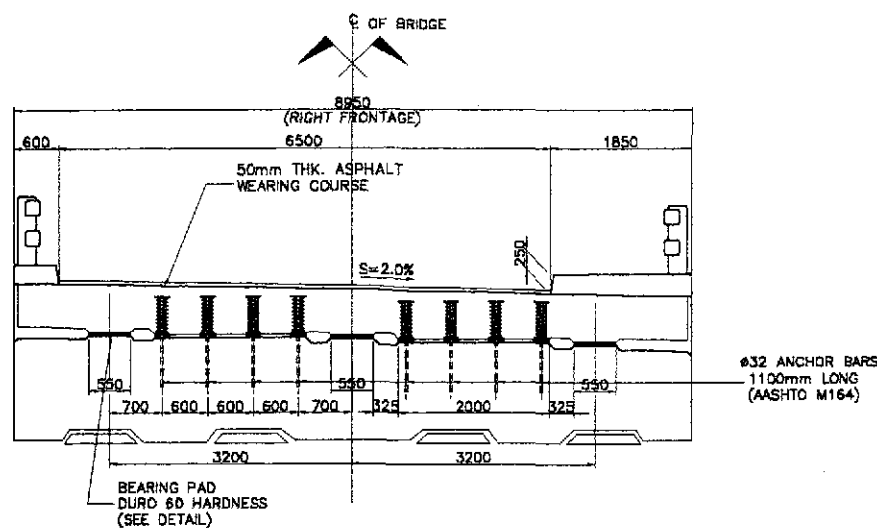


2a DETAIL
SCALE 1:10

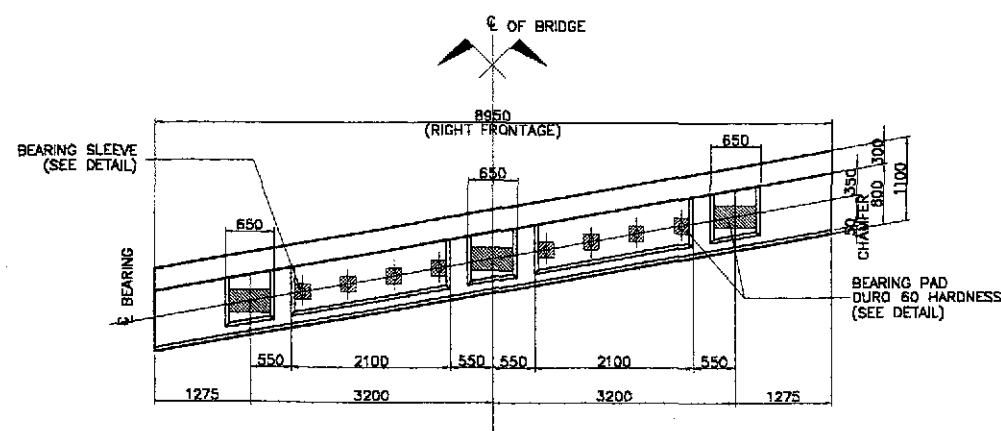


3a DETAIL
SCALE 1:10

BAR BENDING DIAGRAM																	
SCHEDULE OF REINFORCEMENT PER APPROACH SLAB																	
LOCATION	CONCRETE VOLUME (m³)	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	11.48	AS1	25	46	150	(B)	4900	200	-	-	-	-	5100	234.80	3.854	905	165.79
		AS2	25	4	150	(B)	3920	200	-	-	-	-	4120	16.48	3.854	64	
		AS3	20	6	300	(A)	6800	-	-	-	-	-	6800	40.80	2.466	101	
		AS4	20	12	300	(A)	7010	-	-	-	-	-	7010	84.12	2.466	208	
		AS5	20	1	AS SHOWN	(A)	8500	-	-	-	-	-	8500	8.50	2.466	17	
		AS6	16	5	300	(A)	6780	-	-	-	-	-	6780	33.80	1.578	54	
		AS7	16	11	300	(A)	7010	-	-	-	-	-	7010	77.11	1.578	122	
		AS8	20	1	AS SHOWN	(A)	7010	-	-	-	-	-	7010	7.01	2.466	18	
		AS9	16	24	300	(B)	4900	200	-	-	-	-	5100	122.40	1.578	194	
		AS10	25	4	AS SHOWN	(C)	3550	1500	-	-	-	-	5050	20.20	3.854	78	
		AS11	16	2	300	(B)	4400	200	-	-	-	-	4600	9.20	1.578	15	
		AS12	25	2	AS SHOWN	(A)	7010	-	-	-	-	-	7010	14.02	3.854	55	
		AS13	16	25	300	(D)	400	500	200	700	-	-	1800	45.00	1.578	72	
TOTAL	11.48													GRADE 40 TOTAL = 457 kgs. GRADE 60 TOTAL = 1,448 kgs.			



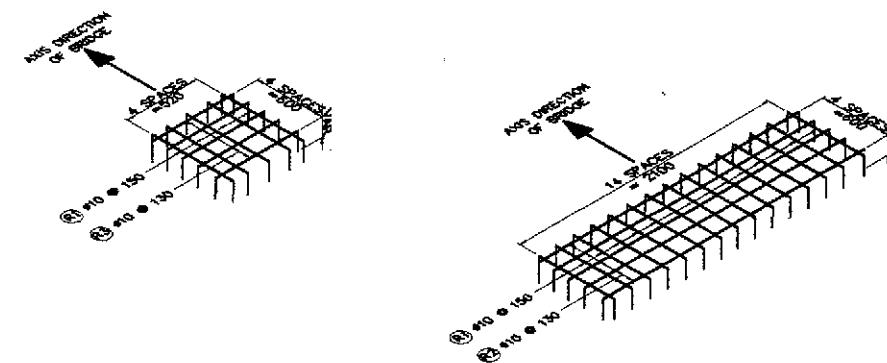
1 SECTION AT ABUTMENT SEAT
SCALE 1:50



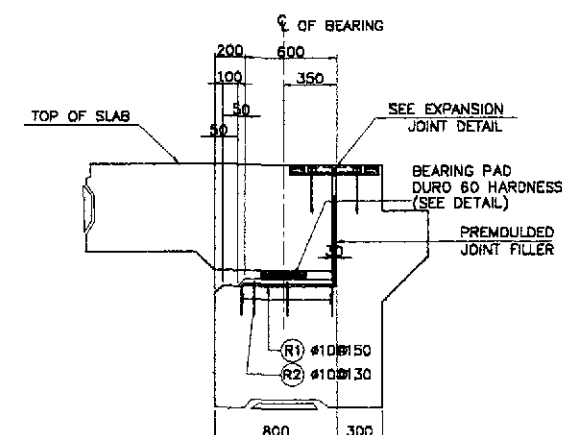
2 PLAN AT ABUTMENT SEAT
SCALE

NOTE :

