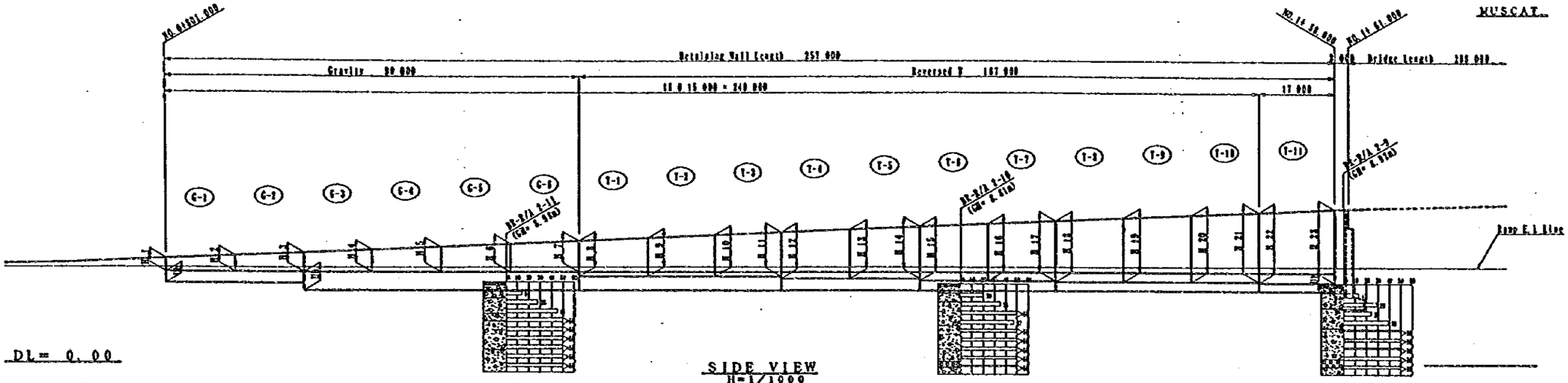
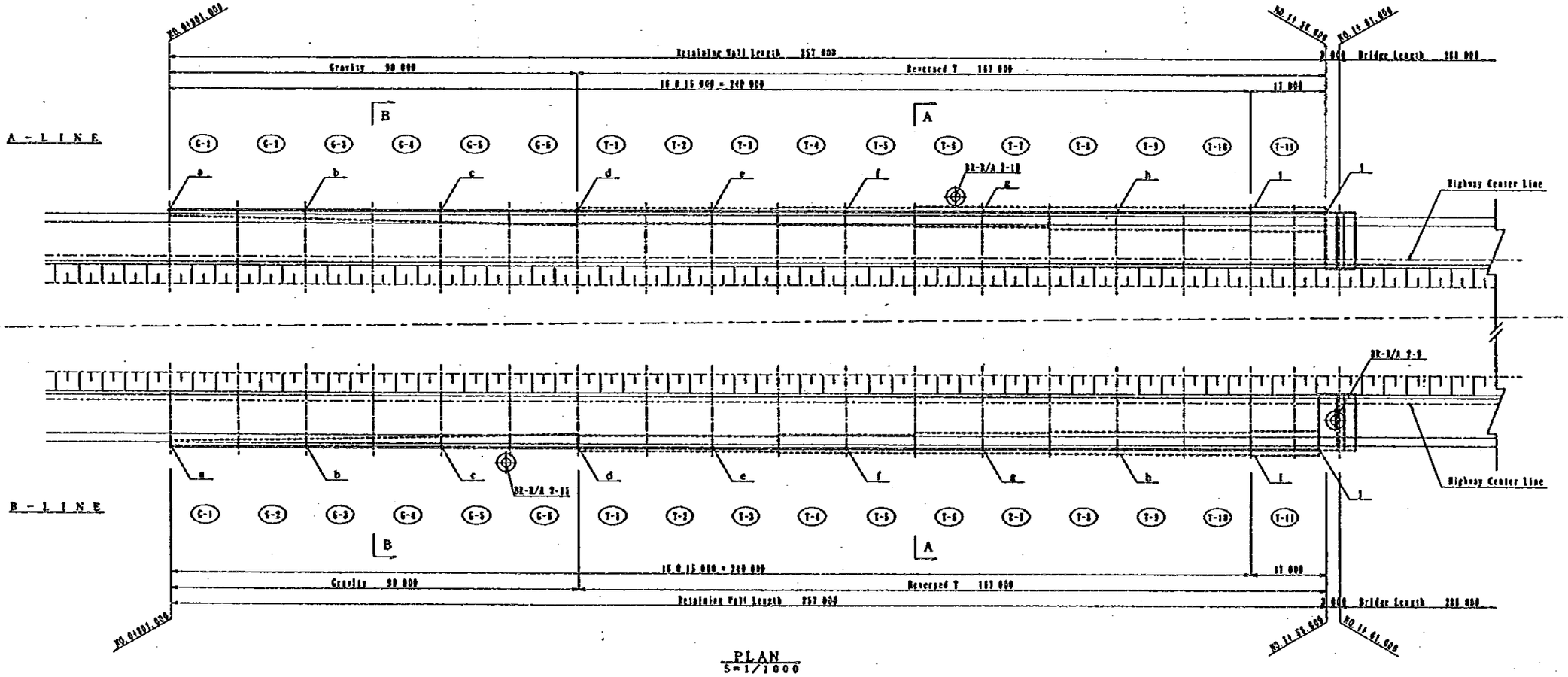
STRUCTURE