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

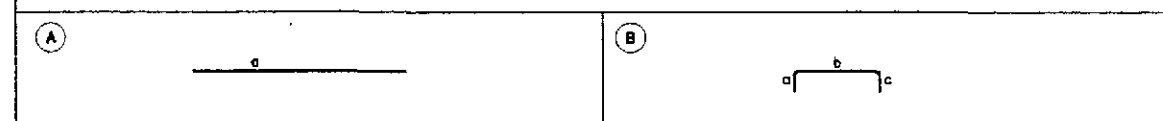


4 RISER REINFORCEMENT
NOT TO SCALE



3 SECTION
SCALE 1:25

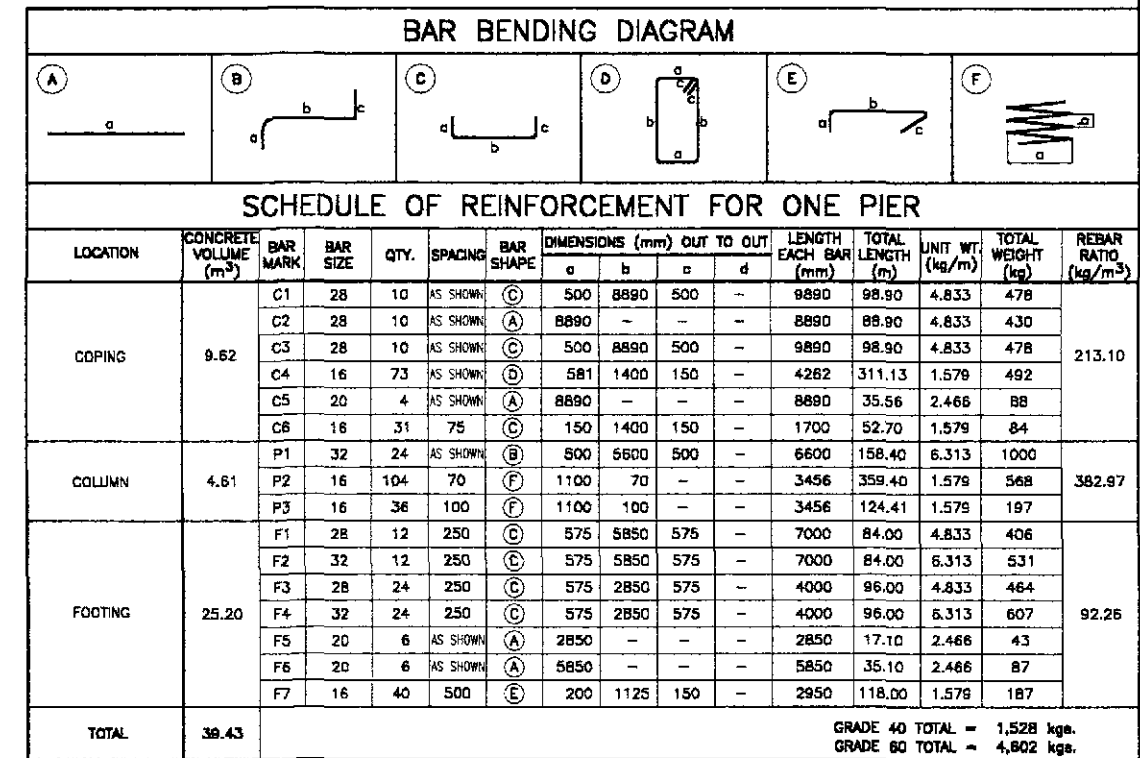
BAR BENDING DIAGRAM

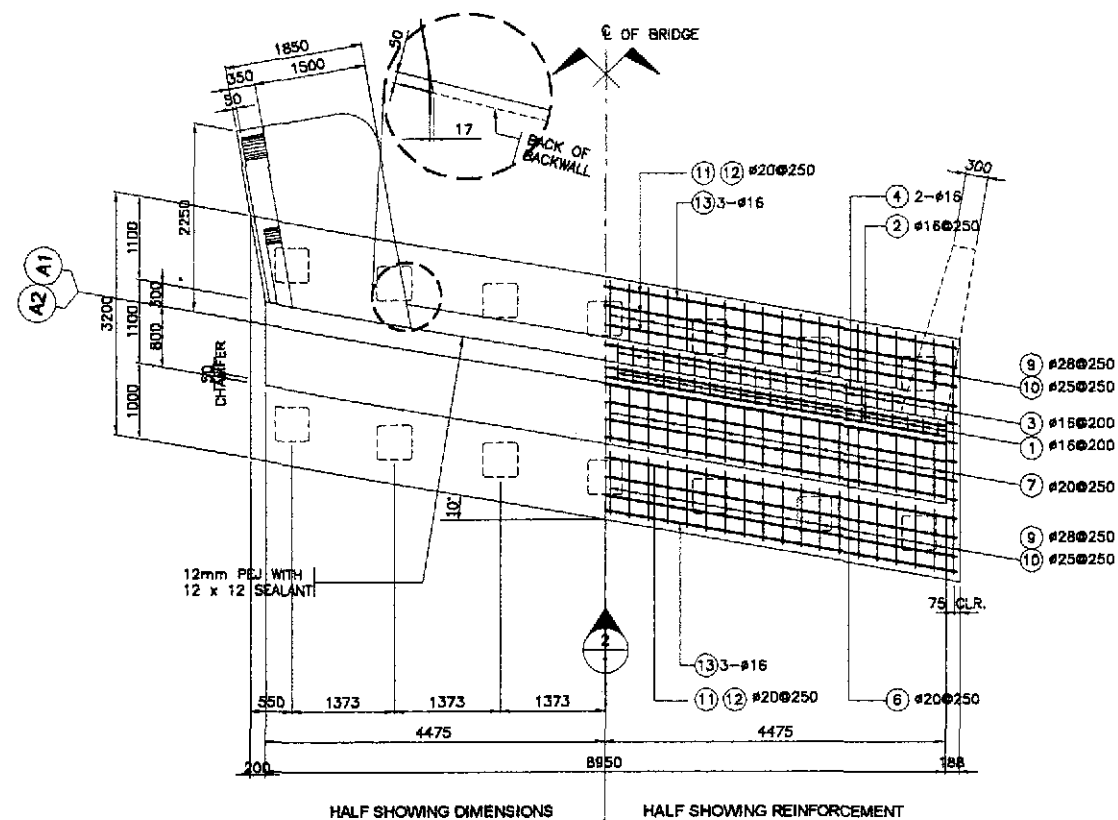


SCHEDULE OF REINFORCEMENT

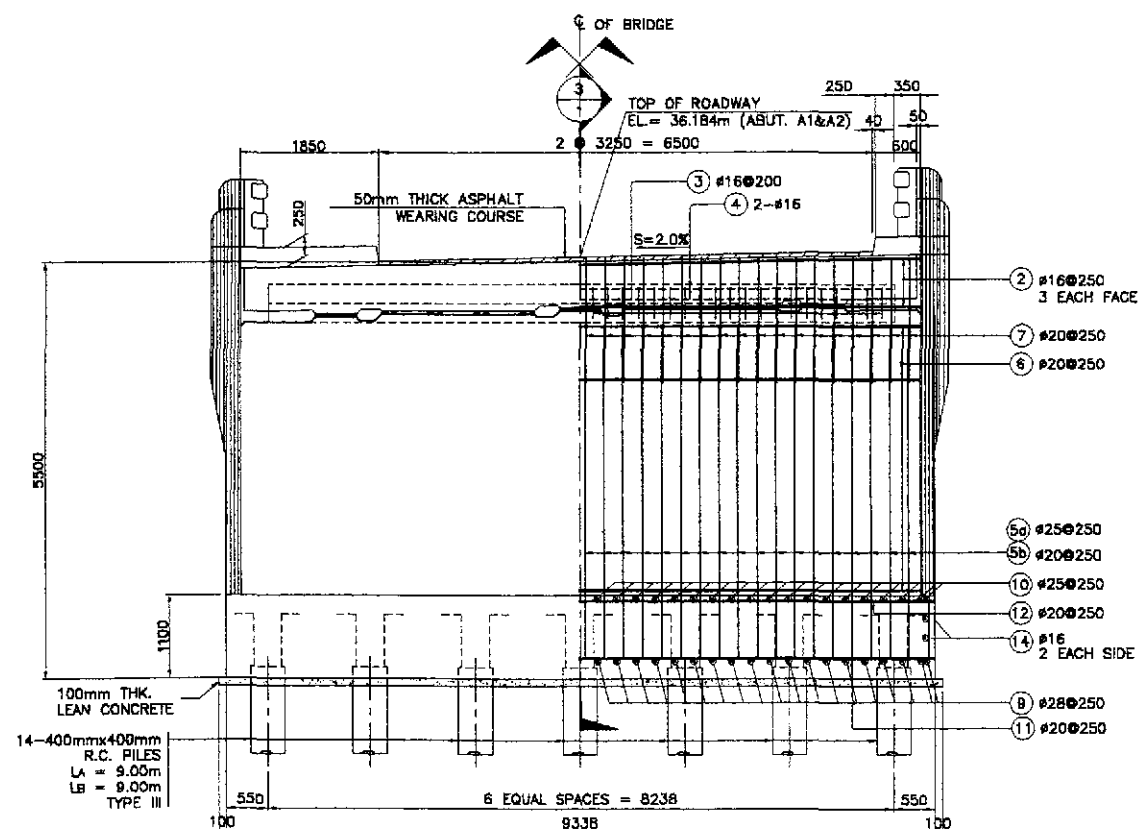
LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSION (mm) OUT TO OUT					LENGTH EACH BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m³)
RISER	0.19	R1	10	45	150	(B)	a	b	c	d	e	1540	69.30	0.616	43	410.53
		R2	10	10	130	(B)	500	2175	500			3175	31.75	0.616	20	
		R3	10	15	130	(B)	500	540	500			1540	23.10	0.616	15	
TOTAL	0.19															GRADE 40 TOTAL = 78 kgs.

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

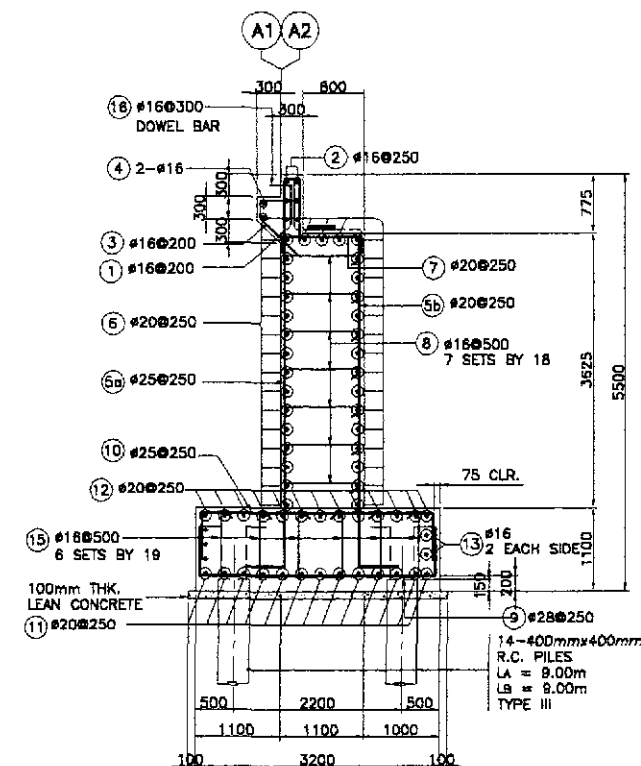




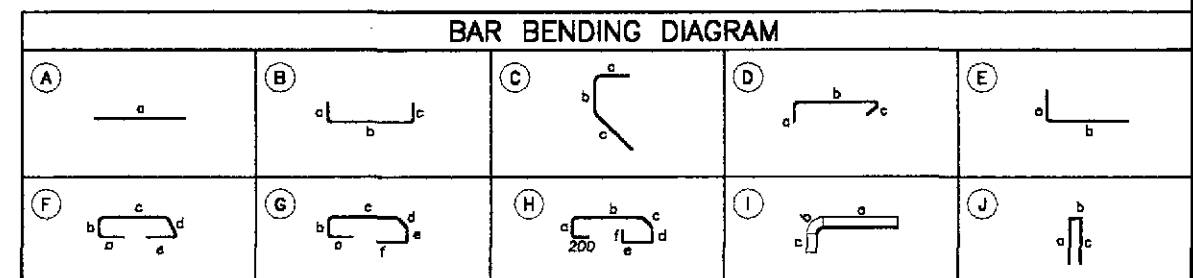
1 PLAN
SCALE 1:50



2 ELEVATION
SCALE 1:50

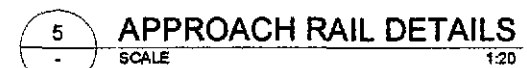


3 SECTION
SCALE 1:50



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	2.96	①	16	45	200	(B)	1050	200	1050	-	-	-	2300	103.50	1.579	164	118.98
		②	16	6	250	(A)	8990	-	-	-	-	-	8990	53.94	1.579	86	
		③	16	33	200	(C)	600	200	750	-	-	-	1550	51.15	1.579	81	
		④	16	2	AS SHOWN	(A)	6500	-	-	-	-	-	6500	13.00	1.579	21	
MAINWALL	35.69	5a	25	36	250	(E)	400	4475	-	-	-	-	4875	175.50	3.854	677	63.75
		5b	20	36	250	(E)	400	4475	-	-	-	-	4875	173.88	2.466	433	
		⑥	20	33	250	(A)	8990	-	-	-	-	-	8990	296.67	2.466	732	
		⑦	20	36	250	(B)	250	1000	250	-	-	-	1500	54.00	2.466	134	
		⑧	16	126	500	(D)	250	1000	250	-	-	-	1500	189.00	1.579	299	
FOOTING	32.87	⑨	28	38	250	(B)	700	3050	700	-	-	-	4450	169.10	4.833	816	76.09
		⑩	25	38	250	(B)	700	3050	700	-	-	-	4450	169.10	3.854	652	
		⑪	20	13	250	(B)	700	9335	700	-	-	-	10735	139.56	2.466	345	
		⑫	20	13	250	(B)	700	9335	700	-	-	-	10735	139.56	2.466	345	
		⑬	16	4	AS SHOWN	(A)	9335	-	-	-	-	-	9335	37.34	1.579	59	
		⑭	16	4	AS SHOWN	(A)	3050	-	-	-	-	-	3050	12.20	1.579	20	
TOTAL	71.52	⑮	16	114	500	(D)	250	950	250	-	-	-	1450	165.30	1.579	262	
		⑯	16	22	300	(E)	650	500	-	-	-	-	1150	25.30	1.579	40	
													GRADE 40 TOTAL = 1,032 kgs.				
													GRADE 60 TOTAL = 4,136 kgs.				

JICA JAPAN INTERNATIONAL COOPERATION AGENCY		KATAHIRA & ENGINEERS INTERNATIONAL YACHIYO ENGINEERING CO., LTD.		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 (Plaridel, Cabanatuan and San Jose Bypasses)		SCALE : 1:50		SHEET CONTENTS : BRIDGE NO. 7 ABUTMENT A1 & A2 MAINWALL REINFORCEMENT DETAILS LEFT FRONTAGE (ULTIMATE STAGE)		SHEET NO. : B7-20	
DESIGNED	DATE	SIGNATURE	PROJECT	BUREAU OF DESIGN	OFFICE OF THE SECRETARY	REVIEWED BY	RECOMMENDED BY	APPROVED BY							
CHECKED	10/16/07	[Signature]	PROJECT DIRECTOR	CHIEF, BRIDGES DIVISION	DIRECTOR IV (OIC)	MANUEL M. BONDAN	SIMEON A. DATUMANONG	[Signature]							
SUBMITTED	10/18/07	[Signature]	PROJECT LEADER												



BAR BENDING DIAGRAM

Diagram A: A horizontal bar of length 'a'.

Diagram B: A U-shaped bar with horizontal segments 'a' and 'c', and a vertical segment 'b'.

Diagram C: A bent bar with segments 'a', 'b', and 'c'.

Diagram D: A bent bar with segments 'a', 'b', and 'c'.

Diagram E: A bent bar with segments 'a' and 'b'.

Diagram F: A bent bar with segments 'a', 'b', 'c', 'd', and 'e'.

Diagram G: A bent bar with segments 'a', 'b', 'c', 'd', 'e', and 'f'.

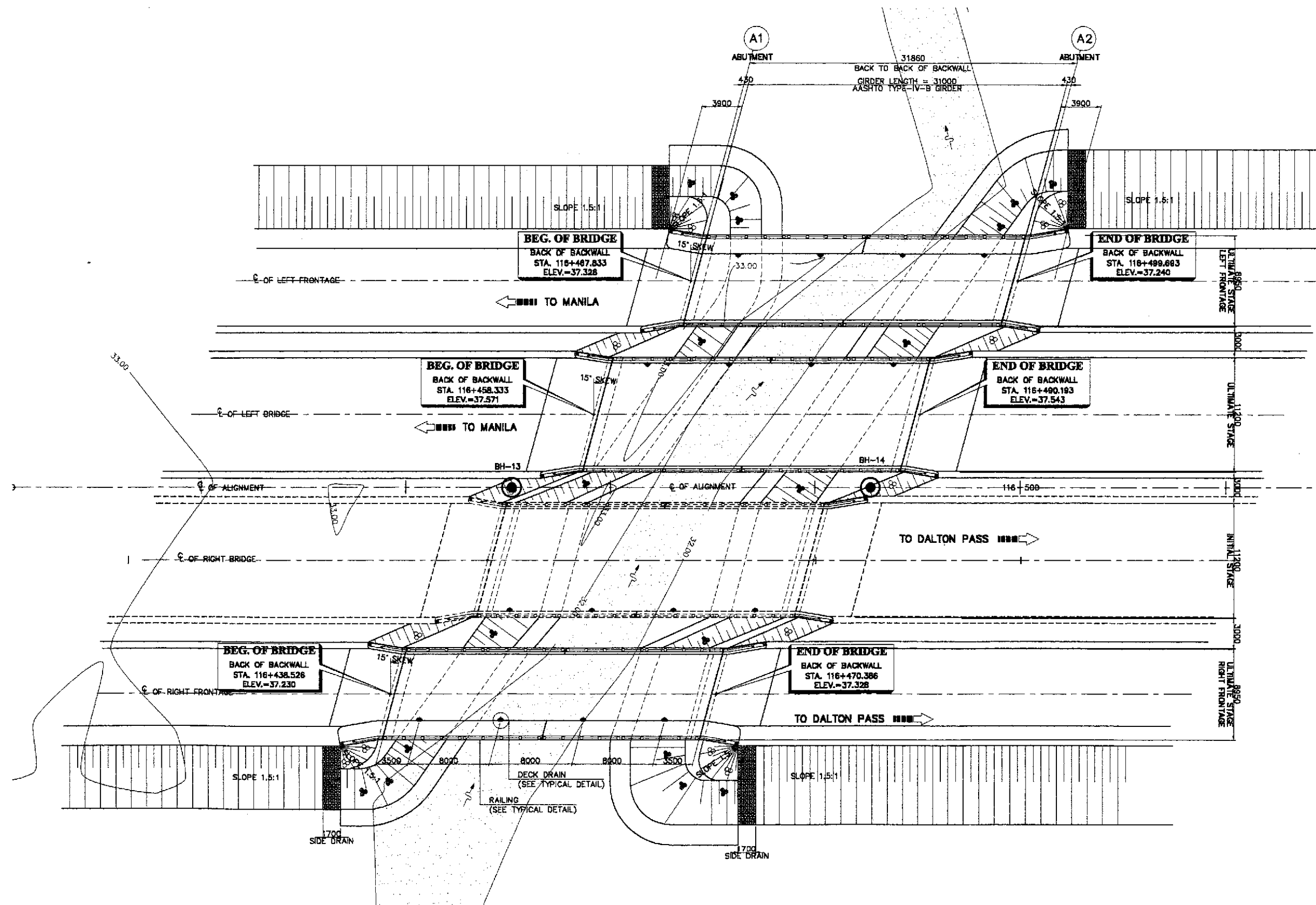
Diagram H: A bent bar with segments 'a', 'b', 'c', 'd', 'e', and 'f'. A dimension of 200 is shown for segment 'f'.