-RETAINING WALL

MUSCAT



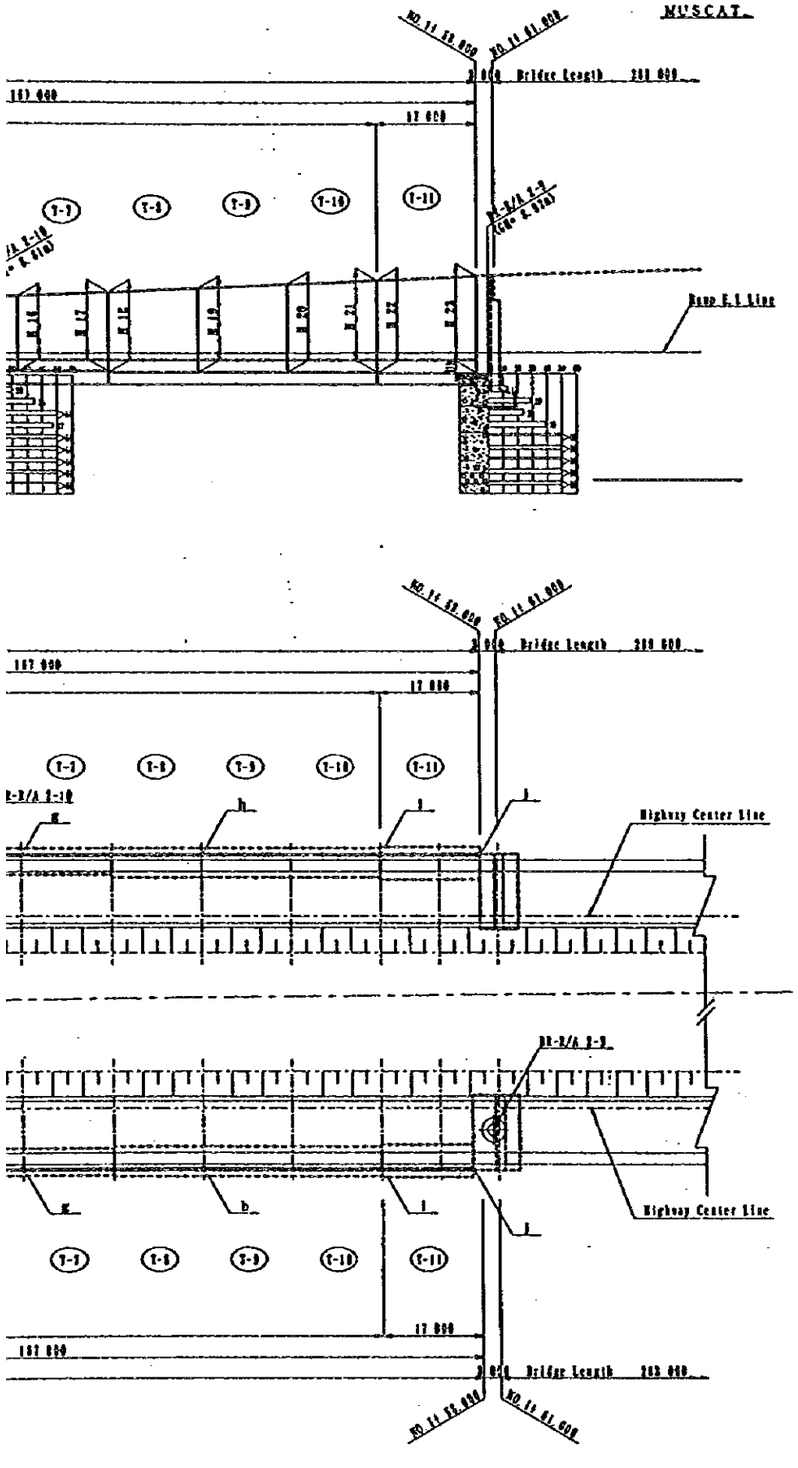
SIDE VIEW
H=1/1000
V=1/500

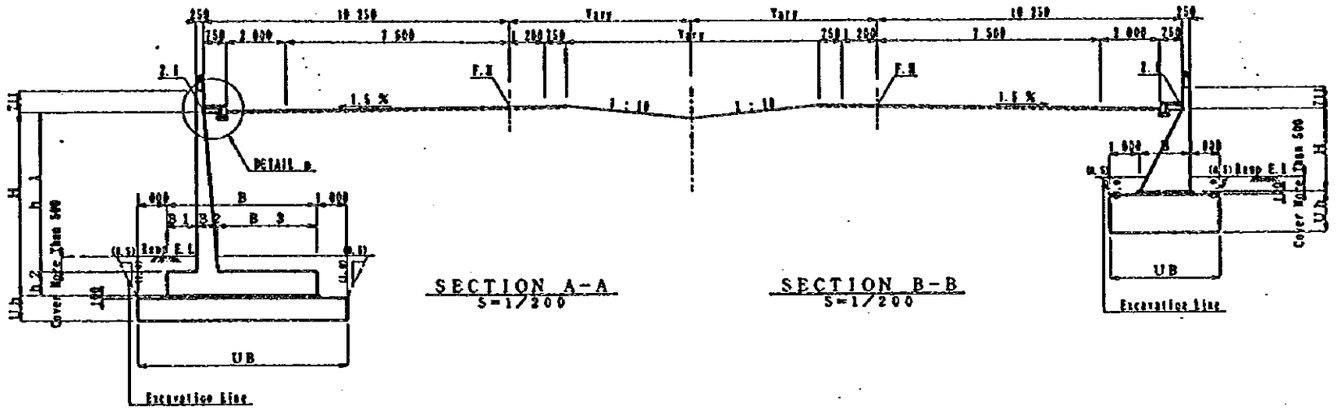


PLAN
S=1/1000

MARK / TYPE	
A L I N E	T-1
	T-2
	T-3
	T-4
	T-5
	T-6
	T-7
	T-8
	T-9
	T-10
	T-11
B L I N E	T-1
	T-2
	T-3
	T-4
	T-5
	T-6
	T-7
	T-8
	T-9
	T-10
	T-11

NOTES:





SECTION A-A
S=1/200

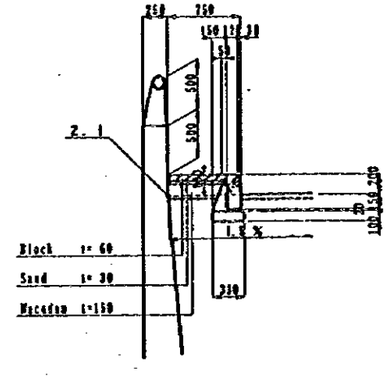
SECTION B-B
S=1/200

Reversed T

TYPE \ MARK		H	h 1	h 2	B	B 1	B 2	B 3	U h	U B
A LINE	T-1	11+3 907	3 407	500	3 500	600	439	2 461	1 500	5 500
		9+4 343	3 843				464	2 436		
	T-2	10+4 778	4 278				488	2 412		
	T-3	11+5 181	4 681				510	2 390		
	T-4	12+5 381		700	4 000	800	559	2 641	1 300	6 000
		13+5 784	5 084				586	2 614		
	T-5	14+6 175	5 475				612	2 588		
	T-6	15+6 375		900	4 500	1 000	654	2 846	1 100	6 500
		16+6 766	5 866				683	2 817		
	T-7	17+7 046	6 146				703	2 797		
	T-8	18+7 146		1 000	5 000	1 000	733	3 267	1 000	7 000
		19+7 425	6 425				755	3 245		
	T-9	20+7 694	6 694				776	3 224		
	T-10	21+7 962	6 962				797	3 203		
	T-11	22+8 062		1 100	5 500	1 200	823	3 477	900	7 500
		23+8 323	7 223				844	3 456		
B LINE	T-1	8 1+3 814	3 314	500	3 500	600	434	2 466	1 500	5 500
		9+4 251	3 751				458	2 442		
	T-2	10+4 687	4 187				483	2 417		
	T-3	11+5 091	4 591				505	2 395		
	T-4	12+5 291		700	4 000	800	553	2 647	1 300	6 000
		13+5 695	4 995				580	2 620		
	T-5	14+6 053	5 353				604	2 596		
	T-6	15+6 253		900	4 500	1 000	645	2 855	1 100	6 500
		16+6 611	5 711				671	2 829		
	T-7	17+6 926	6 025				694	2 806		
	T-8	18+7 025		1 000	5 000	1 000	723	3 277	1 000	7 000
		19+7 338	6 338				748	3 252		
	T-9	20+7 606	6 606				769	3 231		
	T-10	21+7 874	6 874				790	3 210		
	T-11	22+7 974		1 100	5 500	1 200	816	3 484	900	7 500
		23+8 235	7 135				837	3 463		

Gravity

TYPE \ MARK		H	B	U h	U B
A LINE	G-1	8 1+1 511	1 213	1 200	3 213
	G-2	1+1 759	1 373		3 371
	G-3	1+2 006	1 529	2 000	3 529
	G-4	1+2 323	1 731		3 731
	G-5	1+2 639	1 932		3 932
	G-6	1+3 023	2 177		4 177
		1+3 407	2 422		4 422
B LINE	G-1	8 1+1 422	1 157	1 200	3 157
	G-2	1+1 668	1 313		3 313
	G-3	1+1 913	1 470	2 000	3 470
	G-4	1+2 229	1 671		3 671
	G-5	1+2 544	1 872		3 872
	G-6	1+2 929	2 117		4 117
		1+3 314	2 363		4 363



DETAIL B
S=1/60

	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
		PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
	JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FURUYAMA CONSULTANTS INTERNATIONAL	TITLE :	R/A-2, A' NASEEM GARDEN GENERAL VIEW FOR WALL (1)-1
		DATE	DWG NO. W-1

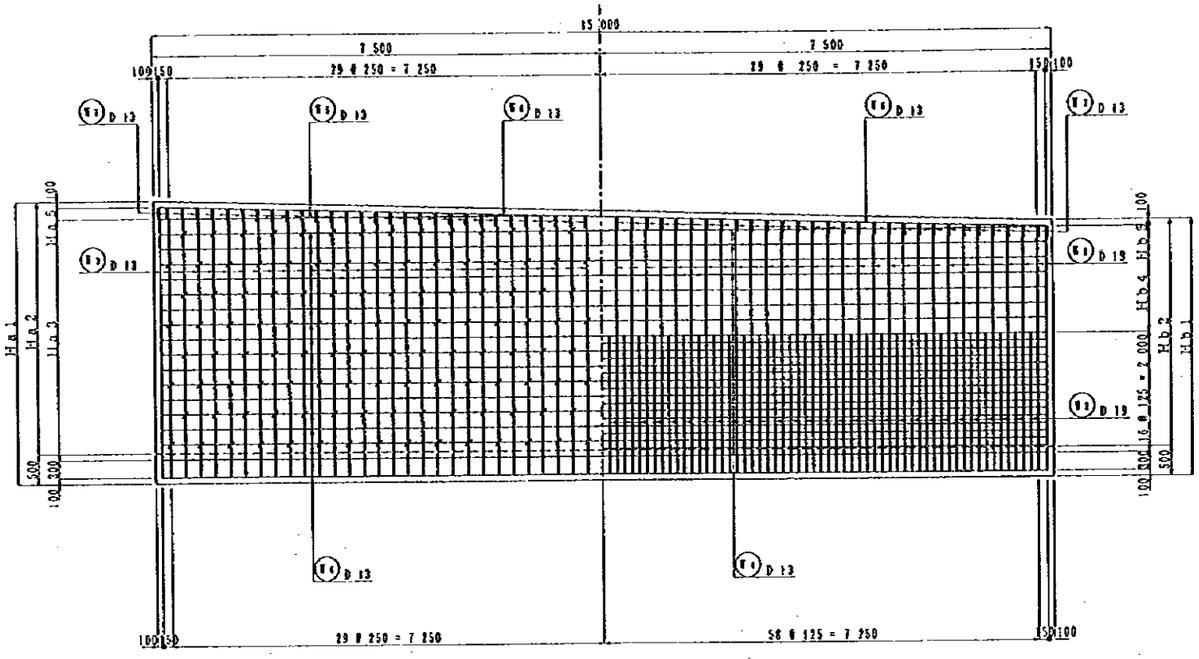
Point		a	b	c	d	e	f	g	h	i	j
A LINE	N	+2619984.47762	+2619994.70843	+2620004.93924	+2620015.14954	+2620025.26163	+2620035.26786	+2620045.16810	+2620054.96221	+2620064.65005	+2620071.04951
	E	+ 804920.89558	+ 804949.09719	+ 804977.29879	+ 805005.50782	+ 805033.75220	+ 805062.03424	+ 805090.35357	+ 805118.70977	+ 805147.10246	+ 805166.05099
	Z	11.215	11.710	12.343	13.111	13.982	14.788	15.570	16.129	16.666	16.973
B LINE	N	+2619950.01308	+2619959.39919	+2619968.67824	+2619977.85011	+2619986.91466	+2619995.87177	+2620004.74250	+2620013.68729	+2620022.73926	+2620028.83339
	E	+ 804932.45932	+ 804960.95317	+ 804989.48207	+ 805018.04561	+ 805046.64339	+ 805075.27500	+ 805103.93351	+ 805132.56897	+ 805161.17073	+ 805180.21965
	Z	11.214	11.705	12.336	13.106	13.979	14.787	15.503	16.130	16.666	16.973

NOTES:

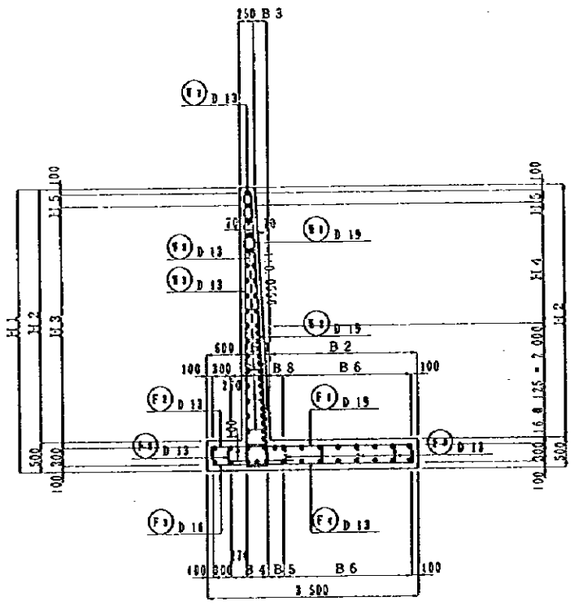
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN GENERAL VIEW FOR WALL (1)-2
DATE
DWG NO. W-2



SIDE VIEW
S=1/100



SECTION
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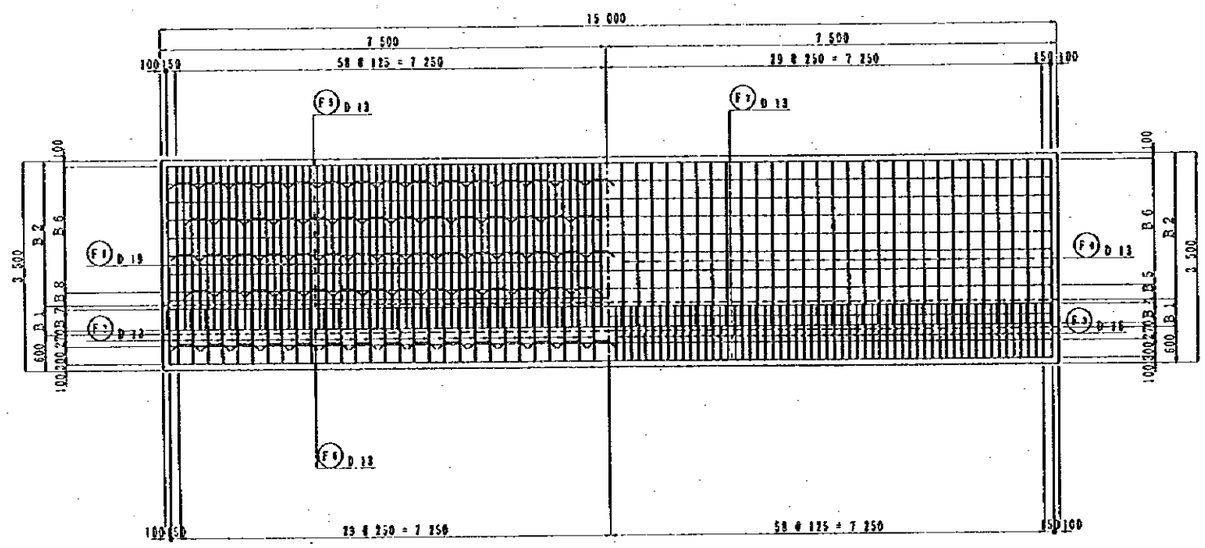


PLAN
S=1/100

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

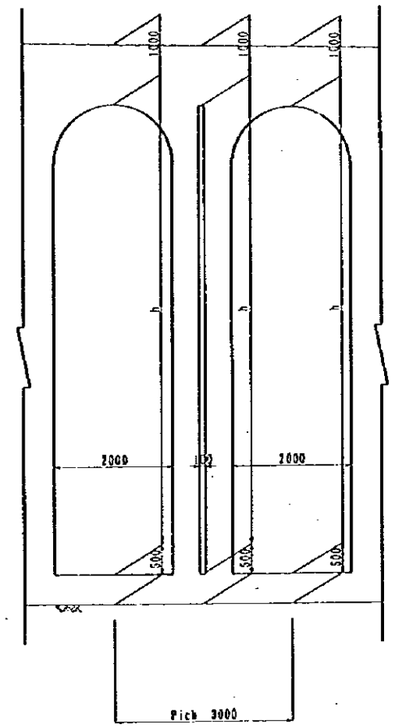
CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (1)
DATE	DWG NO. W-3

A LINE

	T-1 a－a		T-1 b－b	T-2 a－a		T-2 b－b	T-3 a－a		T-3 b－b
Ha1	3 907	Hb1	4 343	4 343	Hb1	4 778	4 778	Hb1	5 181
Ha2	3 407	Hb2	3 843	3 843	Hb2	4 278	4 278	Hb2	4 681
Ha3	13@250 = 3 250	Hb3	15@250 = 3 750	15@250 = 3 750	Hb3	17@250 = 4 250	17@250 = 4 250	Hb3	18@250 = 4 500
Ha4	5@250 = 1 250	Hb4	7@250 = 1 750	7@250 = 1 750	Hb4	9@250 = 2 250	9@250 = 2 250	Hb4	10@250 = 2 500
Ha5	157	Hb5	93	93	Hb5	28	28	Hb5	181
Ba1	439	Bb1	463	463	Bb1	488	488	Bb1	510
Ba2	2 461	Bb2	2 437	2 437	Bb2	2 412	2 412	Bb2	2 390
Ba3	189	Bb3	214	214	Bb3	238	238	Bb3	260
Ba4	2@160.5 = 321	Bb4	2@172.5 = 345	2@172.5 = 345	Bb4	2@184.5 = 369	2@184.5 = 369	Bb4	2@196 = 392
Ba5	2@154.5 = 309	Bb5	2@142.5 = 285	285	Bb5	261	261	Bb5	238
Ba6	7@300 = 2 100	Bb6	7@300 = 2 100	7@300 = 2 100	Bb6	7@300 = 2 100	7@300 = 2 100	Bb6	7@300 = 2 100
Ba7	304	Bb7	329	329	Bb7	353	353	Bb7	375
Ba8	2@163 = 326	Bb8	2@150.5 = 301	2@150.5 = 301	Bb8	2@138.5 = 277	277	Bb8	255

B LINE

	T-1 a－a		T-1 b－b	T-2 a－a		T-2 b－b	T-3 a－a		T-3 b－b
Ha1	3 814	Hb1	4 251	4 251	Hb1	4 687	4 687	Hb1	5 091
Ha2	3 314	Hb2	3 751	3 751	Hb2	4 187	4 187	Hb2	4 591
Ha3	13@250 = 3 250	Hb3	14@250 = 3 500	14@250 = 3 500	Hb3	16@250 = 4 000	16@250 = 4 000	Hb3	18@250 = 4 500
Ha4	5@250 = 1 250	Hb4	6@250 = 1 500	6@250 = 1 500	Hb4	8@250 = 2 000	8@250 = 2 000	Hb4	10@250 = 2 500
Ha5	64	Hb5	251	251	Hb5	187	187	Hb5	91
Ba1	434	Bb1	458	458	Bb1	483	483	Bb1	505
Ba2	2 466	Bb2	2 442	2 442	Bb2	2 417	2 417	Bb2	2 395
Ba3	184	Bb3	208	208	Bb3	233	233	Bb3	255
Ba4	2@158 = 316	Bb4	2@170 = 340	2@170 = 340	Bb4	2@182 = 364	2@182 = 364	Bb4	2@193.5 = 387
Ba5	2@157 = 314	Bb5	2@145 = 290	290	Bb5	266	266	Bb5	243
Ba6	7@300 = 2 100	Bb6	7@300 = 2 100	7@300 = 2 100	Bb6	7@300 = 2 100	7@300 = 2 100	Bb6	7@300 = 2 100
Ba7	299	Bb7	323	323	Bb7	348	348	Bb7	370
Ba8	2@165.5 = 331	Bb8	2@153.5 = 307	2@153.5 = 307	Bb8	2@141 = 282	282	Bb8	260



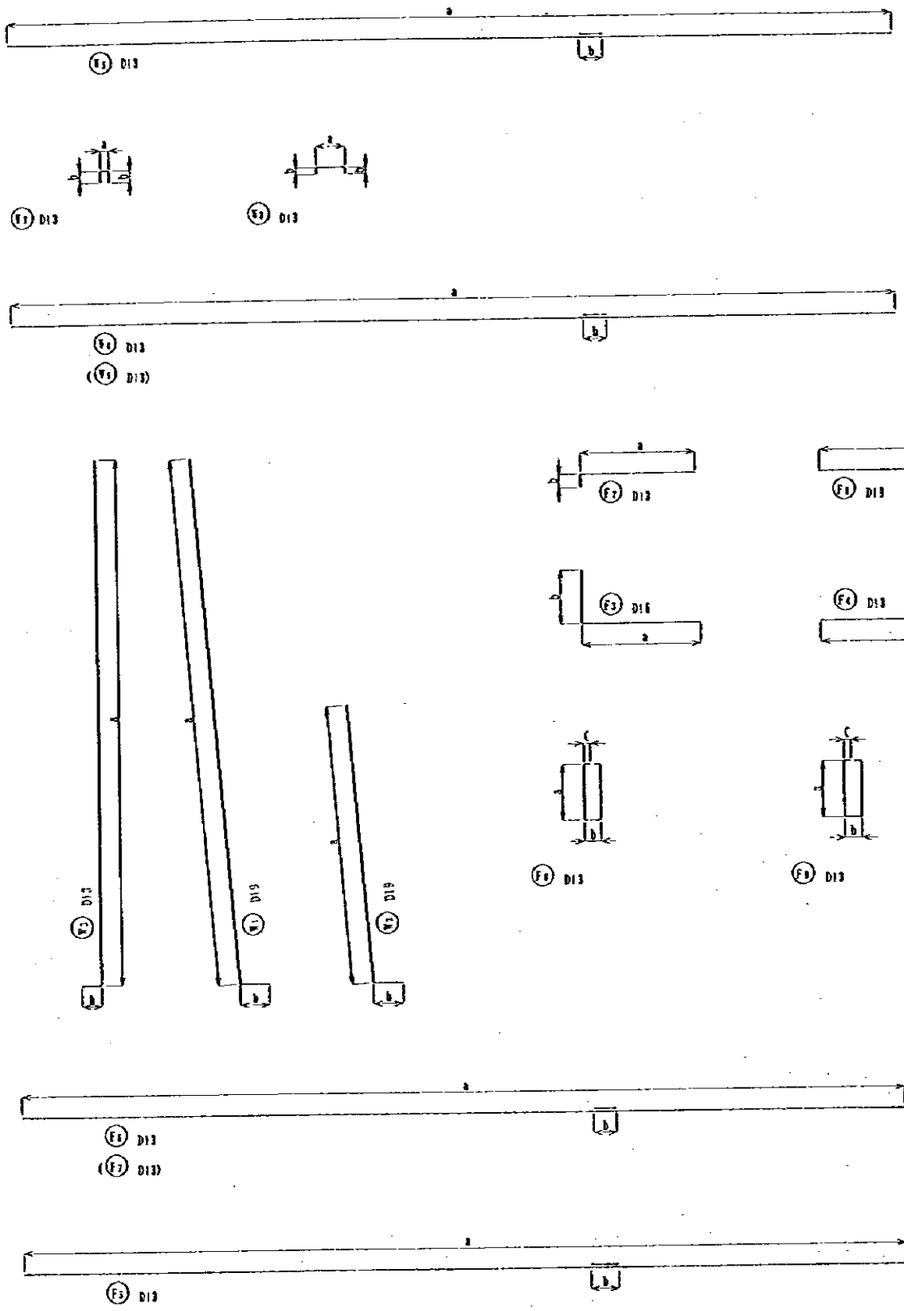
Slit Shape in Front of Wall
(Thickness t=30 mm)