Diagram I: A bent bar with segments 'a', 'b', and 'c'.

Diagram J: A bent bar with segments 'a' and 'b'.

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	5.34	W1	20	26	225	(B)	400	2100	150	-	-	-	2650	68.90	2.466	170	192.92	
		W2	25	26	225	(B)	400	2100	150	-	-	-	2650	68.90	3.854	266		
		W3	20	6	225	(B)	400	2700	150	-	-	-	3250	19.50	2.466	49		
		W4	25	6	225	(B)	400	2700	150	-	-	-	3250	19.50	3.854	76		
		W5	20	8	225	(B)	400	2150	150	-	-	-	2700	21.80	2.466	54		
		W6	25	8	225	(B)	400	2150	150	-	-	-	2700	21.80	3.854	84		
		W7	16	10	200	(E)	250	5250	-	-	-	-	5500	55.00	1.579	87		
		W8	16	10	200	(E)	250	5250	-	-	-	-	5500	55.00	1.579	87		
		W9	16	10	200	(E)	250	1200	-	-	-	-	1450	14.50	1.579	23		
		W10	16	10	200	(E)	250	1200	-	-	-	-	1450	14.50	1.579	23		
		W11	16	4	AS SHOWN	(C)	250	1000	1700	-	-	-	2950	11.80	1.579	19		
		W12	12	130	AS SHOWN	(D)	170	450	170	-	-	-	790	102.70	0.888	92		
GRADE 60 TOTAL = 699 kgs.																		
GRADE 40 TOTAL = 331 kgs.																		
APPROACH RAILING AND SIDEWALK	2.71	AS1	12	12	AS SHOWN	(A)	2150	-	-	-	-	-	2150	25.80	0.888	23	92.52	
		AS2	12	5	AS SHOWN	(A)	2150	-	-	-	-	-	2150	10.75	0.888	10		
		AS3	12	4	AS SHOWN	(A)	2150	-	-	-	-	-	2150	8.60	0.888	8		
		AS4	12	4	AS SHOWN	(A)	2150	-	-	-	-	-	2150	8.60	0.888	8		
		AS5	16	3	300	(G)	200	170	480	200	170	200	1420	4.26	1.579	7		
		AS6	16	6	300	(F)	200	170	480	200	200	-	1250	7.50	1.579	12		
		AS7	16	6	300	(H)	200	170	1730	200	170	200	2870	25.83	1.579	41		
		AS8	16	9	300	(E)	200	1770	-	-	-	-	1970	17.73	1.579	28		
		AS9	16	8	300	(E)	200	900	-	-	-	-	1100	8.80	1.579	14		
		AS10	16	8	300	(J)	1300	120	1300	-	-	-	2720	21.76	1.579	35		
		AS11	16	2	AS SHOWN	(I)	2300	236	1300	-	-	-	2836	5.67	1.579	9		
		AS12	16	4	AS SHOWN	(I)	2050	236	900	-	-	-	3186	12.74	1.579	21		
		AS13	16	8	AS SHOWN	(A)	2050	-	-	-	-	-	2050	16.40	1.579	26		
		AS14	16	4	AS SHOWN	(A)	1300	-	-	-	-	-	1300	5.20	1.579	9		
		GRADE 40 TOTAL = 251 kgs.																
		TOTAL	8.05															GRADE 60 TOTAL = 699 kgs.
GRADE 40 TOTAL = 582 kgs.																		



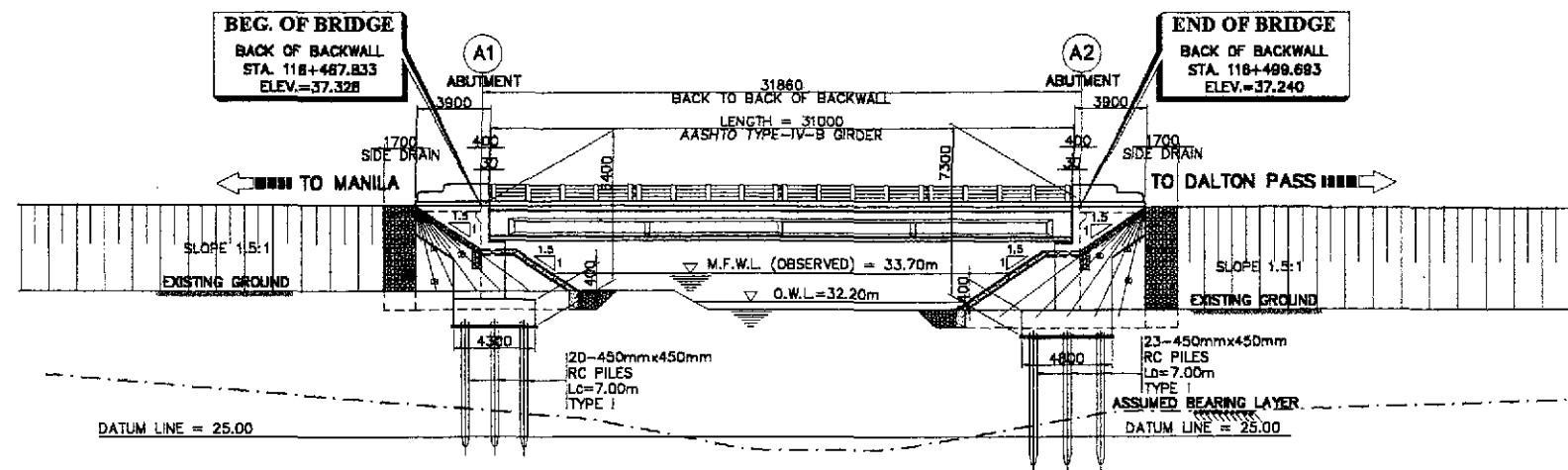
1 GENERAL PLAN
SCALE 1:200

A CABANATUAN BYPASS BRIDGE NO. 8 (STA. 116+458.333)
SCALE SHOWN

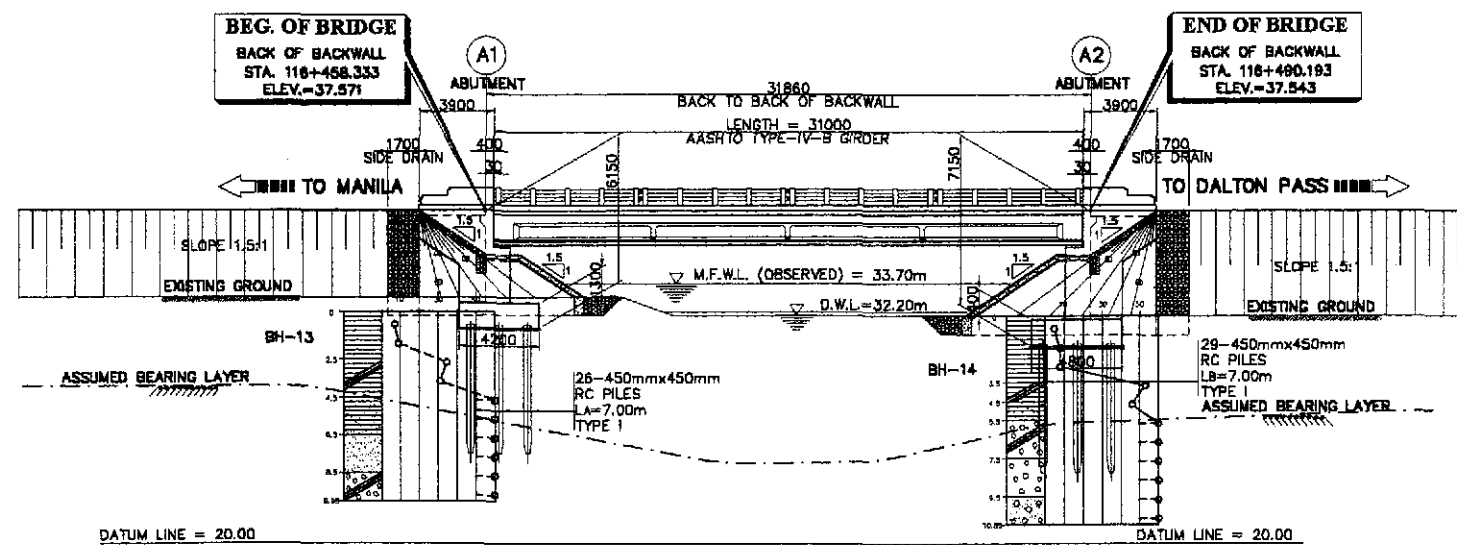
PERFECTO L. ZAPLAN JR.
DIO Chief, Hydraulics Division, BOD

JICA 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 (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : 1:200 FULL SIZE A1	SHEET CONTENTS : BRIDGE NO. 8 GENERAL PLAN (ULTIMATE STAGE)	SHEET NO. : B8-01
DESIGNED 10/09/01 E. N. SALLAN	CHECKED 10/16/02 [Signature]	SUBMITTED 10/18/02 [Signature]	Submitted By: DANILO C. TRAJANO Project Director	Reviewed By: ADRIANO M. DORDY Chief, Bridge Division	Recommended By: GILBERTO S. REYES Director IV (DIO)	Recommended By: MANUEL W. BONOAN Undersecretary	Approved By: SIMEON A. DATUMANONG Secretary	CABANATUAN BYPASS - CONTRACT PACKAGE II	

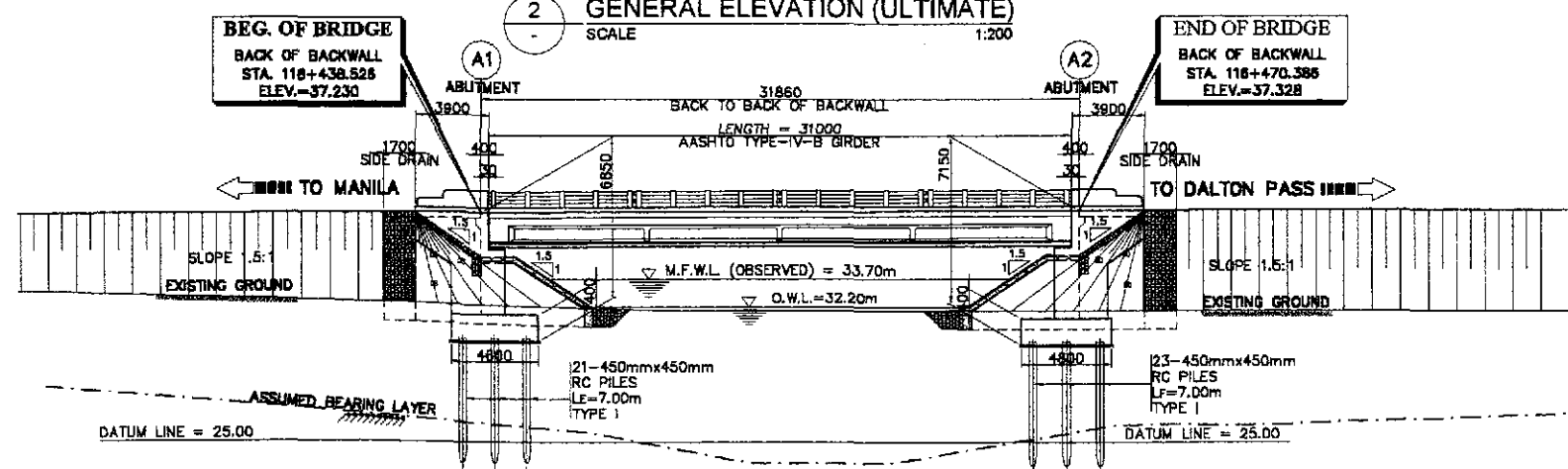
KATAHIRA & ENGINEERS
INTERNATIONAL
YEO YACHIYO ENGINEERING
CO., LTD.