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (2)
DATE
DWG NO. W-4



REIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 1					
N 1	D 19	4 220	4 150~3 713	285	——
2	"	2 590	2 304	285	——
3	D 13	4 120	4 143~3 707	195	——
4	"	15 190	14 800	390	——
5	"	7 500	3 200~11 800	——	——
6	"	15 200	14 806	390	——
7	"	500	110	195	——
8	"	490	344~178	111	——
F 1	D 19	3 260	2 971	300	——
2	D 13	1 100	859	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	"	15 190	14 800	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 160	328	279	111
9	"	1 170	329	282	111
T 2					
N 1	D 19	4 660	4 585~4 149	285	——
2	"	2 590	2 304	285	——
3	D 13	4 560	4 578~4 143	195	——
4	"	15 190	14 800	390	——
5	"	5 280	966~9 588	——	——
6	"	15 200	14 806	390	——
7	"	500	110	195	——
8	"	500	373~177	111	——
F 1	D 19	3 250	2 947	300	——
2	D 13	1 120	923	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	"	15 190	14 800	390	——
6	"	15 490	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 160	328	279	111
9	"	1 170	329	282	111
T 3					
N 1	D 19	5 050	4 585~4 588	285	——
2	"	2 590	2 304	285	——
3	D 13	4 980	4 578~4 991	195	——
4	"	15 190	14 800	390	——
5	"	6 740	6 737	——	——
6	"	15 200	14 805	390	——
7	"	500	110	195	——
8	"	520	393~196	111	——
F 1	D 19	3 230	2 925	300	——
2	D 13	1 140	945	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	"	15 190	14 800	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 160	328	279	111
9	"	1 170	329	282	111

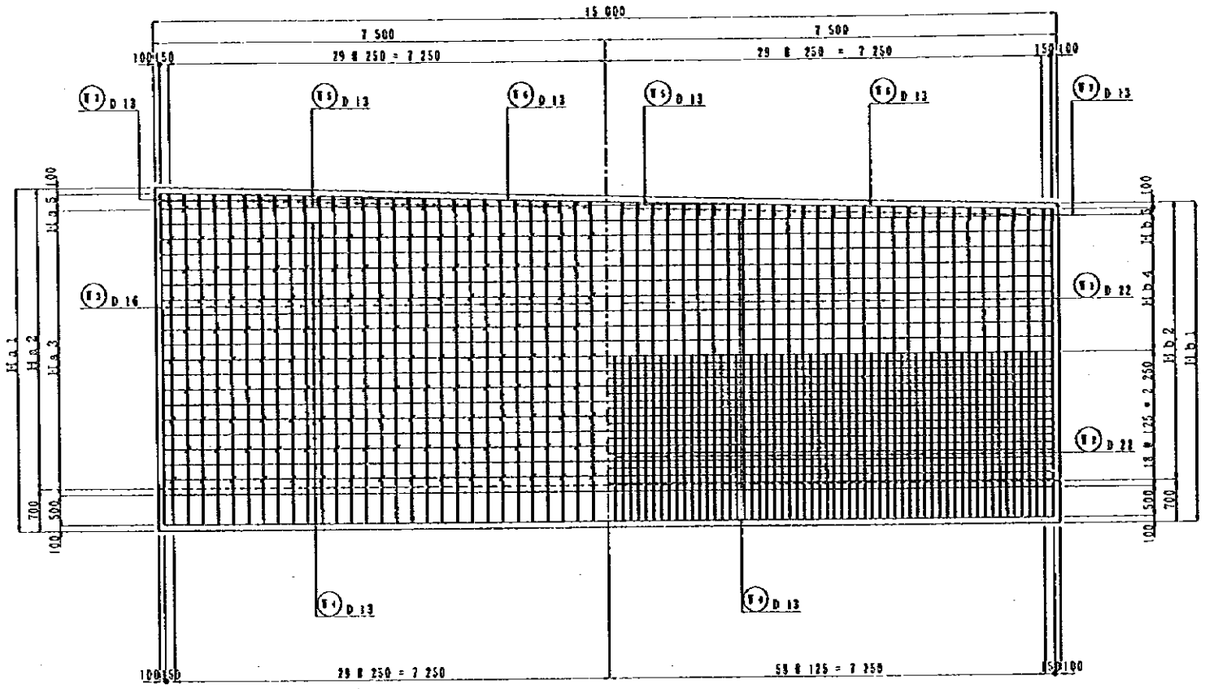
REIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 1					
N 1	D 19	4 130	4 057~3 620	285	——
2	"	2 590	2 304	285	——
3	D 13	4 020	4 051~3 614	195	——
4	"	15 190	14 800	390	——
5	"	8 620	8 616	——	——
6	"	15 200	14 806	390	——
7	"	500	110	195	——
8	"	500	341~200	111	——
F 1	D 19	3 280	2 977	300	——
2	D 13	1 090	893	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	"	15 190	14 800	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 160	328	279	111
9	"	1 170	329	282	111
T 2					
N 1	D 19	4 570	4 494~4 057	285	——
2	"	2 590	2 304	285	——
3	D 13	4 470	4 487~4 051	195	——
4	"	15 190	14 800	390	——
5	"	10 880	6 433~14 931	390	——
6	"	15 200	14 806	390	——
7	"	500	110	195	——
8	"	510	386~197	111	——
F 1	D 19	3 260	2 952	300	——
2	D 13	1 120	918	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	"	15 190	14 800	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 160	328	279	111
9	"	1 170	329	282	111
T 3					
N 1	D 19	4 590	4 899~4 454	285	——
2	"	2 590	2 304	285	——
3	D 13	4 890	4 851~4 407	195	——
4	"	15 190	14 800	390	——
5	"	8 220	3 379~12 661	390	——
6	"	15 200	14 805	390	——
7	"	500	110	195	——
8	"	520	388~191	111	——
F 1	D 19	3 230	2 930	300	——
2	D 13	1 140	940	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	"	15 190	14 860	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 160	328	279	111
9	"	1 170	329	282	111

NOTES:

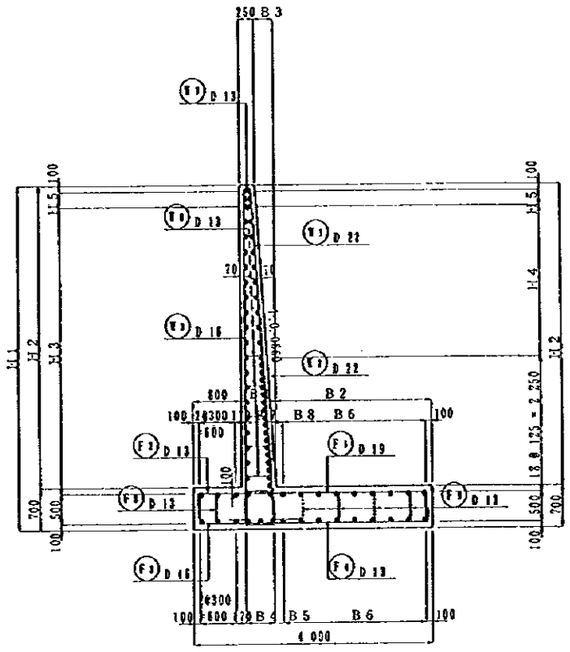
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

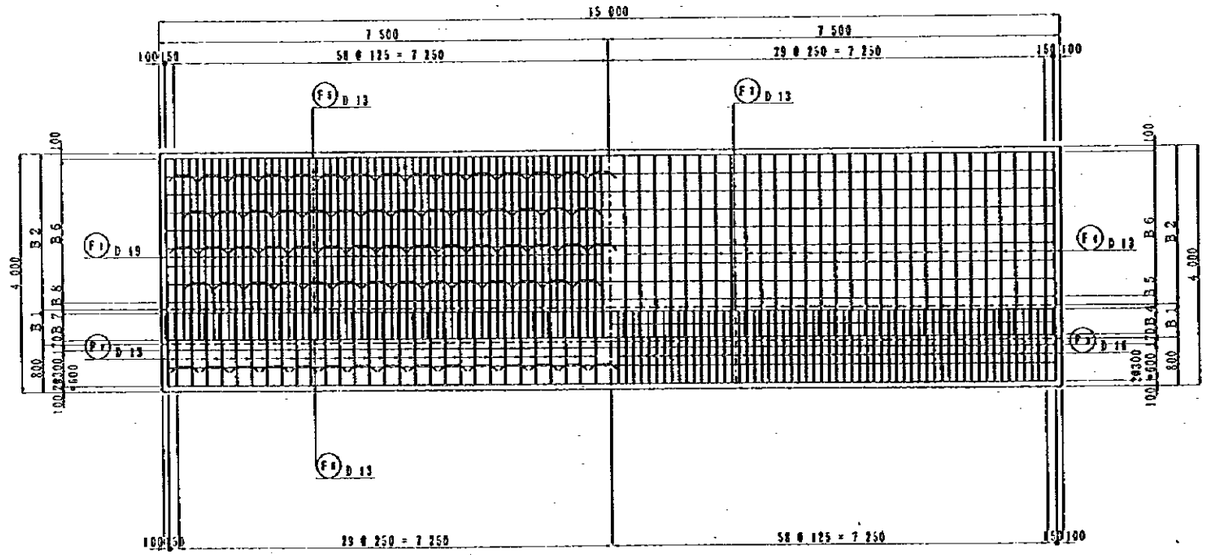
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (3)
DATE
DWG NO. W - 5



SIDE VIEW
S=1/100



SECTION
S=1/100



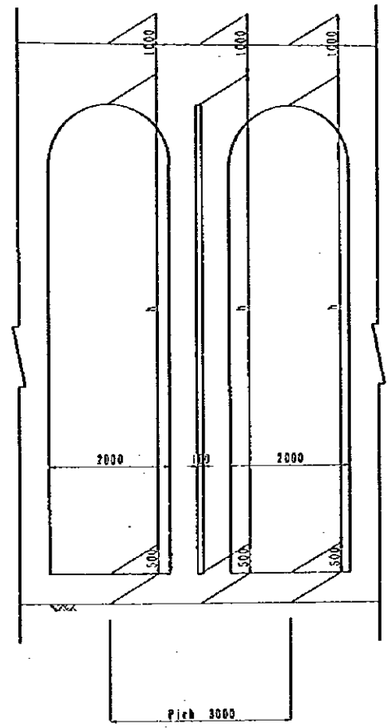
PLAN
S=1/100

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS	
	PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY	
JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FURUYAMA CONSULTANTS INTERNATIONAL	TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (4)	
	DATE		DWG NO. W-6

		T-4				T-5		
		a − a		b − b		a − a		b − b
A-LINE	Ha1	5 381	Hb1	5 784	Ha1	5 784	Hb1	6 175
	Ha2	4 681	Hb2	5 084	Ha2	5 084	Hb2	5 475
	Ha3	18@250 = 4 500	Hb3	20@250 = 5 000	Ha3	20@250 = 5 000	Hb3	21@250 = 5 250
	Ha4	10@250 = 2 500	Hb4	11@250 = 2 750	Ha4	11@250 = 2 750	Hb4	12@250 = 3 000
	Ha5	181	Hb5	84	Ha5	84	Hb5	225
	Ba1	559	Bb1	586	Ba1	586	Bb1	612
	Ba2	2 641	Bb2	2 614	Ba2	2 614	Bb2	2 588
	Ba3	309	Bb3	336	Ba3	336	Bb3	362
	Ba4	2@229 = 458	Bb4	2@242.5 = 485	Ba4	2@242.5 = 485	Bb4	2@255.5 = 511
	Ba5	172	Bb5	145	Ba5	145	Bb5	119
	Ba6	8@300 = 2 400	Bb6	8@300 = 2 400	Ba6	8@300 = 2 400	Bb6	8@300 = 2 400
	Ba7	425	Bb7	452	Ba7	452	Bb7	478
	Ba8	205	Bb8	178	Ba8	178	Bb8	152

		T-4				T-5		
		a − a		b − b		a − a		b − b
B-LINE	Ha1	5 291	Hb1	5 695	Ha1	5 695	Hb1	6 053
	Ha2	4 591	Hb2	4 995	Ha2	4 995	Hb2	5 353
	Ha3	18@250 = 4 500	Hb3	19@250 = 4 750	Ha3	19@250 = 4 750	Hb3	21@250 = 5 250
	Ha4	9@250 = 2 250	Hb4	10@250 = 2 500	Ha4	10@250 = 2 500	Hb4	12@250 = 3 000
	Ha5	91	Hb5	245	Ha5	245	Hb5	103
	Ba1	553	Bb1	580	Ba1	580	Bb1	604
	Ba2	2 647	Bb2	2 620	Ba2	2 620	Bb2	2 597
	Ba3	303	Bb3	330	Ba3	330	Bb3	354
	Ba4	2@226 = 452	Bb4	2@239.5 = 479	Ba4	2@239.5 = 479	Bb4	2@251.5 = 503
	Ba5	178	Bb5	151	Ba5	151	Bb5	127
	Ba6	8@300 = 2 400	Bb6	8@300 = 2 400	Ba6	8@300 = 2 400	Bb6	8@300 = 2 400
	Ba7	419	Bb7	446	Ba7	446	Bb7	470
	Ba8	211	Bb8	184	Ba8	184	Bb8	160



Slit Shape in Front of Wall
(Thickness t=30 mm)

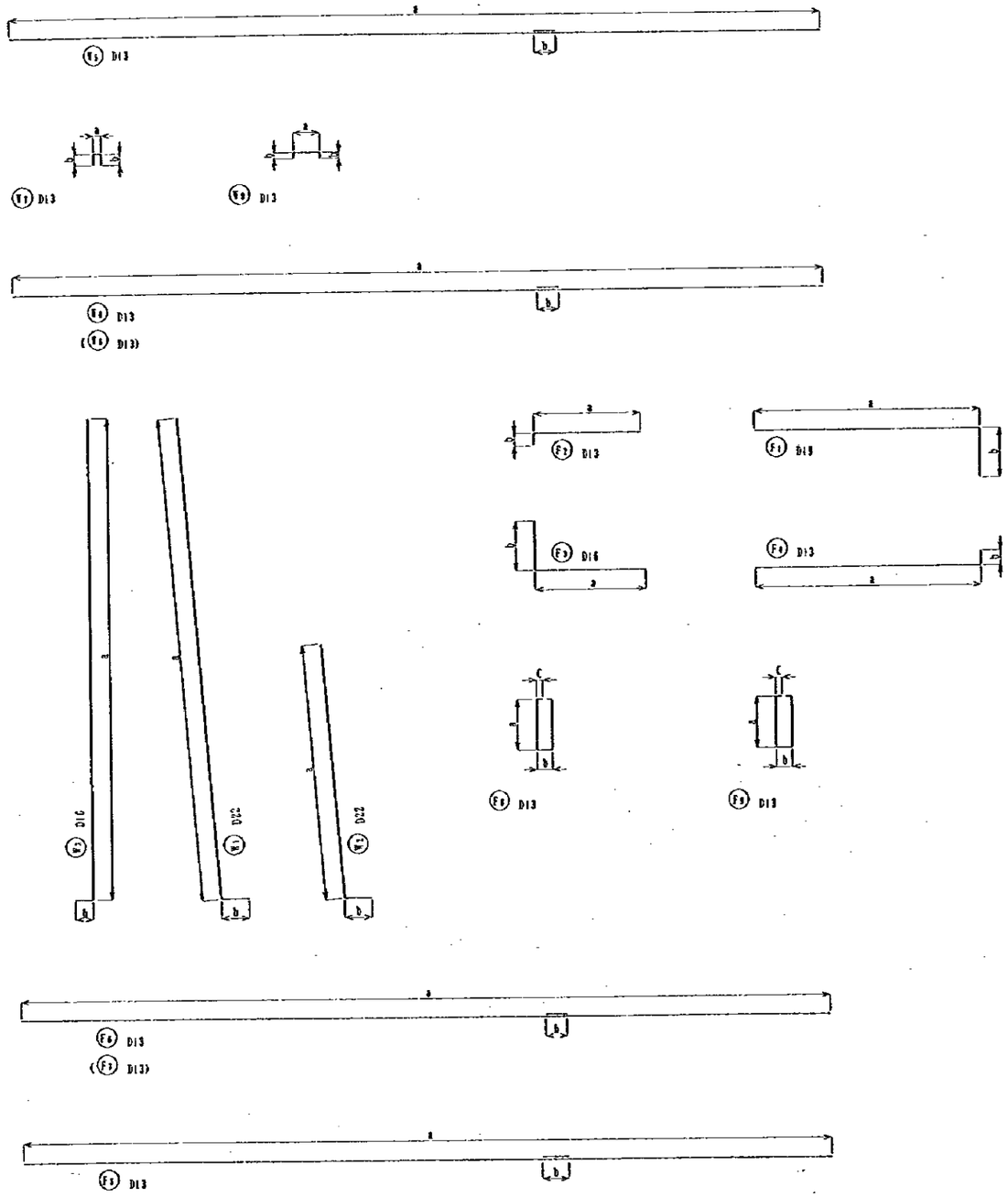
NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (5)
DATE	DWG NO. W-7