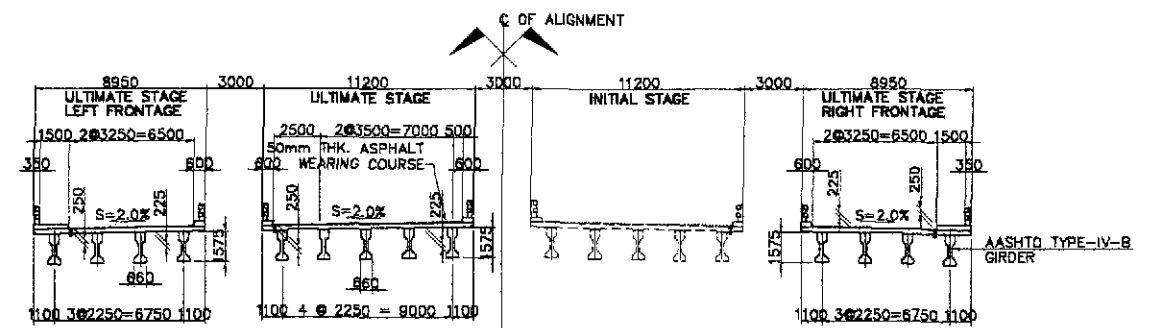
1 GENERAL ELEVATION @ LEFT FRONTAGE
SCALE 1:200



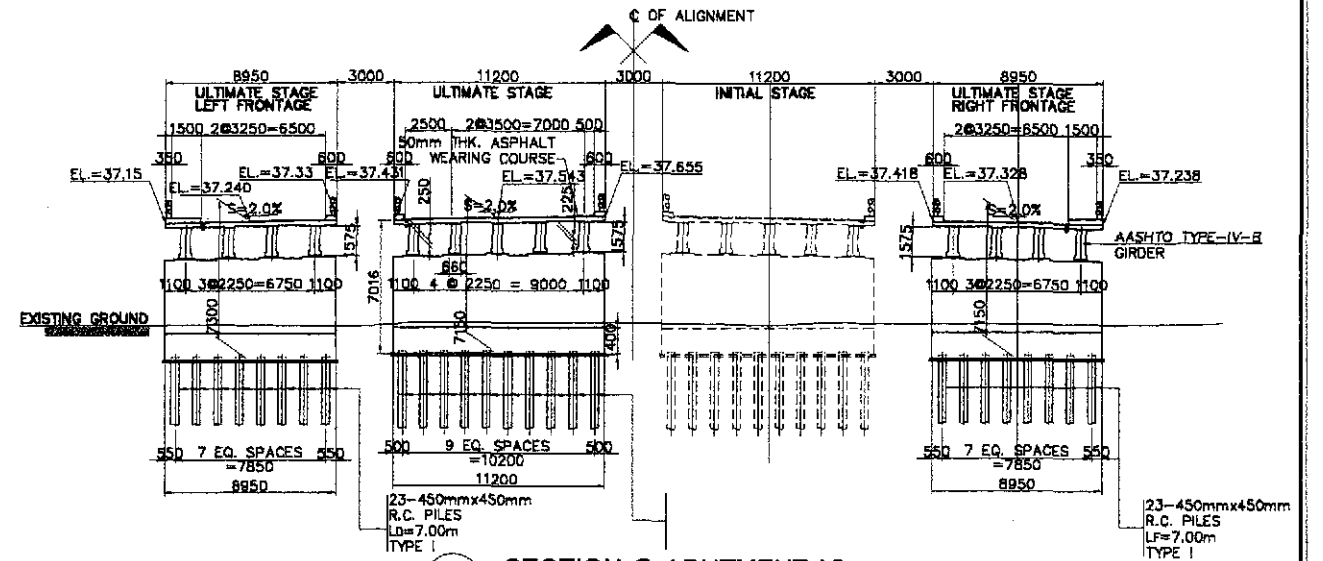
2 GENERAL ELEVATION (ULTIMATE)
SCALE 1:200



3 GENERAL ELEVATION @ RIGHT FRONTAGE
SCALE 1:200



4 SECTION @ MIDSPAN
SCALE 1:200



5 SECTION @ ABUTMENT A2
SCALE 1:200

HYDRAULIC DESIGN DATA	
VELOCITY @ 50 YEARS, V_{50}	2.677 m/sec
DISCHARGE @ 50 YEARS, Q_{50}	32.300 cu.m/sec
CATCHMENT AREA, CA	2.050 sq. km

NOTE :
PRIOR TO CONSTRUCTION SOIL INVESTIGATION AT ABUTMENT A2 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.

A CABANATUAN BYPASS BRIDGE NO. 8 (STA. 116+458.333)
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.

DESIGNED: 10/09/02
CHECKED: 10/16/02
SUBMITTED: 10/18/02
E.N. SALLAN
R.M. - P.M.
DANILLO C. TRAJANO
Project Director

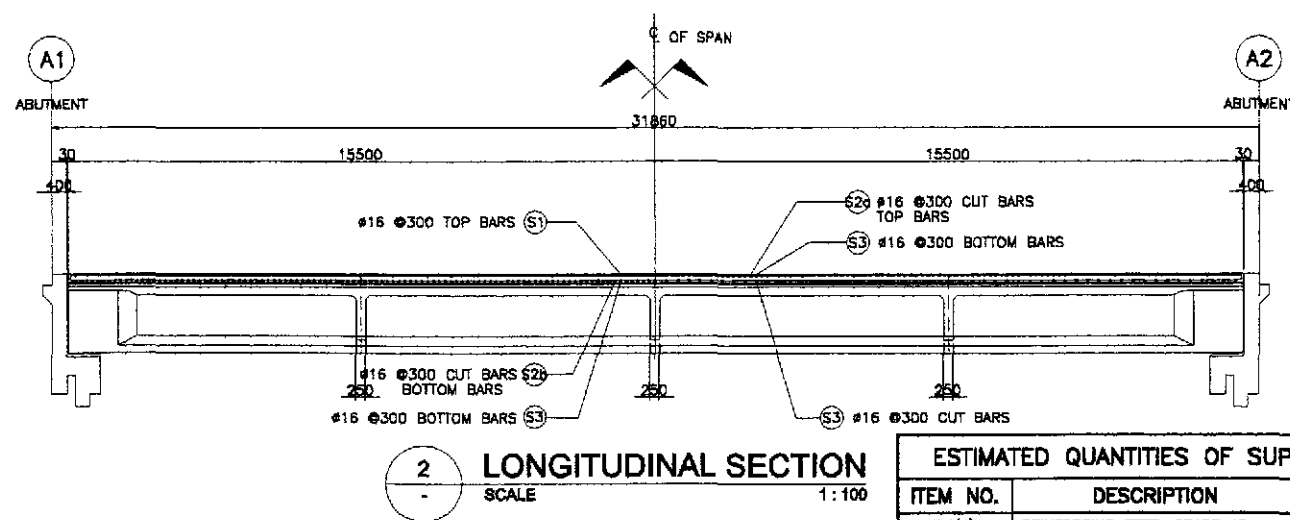
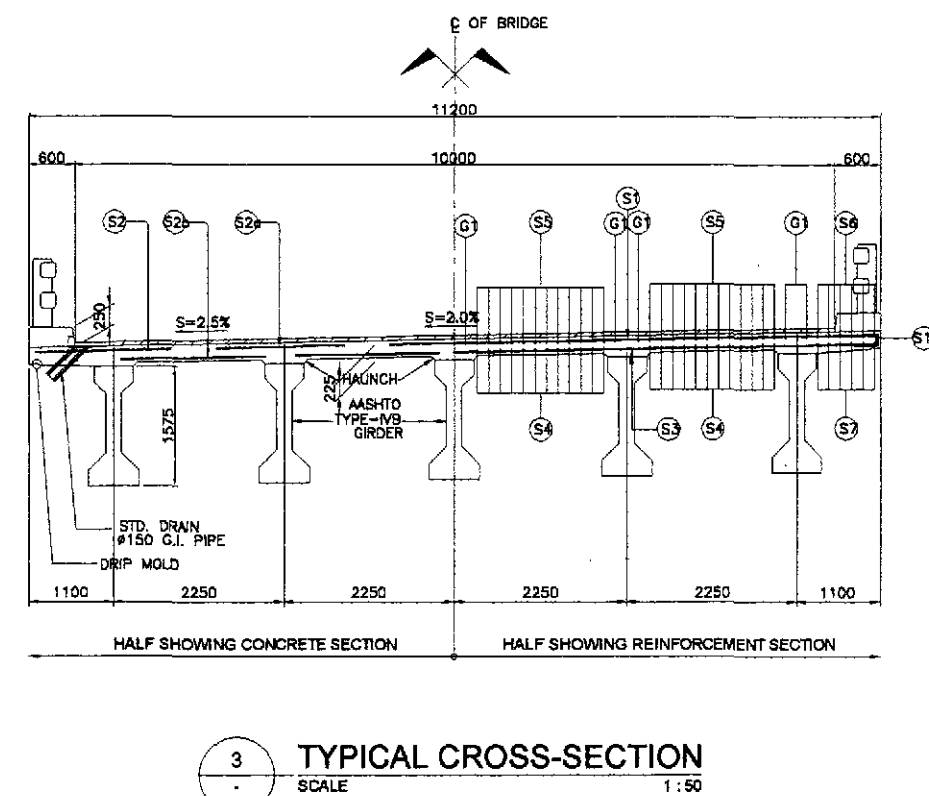
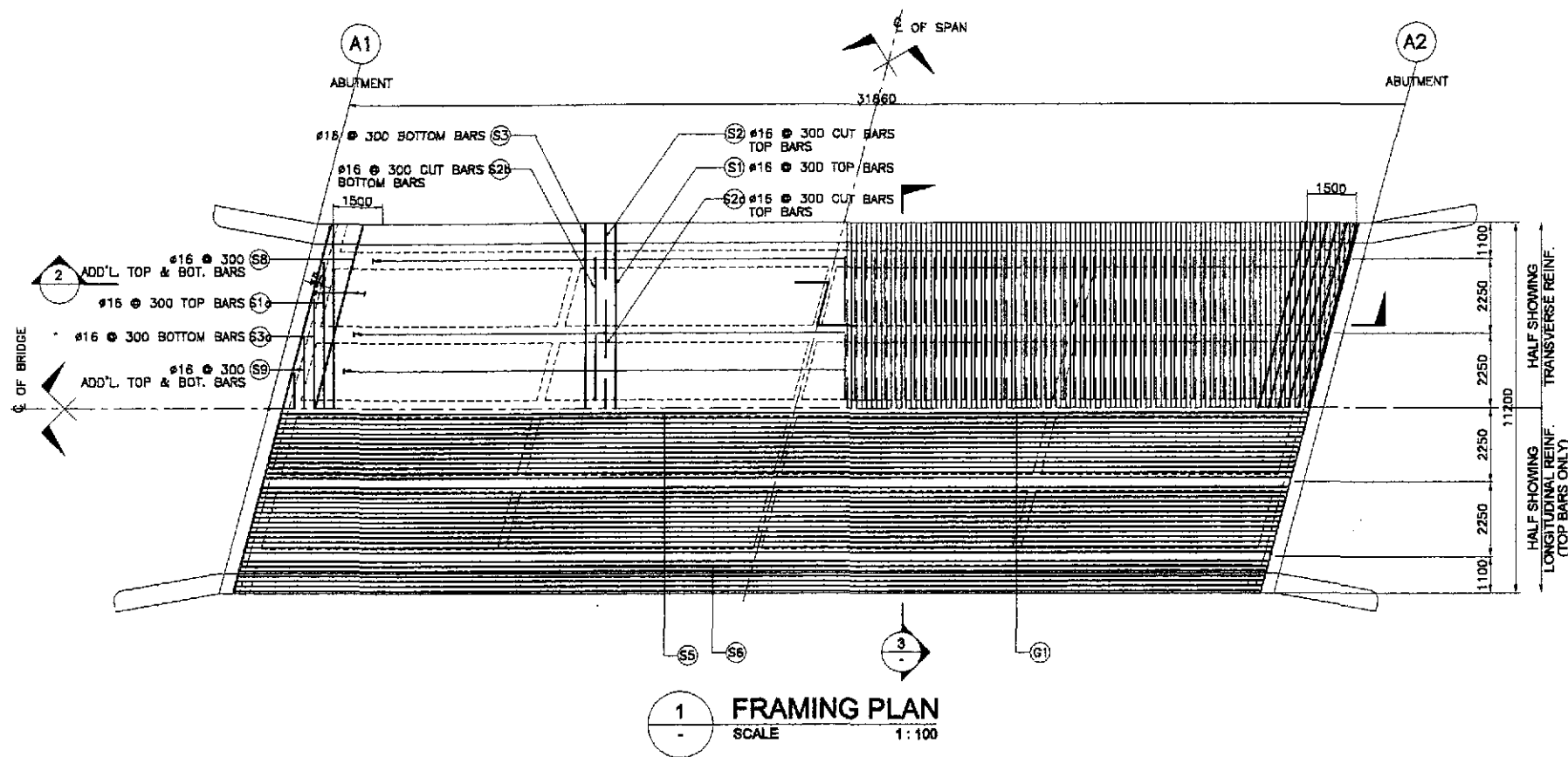
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
BUREAU OF DESIGN
OFFICE OF THE SECRETARY
Recommended By: GILBERTO S. REYES
Director IV (OIC)
Manuel M. BONGAN
Undersecretary
SIMEON A. DATUMANDONG
Secretary