7



REIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 4					
W 1	D 22	5 730	5 596~5 192	330	——
2	"	3 090	2 756	330	——
3	D 16	5 630	5 584~5 181	240	——
4	D 13	15 190	14 800	390	——
5	"	7 580	3 327~12 432	390	——
6	"	15 200	14 805	390	——
7	"	500	110	195	——
8	"	580	468~204	111	——
F 1	D 19	3 650	3 148	500	——
2	D 13	1 420	1 222	195	——
3	D 16	1 750	1 250	500	——
4	D 13	3 230	3 030	195	——
5	"	15 190	14 850	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 560	528	279	111
9	"	1 570	529	282	111
T 5					
W 1	D 22	6 130	5 568~5 586	330	——
2	"	3 090	2 756	330	——
3	D 16	6 020	5 975~5 584	240	——
4	D 13	15 190	14 800	390	——
5	"	8 640	8 632	——	——
6	"	15 200	14 805	390	——
7	"	500	110	195	——
8	"	570	484~156	111	——
F 1	D 19	3 630	3 122	500	——
2	D 13	1 450	1 248	195	——
3	D 16	1 750	1 250	500	——
4	D 13	3 230	3 030	195	——
5	"	15 190	14 800	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 560	528	279	111
9	"	1 570	529	282	111

REIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 4					
W 1	D 22	5 640	5 502~5 102	330	——
2	"	3 090	2 756	330	——
3	D 16	5 540	5 495~5 091	240	——
4	D 13	15 190	14 800	390	——
5	"	9 100	9 097	——	——
6	"	15 200	14 805	390	——
7	"	500	110	195	——
8	"	560	462~198	111	——
F 1	D 19	3 660	3 154	500	——
2	D 13	1 420	1 216	195	——
3	D 16	1 750	1 250	500	——
4	D 13	3 230	3 030	195	——
5	"	15 190	14 800	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 560	528	279	111
9	"	1 570	529	282	111
T 5					
W 1	D 22	6 020	5 866~5 507	330	——
2	"	3 090	2 756	330	——
3	D 16	5 920	5 853~5 495	240	——
4	D 13	15 190	14 800	390	——
5	"	9 750	4 916~14 791	390	——
6	"	15 200	14 804	390	——
7	"	500	110	195	——
8	"	560	486~188	111	——
F 1	D 19	3 630	3 130	500	——
2	D 13	1 440	1 240	195	——
3	D 16	1 756	1 250	500	——
4	D 13	3 230	3 030	195	——
5	"	15 190	14 800	390	——
6	"	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 560	528	279	111
9	"	1 570	529	282	111

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

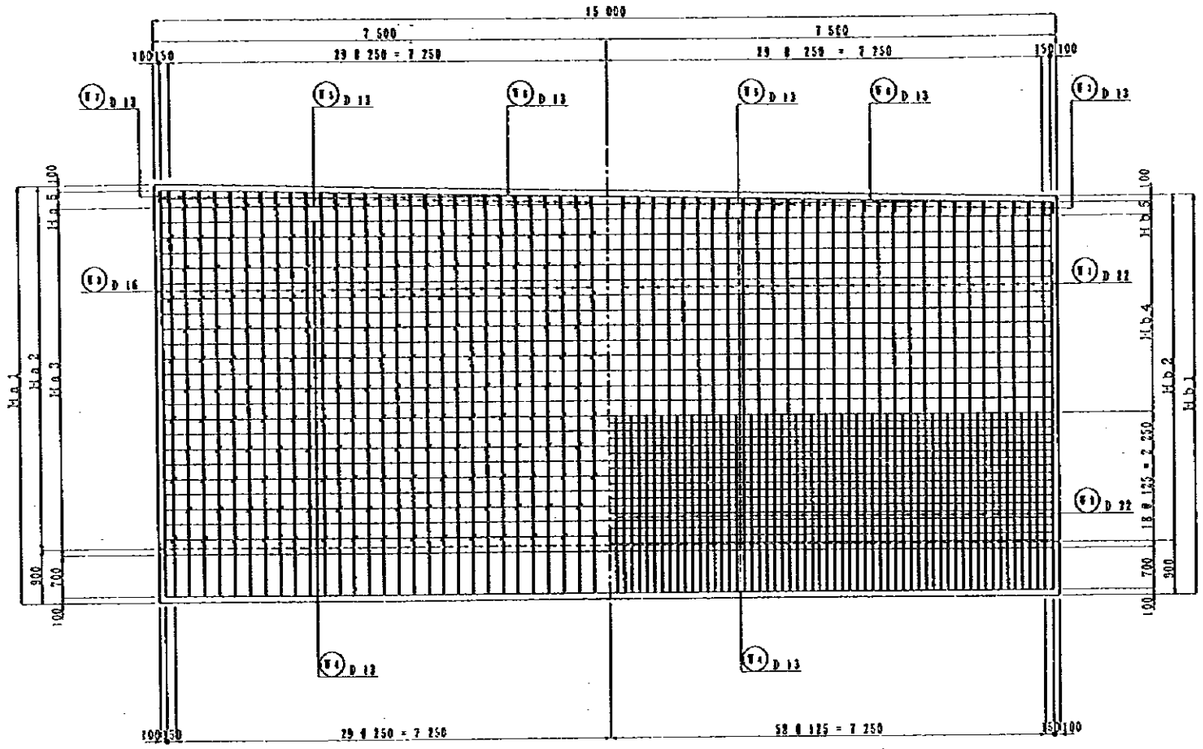
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY

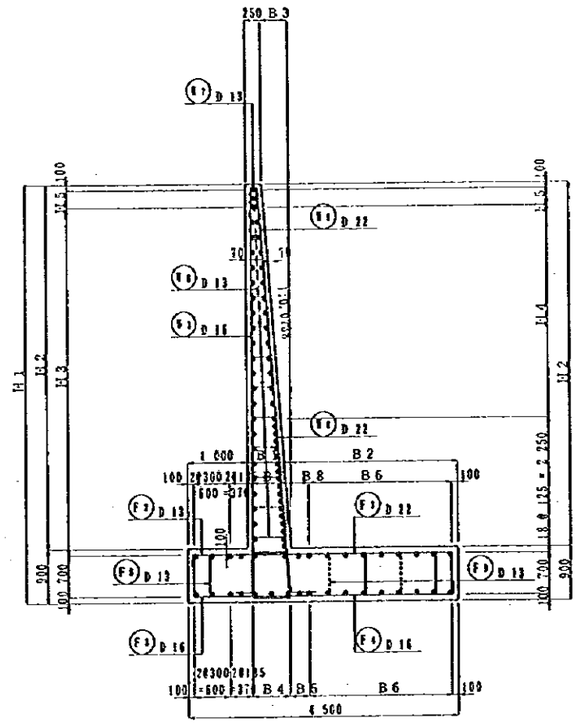
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (6)

DATE

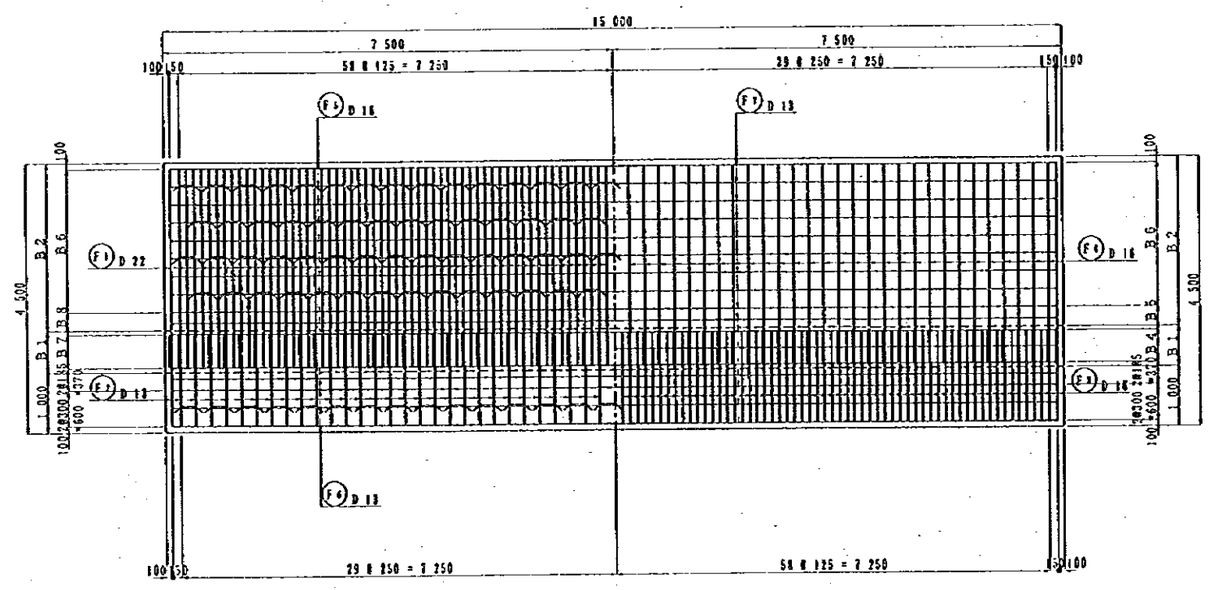
DWG NO. W-8



SIDE VIEW
S=1/100



SECTION
S=1/100



PLAN
S=1/100

NOTES:

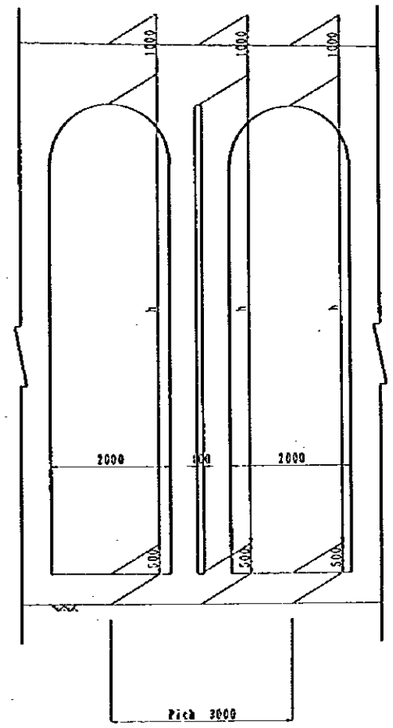
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (7)
DATE	DWG NO. W-9

		T-6			T-7		
		a – a		b – b		a – a		b – b
A LINE	Ha1	6 375	Hb1	6 766	Ha1	6 766	Hb1	7 046
	Ha2	5 475	Hb2	5 866	Ha2	5 866	Hb2	6 146
	Ha3	21@250 = 5 250	Hb3	23@250 = 5 750	Ha3	23@250 = 5 750	Hb3	24@250 = 6 000
	Ha4	12@250 = 3 000	Hb4	14@250 = 3 500	Ha4	14@250 = 3 500	Hb4	15@250 = 3 750
	Ha5	225	Hb5	116	Ha5	116	Hb5	146
	Ba1	654	Bb1	683	Ba1	683	Bb1	703
	Ba2	2 846	Bb2	2 817	Ba2	2 817	Bb2	2 797
	Ba3	404	Bb3	433	Ba3	433	Bb3	453
	Ba4	2@286.5 = 573	Bb4	2@300.5 = 601	Ba4	2@300.5 = 601	Bb4	622
	Ba5	2@178.5 = 357	Bb5	2@164.5 = 329	Ba5	2@164.5 = 329	Bb5	2@154 = 308
	Ba6	8@300 = 2 400	Bb6	8@300 = 2 400	Ba6	8@300 = 2 400	Bb6	8@300 = 2 400
	Ba7	521	Bb7	550	Ba7	550	Bb7	570
	Ba8	2@204.5 = 409	Bb8	2@190 = 380	Ba8	2@190 = 380	Bb8	2@180 = 360

		T-6			T-7		
		a – a		b – b		a – a		b – b
B LINE	Ha1	6 253	Hb1	6 611	Ha1	6 611	Hb1	6 925
	Ha2	5 353	Hb2	5 711	Ha2	5 711	Hb2	6 025
	Ha3	21@250 = 5 250	Hb3	22@250 = 5 500	Ha3	22@250 = 5 500	Hb3	24@250 = 6 000
	Ha4	12@250 = 3 000	Hb4	13@250 = 3 250	Ha4	13@250 = 3 250	Hb4	15@250 = 3 750
	Ha5	103	Hb5	211	Ha5	211	Hb5	25
	Ba1	645	Bb1	671	Ba1	671	Bb1	694
	Ba2	2 855	Bb2	2 829	Ba2	2 829	Bb2	2 806
	Ba3	395	Bb3	421	Ba3	421	Bb3	444
	Ba4	2@282 = 564	Bb4	2@295 = 590	Ba4	2@295 = 590	Bb4	2@306.5 = 613
	Ba5	2@183 = 366	Bb5	2@170 = 340	Ba5	2@170 = 340	Bb5	2@158.5 = 317
	Ba6	8@300 = 2 400	Bb6	8@300 = 2 400	Ba6	8@300 = 2 400	Bb6	8@300 = 2 400
	Ba7	512	Bb7	538	Ba7	538	Bb7	561
	Ba8	2@209 = 418	Bb8	2@196 = 392	Ba8	2@196 = 392	Bb8	2@184.5 = 369



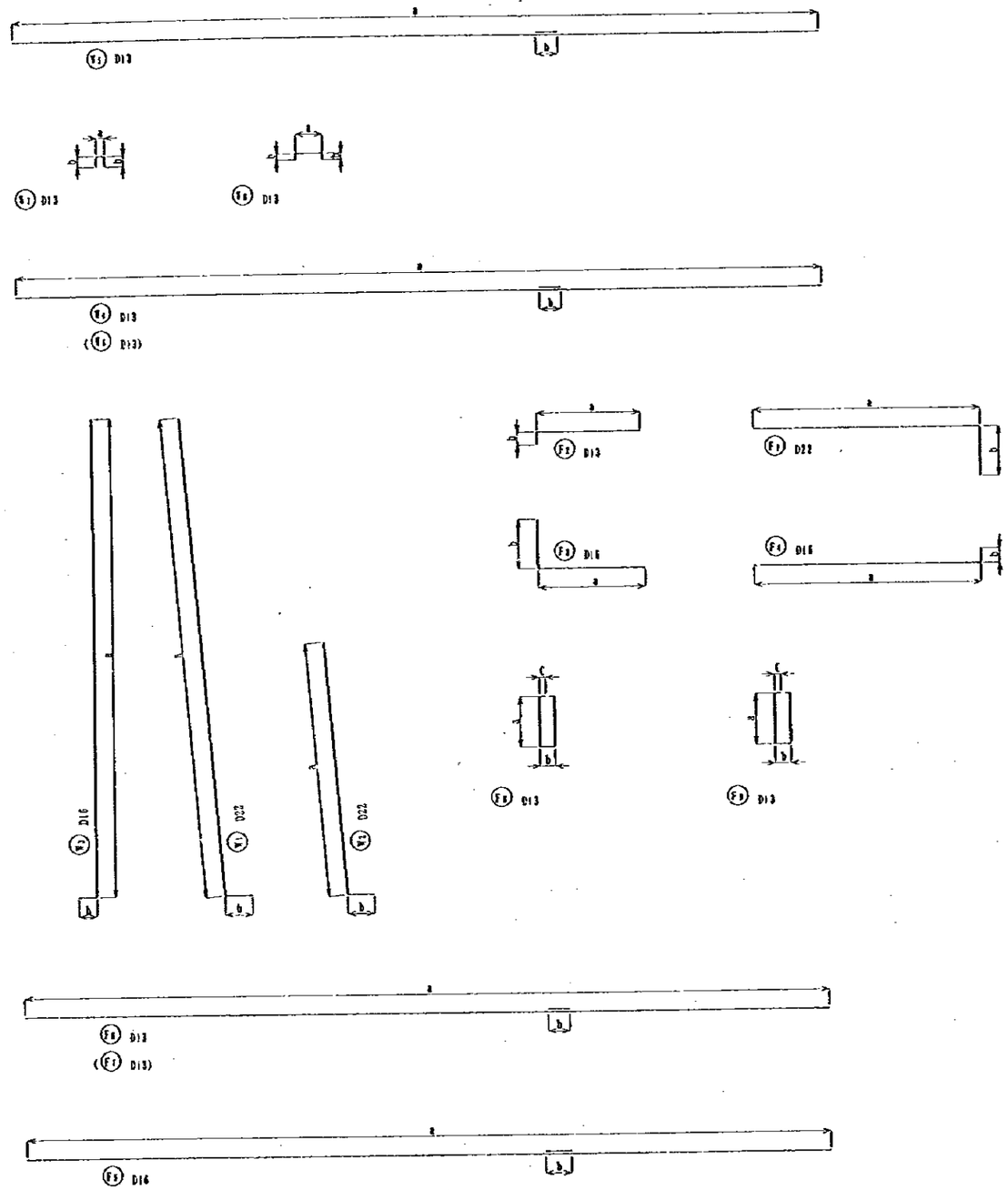
Slit Shape in Front of Wall
(Thickness t=30 mm)

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (8)
DATE	DWG NO. W-10



REIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 6					
W 1	D 22	6 720	6 584~6 192	330	——
2	"	3 290	2 958	330	——
3	D 16	6 620	6 566~6 375	240	——
4	D 13	15 190	14 800	390	——
5	"	9 450	4 450~14 041	390	——
6	"	15 200	14 805	390	——
7	"	500	110	195	——
8	"	610	564~195	111	——
F 1	D 22	4 140	3 440	700	——
2	D 13	1 720	1 520	195	——
3	D 16	2 150	1 450	700	——
4	"	3 570	3 330	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 960	728	279	111
9	"	1 980	732	285	111
T 7					
W 1	D 22	7 060	6 865~6 584	330	——
2	"	3 290	2 958	330	——
3	D 16	6 950	6 846~6 568	240	——
4	D 13	15 190	14 800	390	——
5	"	7 830	7 821	——	——
6	"	15 200	14 803	390	——
7	"	500	110	195	——
8	"	630	584~216	111	——
F 1	D 22	4 420	3 420	700	——
2	D 13	1 740	1 540	195	——
3	D 16	2 150	1 450	700	——
4	"	3 570	3 330	240	——
5	"	15 280	14 800	480	——
6	D 13	15 150	14 800	390	——
7	"	15 150	14 800	390	——
8	"	1 960	728	279	111
9	"	1 980	732	285	111