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. 8
GENERAL ELEVATION
AND SECTIONS
(ULTIMATE STAGE)

SHEET NO. :
B8-02



ESTIMATED QUANTITIES OF SUPERSTRUCTURE

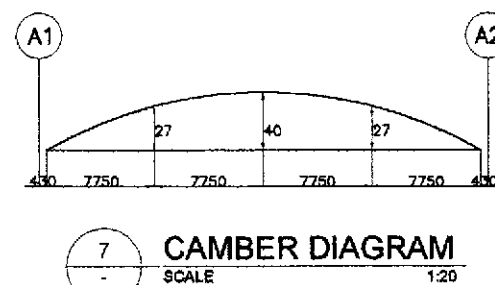
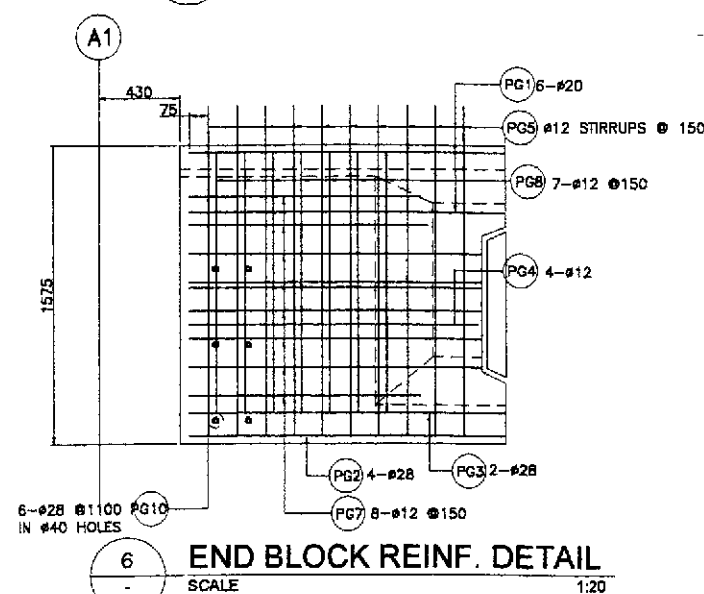
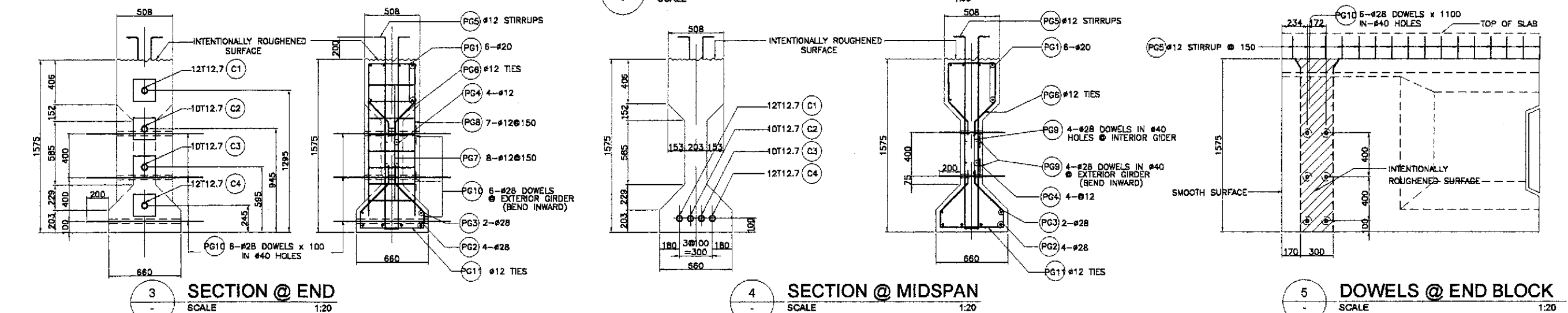
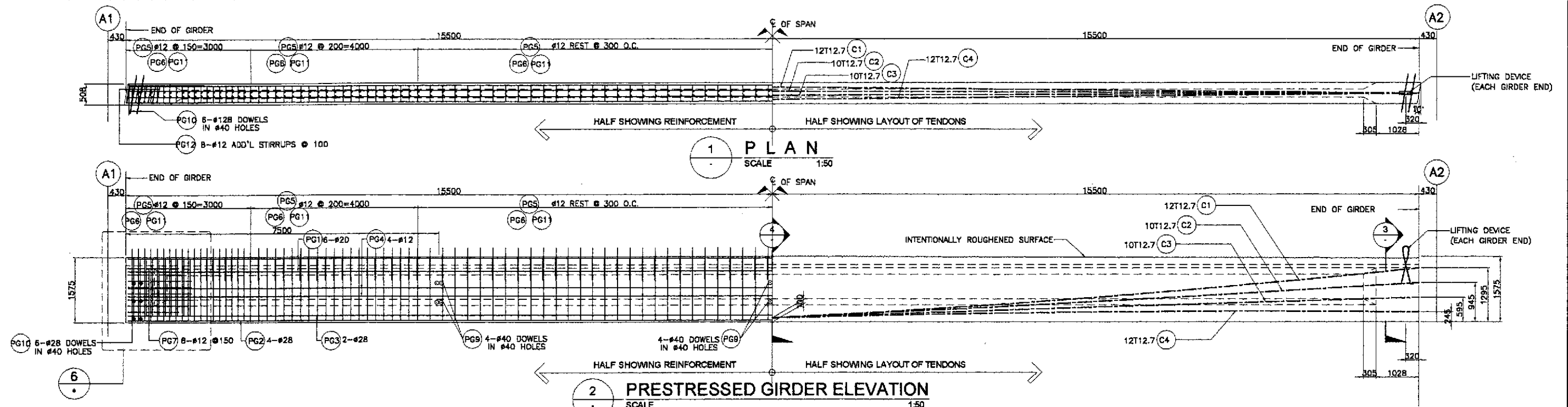
ITEM NO.	DESCRIPTION	UNIT	TOTAL
404(1)a	REINFORCING STEEL GRADE 40	kgs.	24059
	DECK SLAB		13720
	DIAPHRAGM		468
	GIRDER		5995
	SIDEWALK, RAILING, & POST		2482
	APPROACH SLAB		1394
404(1)b	REINFORCING STEEL GRADE 60	kgs.	13510
	DECK SLAB		0
	DIAPHRAGM		1336
	GIRDER		7260
	SIDEWALK, RAILING, & POST		590
	APPROACH SLAB		4324
405(1)	STRUCTURAL CONCRETE	cu. m.	247
	DECK SLAB		82.44
	DIAPHRAGM		15.51
	GIRDER		97.16
	SIDEWALK, RAILING, & POST		16.51
	APPROACH SLAB		35.34

BAR BENDING DIAGRAM

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

SCHEDULE OF REINFORCEMENT

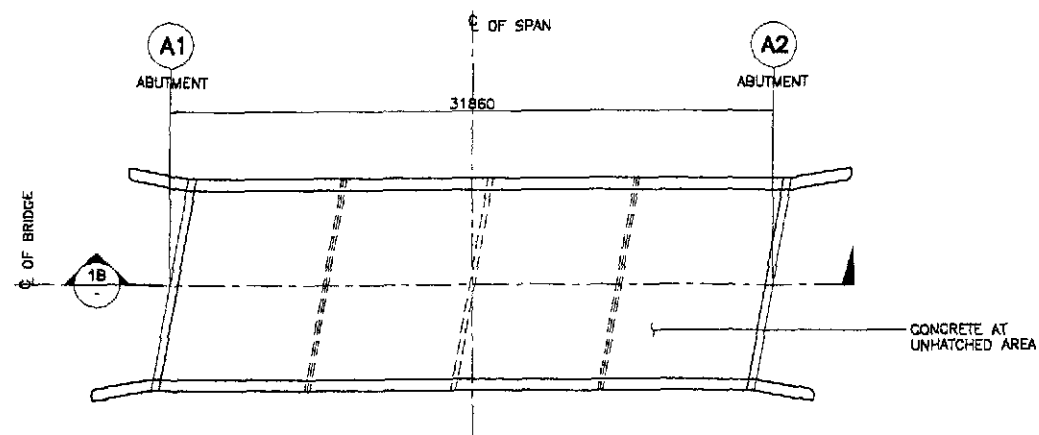
LOCATION	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm) OUT TO OUT	LENGTH EACH BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT IN (kg)	REBAR RATIO (kg/m³)
DECK SLAB	82.44	G1	16	10	AS SHOWN	(A)	30900	11100	30900	1.578	488	166.41
		S1	16	94	300	(C)	145	11390	1070.00	1.578	1691	
		S1a	16	22	300	(C)	145	6150	141.68	1.578	224	
		S2	16	185	300	(B)	145	1800	365.68	1.578	578	
		S2a	16	282	300	(A)	1700	—	479.40	1.578	757	
		S2b	16	376	3200	(A)	1950	—	733.20	1.578	1158	
		S3	16	94	2300	(A)	11100	—	1043.40	1.578	1648	
		S3a	16	22	200	(A)	6150	—	135.30	1.578	214	
		S4	16	48	150	(A)	30900	—	1483.20	1.578	2342	
		S5	16	48	150	(A)	30900	—	1483.20	1.578	2342	
		S6	16	12	AS SHOWN	(A)	30900	—	370.80	1.578	586	
		S7	16	12	AS SHOWN	(A)	30900	—	370.80	1.578	586	
		S8	16	24	AS SHOWN	(A)	11500	—	276.00	1.578	436	
		S9	16	44	AS SHOWN	(A)	6150	—	270.60	1.578	428	
		S10	12	140	450	(E)	145	900	272.30	0.888	242	
TOTAL	82.44										GRADE 40 TOTAL = 13,720 kgs.	



- NOTES:
- 1.) SEE GENERAL NOTES, -2, FOR GIRDER DESIGN GUIDE.
 - 2.) JACKING FORCE PER GIRDER, $P_j = 8058 \text{ KN}$.
 - 3.) JACKING WILL BE DONE AT BOTH ENDS.
 - 4.) FINAL PRESTRESSING FORCE @ MIDSPAN, $F_{NET} = 4783 \text{ KN}$.

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	6	AS SHOWN	(A)	30920	-	-	-	-	30920	185.52	2.466	458	19.43	136.42	QUANTITIES ARE FOR ONE (1) GIRDER ONLY
	PG2	28	4	AS SHOWN	(A)	30920	-	-	-	-	30920	123.68	4.833	598			
	PG3	28	2	AS SHOWN	(A)	30920	-	-	-	-	30920	61.84	4.833	299			
	PG4	12	4	AS SHOWN	(A)	30920	-	-	-	-	30920	123.68	0.888	110			
	PG5	12	138	150	(G)	100	1750	103	-	-	3803	524.81	0.888	467			
	PG6	12	138	150	(E)	430	350	150	260	-	1950	269.10	0.888	239			
	PG7	12	16	150	(D)	430	1000	550	-	-	3530	56.48	0.888	51			
	PG8	12	14	150	(C)	430	1500	150	-	-	3730	52.22	0.888	47			
	PG9	28	12	AS SHOWN	(A)	603	-	-	-	-	603	7.24	4.833	35			
	PG10	28	12	AS SHOWN	(A)	1060	-	-	-	-	1060	12.72	4.833	62			
	PG11	12	138	150	(E)	580	160	150	360	-	1920	264.86	0.888	236			
	PG12	12	16	100	(B)	430	1500	-	-	-	3430	54.88	0.888	49			
														GRADE 40 TOTAL = 1,189kgs.			
														GRADE 80 TOTAL = 1,452 kgs.			

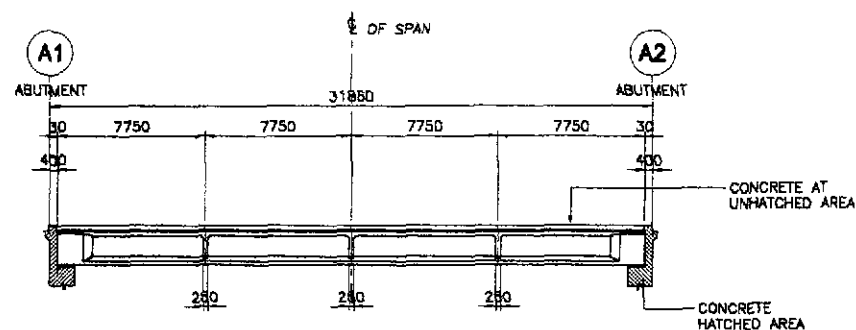
 JAPAN INTERNATIONAL COOPERATION AGENCY		 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS		PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)		SCALE : AS SHOWN		SHEET CONTENTS : BRIDGE NO. 8 AASHTO TYPE IV-B GIRDER (ULTIMATE STAGE)		SHEET NO. : B8-04	
DESIGNED : 10/09/07 KATAHIRA & ENGINEERS INTERNATIONAL	CHECKED : 10/10/07 YACHIYO ENGINEERING CO., LTD.	SUBMITTED : 10/10/07 DANILLO C. TRAJANO Project Director	REVIEWED BY : ADRIANO M. DOROS Chief, Bridge Division	RECOMMENDED BY : GILBERTO S. REYES Director IV (OIC)	RECOMMENDED BY : MANUEL M. BONDAN Undersecretary	RECOMMENDED BY : SIMEON A. DATUMANONG Secretary					



NOTES:

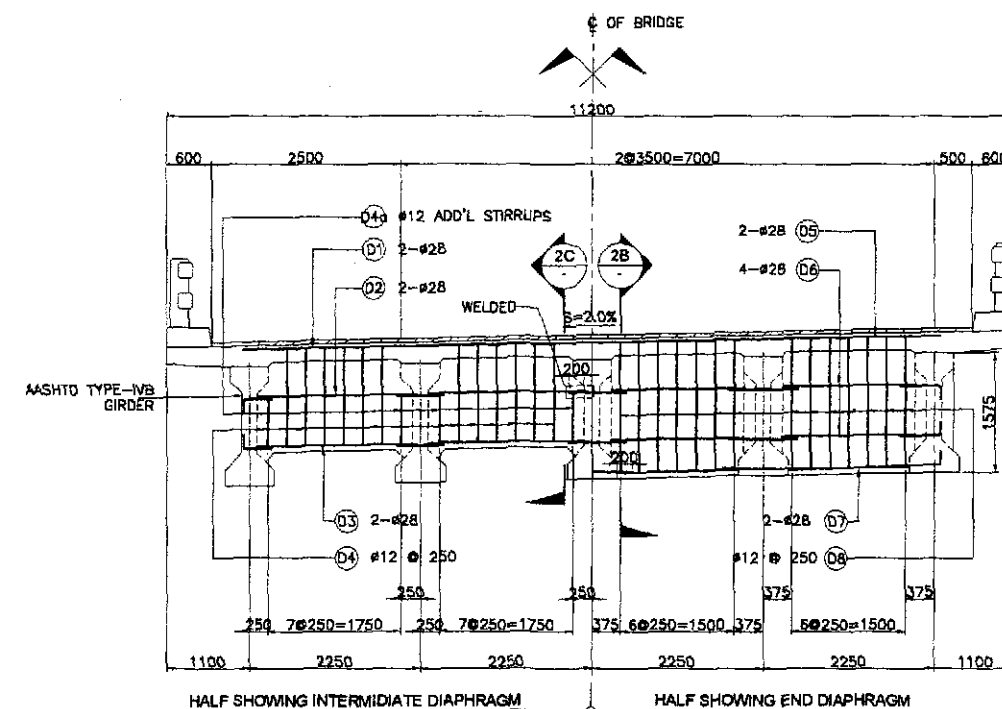
1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST TWENTY ONE (21) DAYS AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. SEE GIRDER DETAIL FOR SPACING OF #28 DOWELS.

1A PLAN
SCALE 1:200

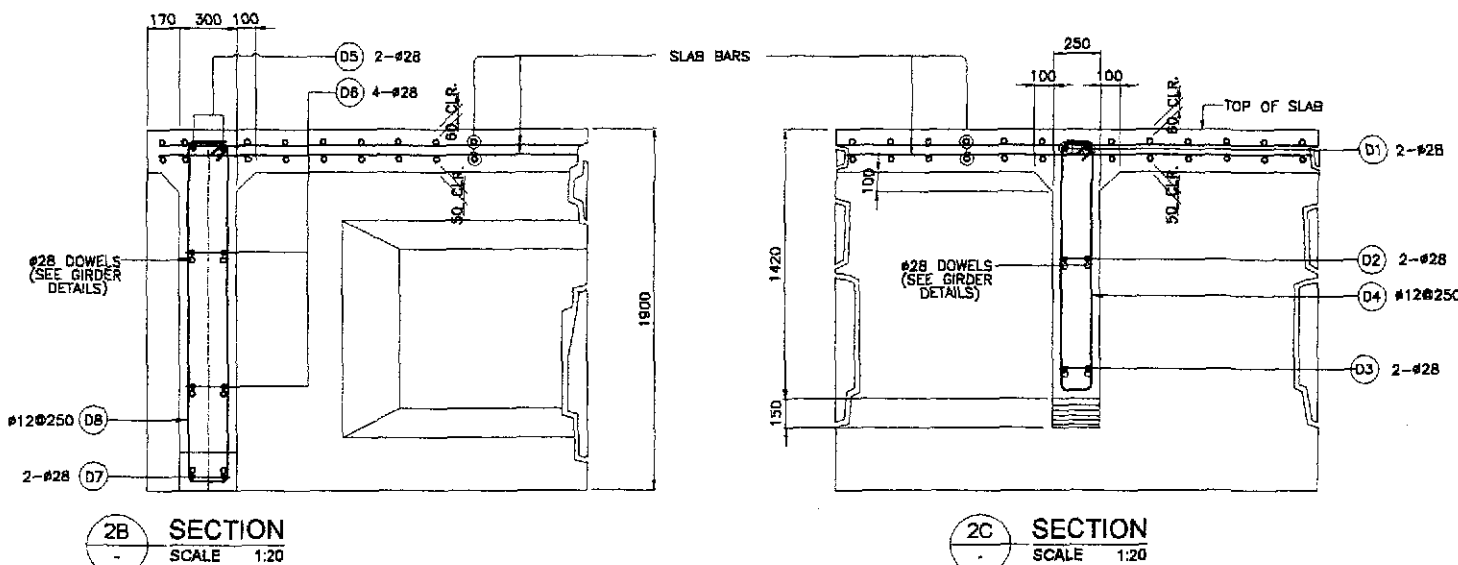


1B LONGITUDINAL SECTION
SCALE 1:200

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

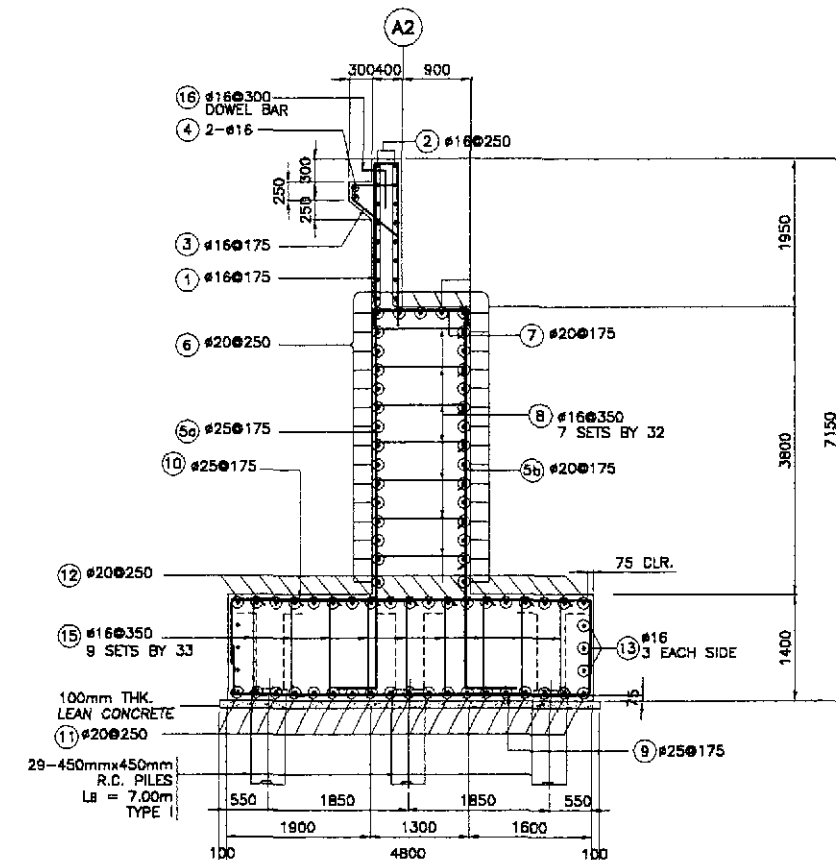
BAR BENDING DIAGRAM

(A)

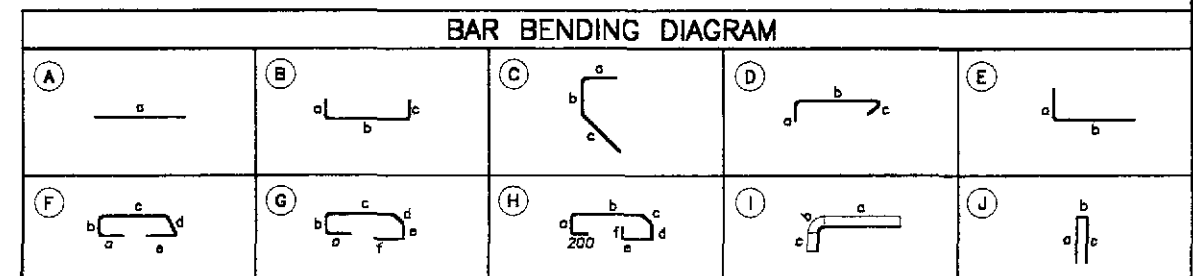
(B)

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	8.51	D1	28	6	AS SHOWN	A	9400				9400	56.40	4.833	273	117.93		
			D2	28	24	AS SHOWN	A	2045				2045	48.08	4.833	238			
			D3	28	24	AS SHOWN	A	2045				2045	48.08	4.833	238			
			D4	12	72	250	C	150	1350	150		3300	237.60	0.888	211			
	END DIAPHRAGM	7.00	D4a	12	24	200	C	150	700	150		2000	48.00	0.888	43	114.38		
			D5	28	4	AS SHOWN	A	9400				9400	37.50	4.833	182			
			D6	28	32	AS SHOWN	A	1740				1740	55.68	4.833	270			
			D7	28	16	AS SHOWN	A	1740				1740	27.84	4.833	135			
TOTAL			15.51															
													GRADE 60 TOTAL = 1336 kgs.					
													GRADE 40 TOTAL = 488 kgs.					



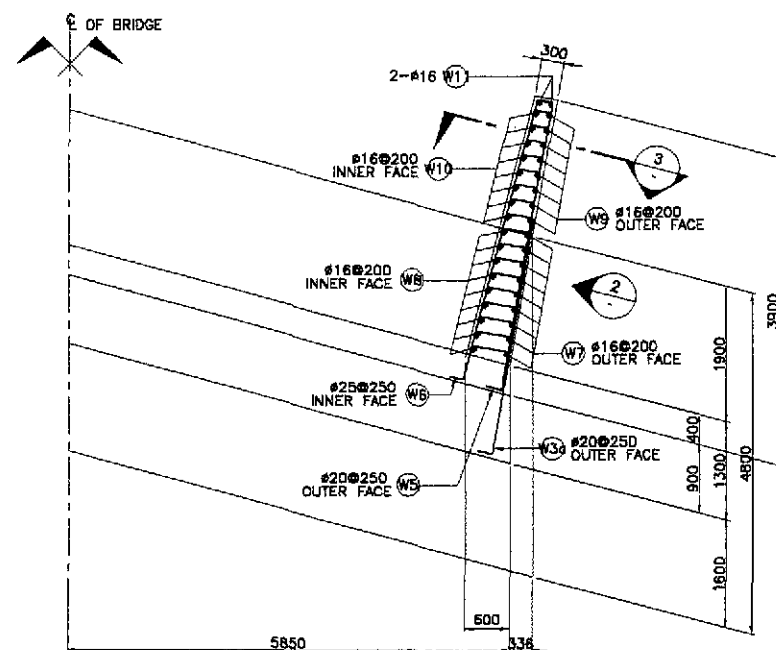
3 SECTION
SCALE 1:50



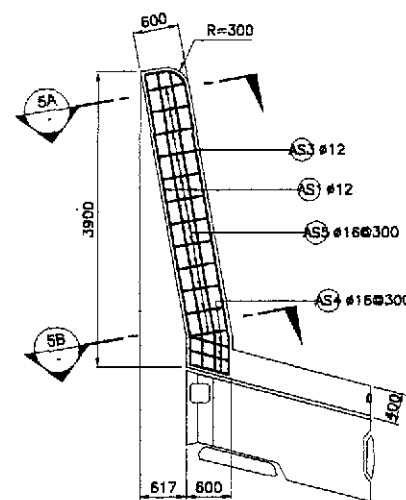
SCHEDULE OF REINFORCEMENT PER ABUTMENT

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	9.86	①	16	64	175	(B)	2200	300	2200	-	-	-	4700	300.80	1.579	475	95.02
		②	16	16	250	(A)	11500	-	-	-	-	-	11500	184.00	1.579	291	
		③	16	58	175	(C)	800	150	700	-	-	-	1500	87.00	1.579	138	
		④	16	2	AS SHOWN	(A)	10250	-	-	-	-	-	10250	20.50	1.579	33	
MAINWALL	55.33	5a	25	64	175	(E)	400	4900	-	-	-	-	5300	339.20	3.854	1308	71.43
		5b	20	64	175	(E)	400	4900	-	-	-	-	5300	339.20	2.466	837	
		⑥	20	33	250	(A)	11500	-	-	-	-	-	11500	378.50	2.466	936	
		⑦	20	64	175	(B)	250	1200	250	-	-	-	1700	108.80	2.466	269	
		⑧	16	224	350	(D)	250	1200	250	-	-	-	1700	380.80	1.579	802	
		⑨	25	68	175	(B)	700	4650	700	-	-	-	8050	411.40	3.854	1586	
FOOTING	79.78	⑩	25	68	175	(B)	700	4650	700	-	-	-	8050	411.40	3.854	1586	68.84
		⑪	20	20	250	(B)	700	12150	700	-	-	-	13550	271.00	2.466	669	
		⑫	20	20	250	(B)	700	12150	700	-	-	-	13550	271.00	2.466	669	
		⑬	16	6	AS SHOWN	(A)	12150	-	-	-	-	-	12150	72.90	1.579	116	
		⑭	16	6	AS SHOWN	(A)	4650	-	-	-	-	-	4650	27.90	1.579	45	
		⑮	16	297	350	(D)	250	1250	250	-	-	-	1750	519.75	1.579	821	
DOWEL			⑯	16	34	300	(E)	650	500	-	-	-	1150	39.10	1.579	62	

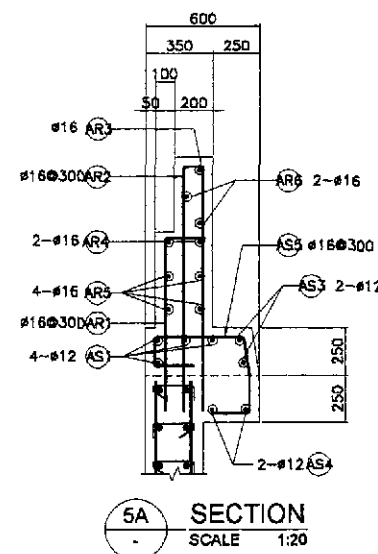
GRADE 40 TOTAL	=	2,583 kpa.
GRADE 60 TOTAL	=	7,860 kpa.



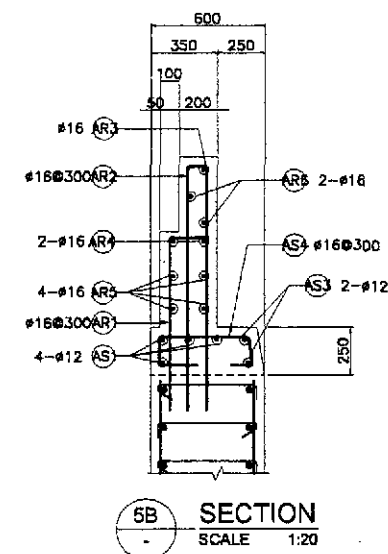
1 PLAN
SCALE 1:50



4 LEFT SIDE
SIDEWALK DETAIL
SCALE 1:50

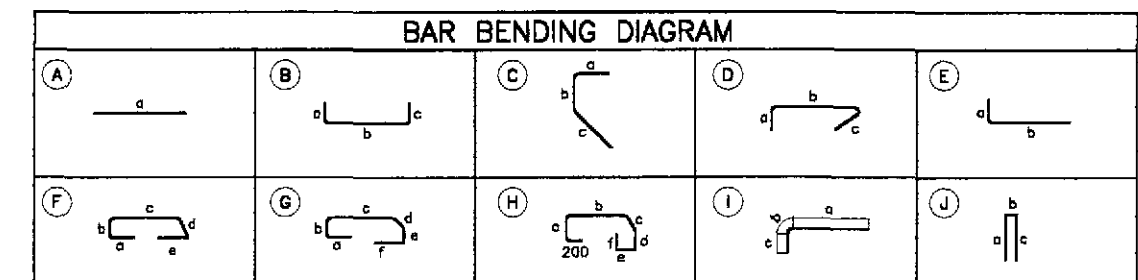


5A SECTION
SCALE 1:20

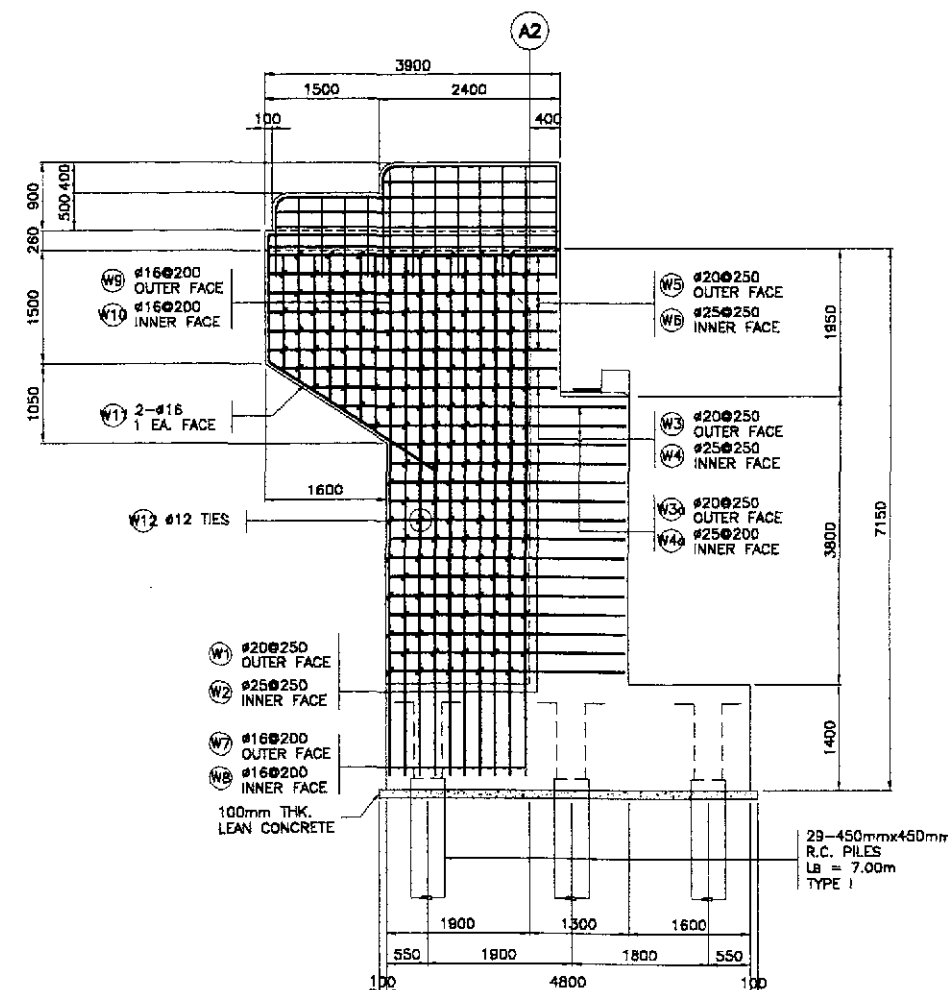


5B SECTION
SCALE 1:20

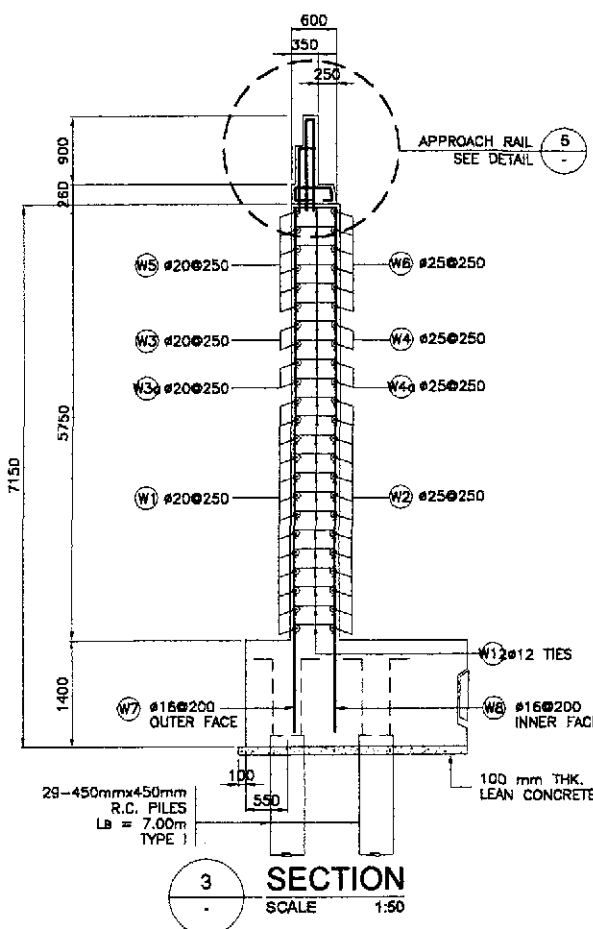
5 APPROACH RAIL DETAILS
SCALE 1:20



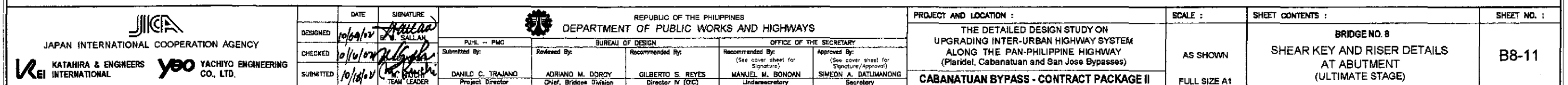
SCHEDULE OF REINFORCEMENT PER ABUTMENT																	
LOCATION	CONCRETE VOLUME (m ³)	BAR MARK	BAR SIZE	QTY.	SPACING	BAR SHAPE	DIMENSIONS (mm)				OUT TO OUT		LENGTH EA. BAR (mm)	TOTAL LENGTH (m)	UNIT WT. (kg/m)	WEIGHT (kg)	REBAR RATIO (kg/m ³)
							a	b	c	d	e	f					
WINGWALL	12.75	W1	20	26	250	(B)	400	3100	150	-	-	-	3650	94.90	2.466	235	151.00
		W2	25	26	250	(B)	400	3100	150	-	-	-	3650	94.90	3.854	366	
		W3	20	4	250	(B)	400	3500	150	-	-	-	4050	16.20	2.466	40	
		W3a	20	4	250	(B)	400	3800	150	-	-	-	4150	16.60	2.466	41	
		W4	25	4	250	(B)	400	3500	150	-	-	-	4050	16.20	3.854	63	
		W4a	25	4	250	(B)	400	3800	150	-	-	-	4150	16.60	3.854	64	
		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	20	200	(E)	250	6900	-	-	-	-	7150	143.00	1.579	226	
		W8	16	20	200	(E)	250	6900	-	-	-	-	7150	143.00	1.579	226	
		W9	16	14	200	(E)	250	1900	-	-	-	-	2150	30.10	1.579	48	
		W10	16	14	200	(E)	250	1900	-	-	-	-	2150	30.10	1.579	48	
W11	16	4	AS SHOWN	(C)	250	1500	3500	-	-	-	5250	21.00	1.579	34			
W12	12	288	AS SHOWN	(D)	170	450	170	-	-	-	780	227.52	0.888	203			
GRADE 60 SUB-TOTAL = 1,140 kgs. GRADE 40 SUB-TOTAL = 785 kgs.																	
APPROACH RAILING AND SIDEWALK	3.28	AS1	12	8	AS SHOWN	(A)	3800	-	-	-	-	-	3800	30.40	0.888	27	94.48
		AS2	12	4	AS SHOWN	(A)	3800	-	-	-	-	-	3800	15.20	0.888	14	
		AS3	12	4	AS SHOWN	(A)	3800	-	-	-	-	-	3800	15.20	0.888	14	
		AS4	16	6	300	(F)	200	170	480	200	200	-	1250	7.50	1.579	12	
		AS5	16	24	300	(G)	200	170	480	200	170	200	1420	34.08	1.579	54	
		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)	2300	236	1300	-	-	-	3836	7.67	1.579	13	
		AR4	16	4	AS SHOWN	(I)	3700	236	900	-	-	-	4836	19.34	1.579	31	
		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 40 SUB-TOTAL = 310 kgs.															
TOTAL	18.03	GRADE 60 TOTAL = 1,140 kgs. GRADE 40 TOTAL = 1,085 kgs.															



2 WINGWALL ELEVATION
SCALE 1:50

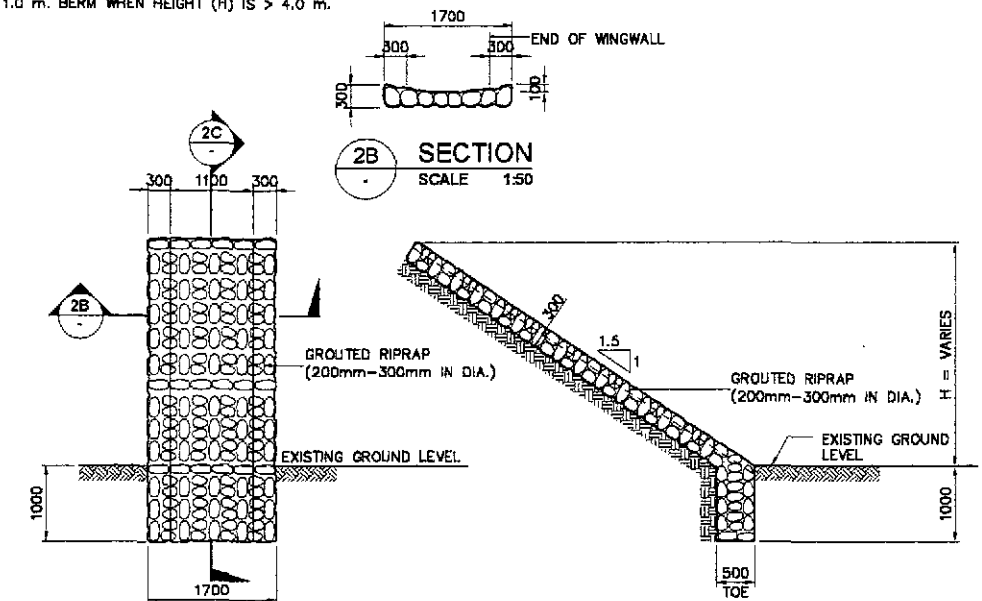
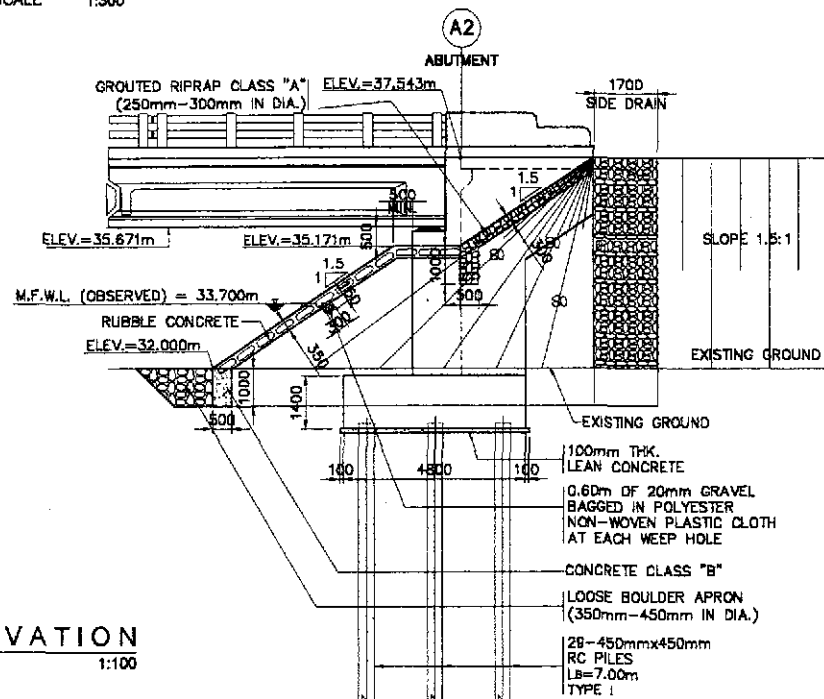
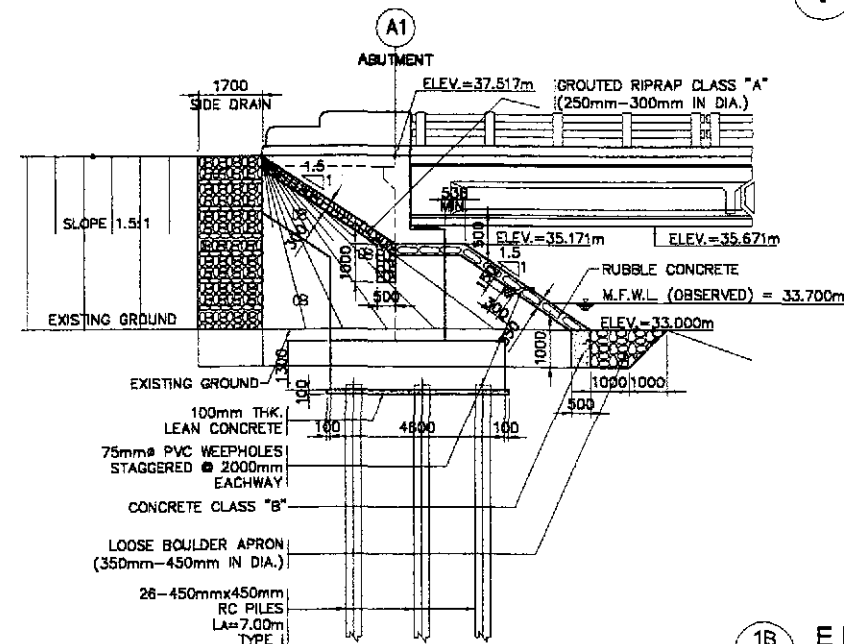
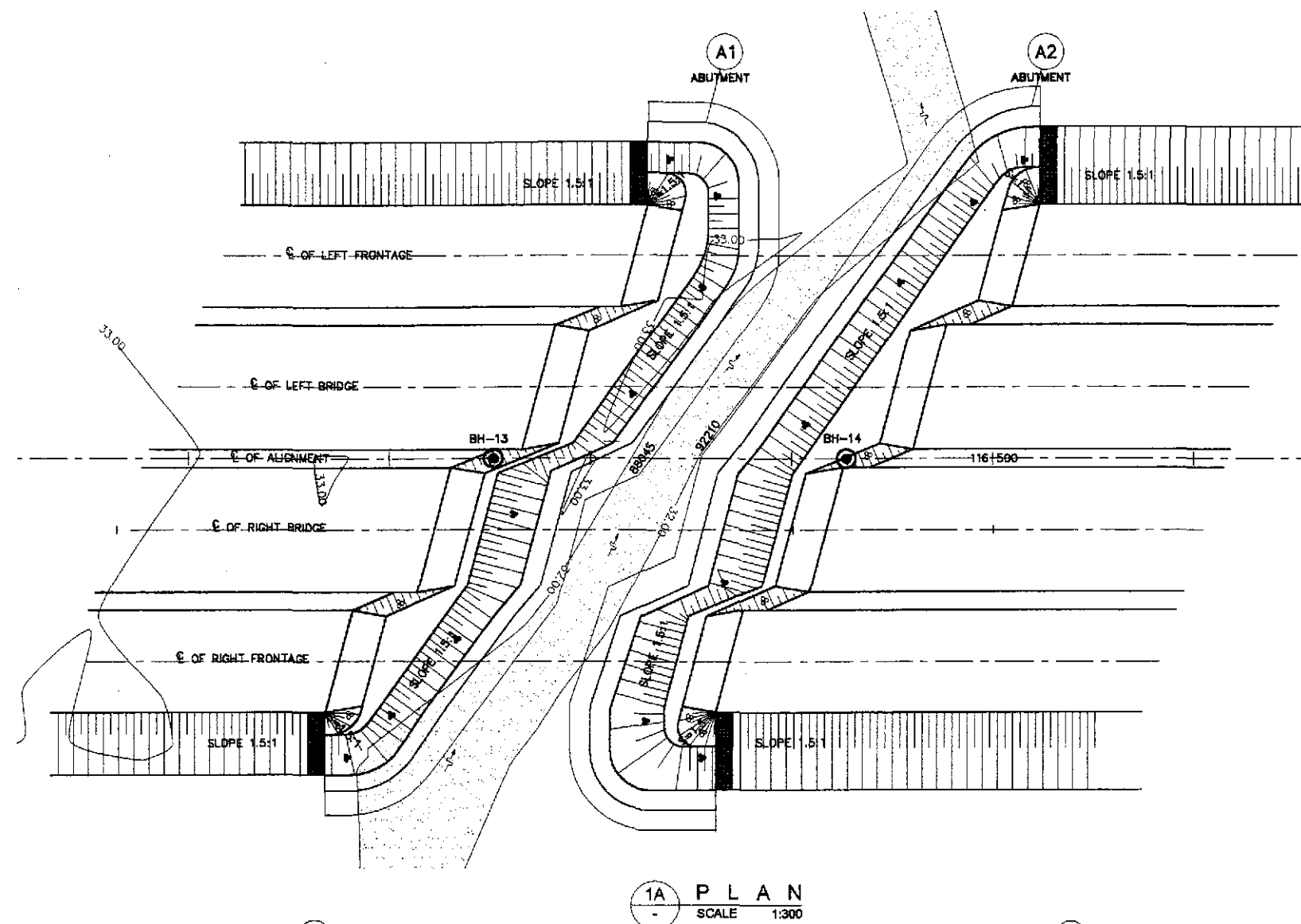


3 SECTION
SCALE 1:50



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 BRUSH.
2. 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
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. RUBBLE CONCRETE SHALL BE CLASS "B" (1:2.5:5) MIX CONCRETE WITH BOULDERS EMBEDDED THEREIN. BOULDERS 250-300mm SHALL BE CAREFULLY HAND-LAID WITHIN THE CONCRETE SECTION. THE BOULDERS SHALL BE THOROUGHLY INCORPORATED INTO THE CONCRETE MASS WITH A COVER OF 30mm AND NOT LESS THAN 30mm APART. THE RUBBLE CONCRETE SHALL BE COMPOSED OF 40 % CLASS "B" CONCRETE AND 60 % BOULDERS.
5. FOR THE LOOSE BOULDER APRON, BOULDERS 350-450mm SHALL BE HAND-LAID, CLOSE TOGETHER AND SHALL BE FIRMLY BEDDED. ALL VOIDS BETWEEN BOULDERS SHALL BE FILLED WITH GRAVEL AND THE JOINTS FILLED WITH TIGHTLY DRIVEN SPALLS.
6. 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.
7. NO CONCRETING UNDER WATER SHALL BE PERMITTED.
8. PROVIDE 1.0 m. BERM WHEN HEIGHT (H) IS > 4.0 m.



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	580

PER ABUTMENT

LOCATION	SIZES	QUANTITY	
		ABUT. A1	ABUT. A2
CONC. CLASS "B"	1000 x 500 x LENGTH	31.54 cu. m.	33.74 cu. m.
BOULDER APRON	400mm-500mm IN DIA.	94.62 cu. m.	101.21 cu. m.
RUBBLE CONCRETE	250mm-300mm IN DIA.	118.39 cu. m.	148.20 cu. m.
SIDE DRAIN	200mm-300mm IN DIA.	9.30 cu. m.	11.26 cu. m.
GROUTED RIPRAP	250mm-300mm IN DIA.	31.20 cu. m.	34.88 cu. m.

1 ABUTMENT SLOPE PROTECTION SCALE AS SHOWN

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 (Plaridel, Cabanatuan and San Jose Bypasses)		SCALE : AS SHOWN		SHEET CONTENTS : BRIDGE NO. 8 ABUTMENT PROTECTION AND SIDE DRAIN DETAILS (ULTIMATE STAGE)		SHEET NO. : B8-12		
DESIGNED	10/09/02	SIGNATURE	A. P. SANCHEZ	PUHL - PMO	BUREAU OF DESIGN	OFFICE OF THE SECRETARY						
CHECKED	10/14/02	SIGNATURE	[Signature]	Submitted By:	Reviewed By:	Recommended By:	Recommended By:					
SUBMITTED	10/18/02	SIGNATURE	[Signature]	DANILO C. TRAJANO	PERFECTO L. ZAPLAN JR.	GILBERTO S. REYES	MANUEL M. BONDAN	SIMEON A. DATUMANONG				
				Project Director	Chief, Hydraulics Division (CIC)	Director IV (CIC)	Undersecretary					