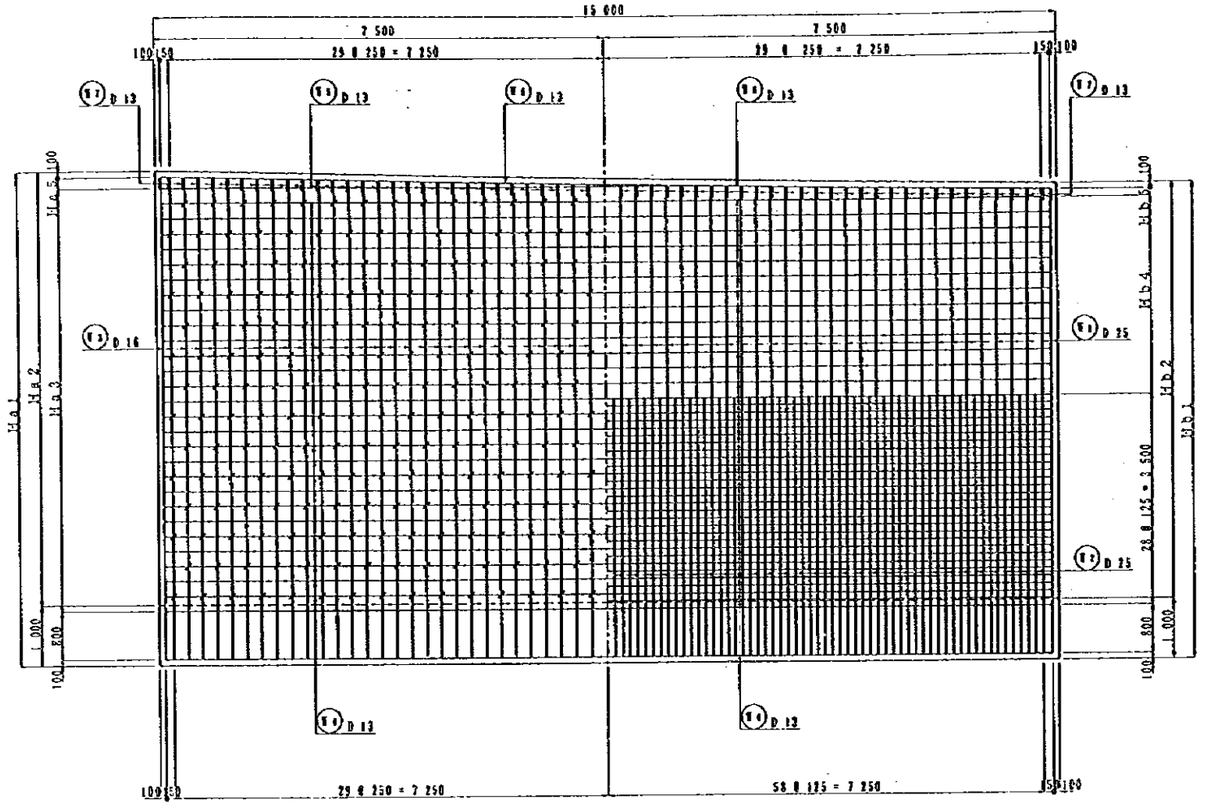
REIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 6					
W 1	D 22	6 580	6 428~6 069	330	——
2	"	3 290	2 958	330	——
3	D 16	6 460	6 411~6 053	240	——
4	D 13	15 190	14 800	390	——
5	"	8 850	8 841	——	——
6	"	15 200	14 804	390	——
7	"	500	110	195	——
8	"	610	552~220	111	——
F 1	D 22	4 160	3 452	700	——
2	D 13	1 710	1 505	195	——
3	D 16	2 150	1 450	700	——
4	"	3 570	3 330	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 960	728	279	111
9	"	1 980	732	285	111
T 7					
W 1	D 22	6 920	6 743~6 428	330	——
2	"	3 290	2 958	330	——
3	D 16	6 810	6 725~6 411	240	——
4	D 13	15 150	14 800	390	——
5	"	7 370	1 194~13 137	390	——
6	"	15 200	14 803	390	——
7	"	500	110	195	——
8	"	620	575~207	111	——
F 1	D 22	4 130	3 429	700	——
2	D 13	1 730	1 531	195	——
3	D 16	2 150	1 450	700	——
4	"	3 570	3 330	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 150	14 800	390	——
8	"	1 960	728	279	111
9	"	1 980	732	285	111

NOTES:

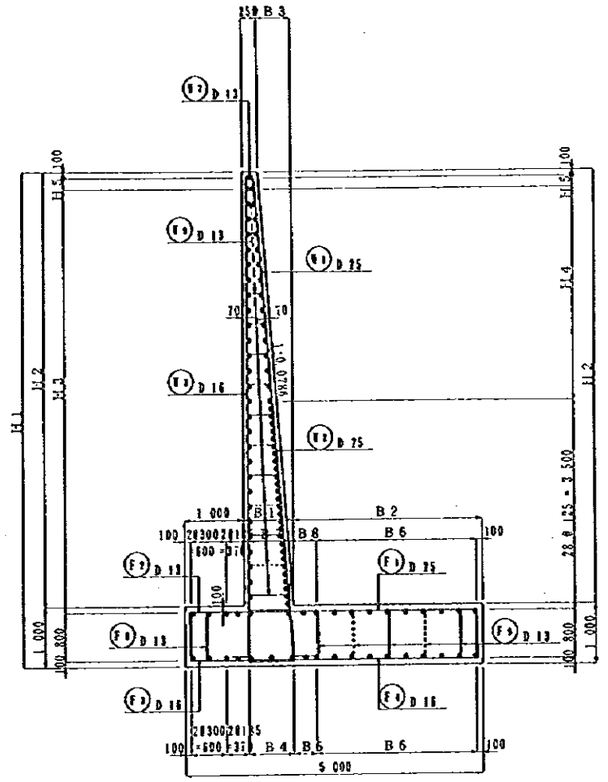
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

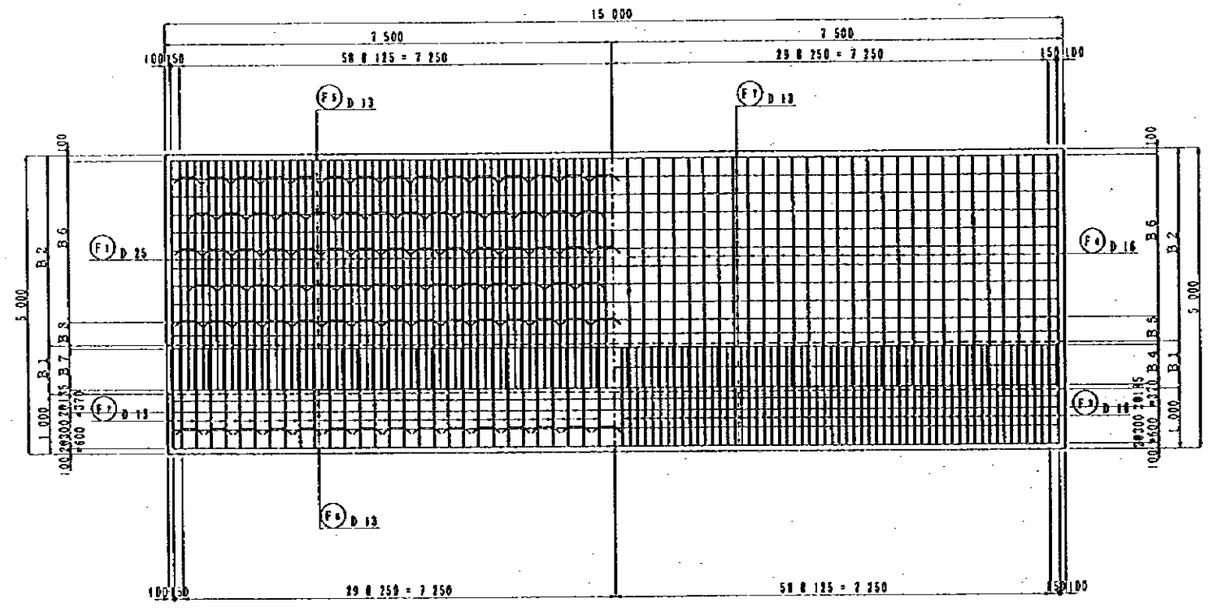
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (9)
DATE
DWG NO. W-11



SIDE VIEW
S=1/100



SECTION
S=1/100



PLAN
S=1/100

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

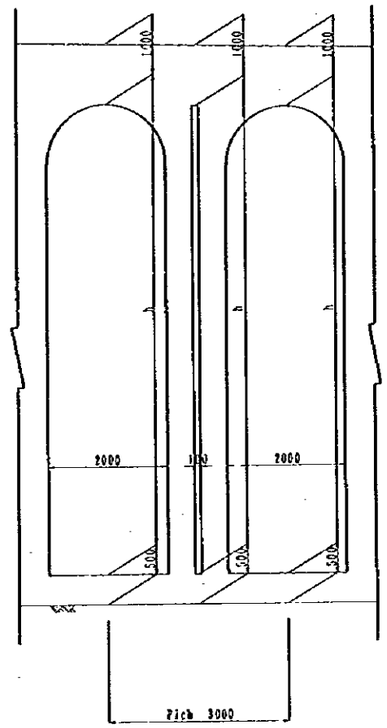
CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (10)
DATE	DWG NO. W-12

A LINE

	T-8			T-9			T-10		
	a – a		b – b	a – a		b – b	a – a		b – b
Ha1	7 146	Hb1	7 425	7 425	Hb1	7 694	7 694	Hb1	7 962
Ha2	6 146	Hb2	6 425	6 425	Hb2	6 694	6 694	Hb2	6 962
Ha3	24@250 = 6 000	Hb3	25@250 = 6 250	25@250 = 6 250	Hb3	26@250 = 6 500	26@250 = 6 500	Hb3	27@250 = 6 750
Ha4	15@250 = 3 750	Hb4	11@250 = 2 750	11@250 = 2 750	Hb4	12@250 = 3 000	12@250 = 3 000	Hb4	13@250 = 3 250
Ha5	146	Hb5	175	175	Hb5	194	194	Hb5	212
Ba1	733	Bb1	755	755	Bb1	776	776	Bb1	797
Ba2	3 267	Bb2	3 245	3 245	Bb2	3 244	3 244	Bb2	3 203
Ba3	483	Bb3	505	505	Bb3	526	526	Bb3	547
Ba4	664	Bb4	686	686	Bb4	707	707	Bb4	728
Ba5	2@233 = 466	Bb5	2@222 = 444	2@222 = 444	Bb5	2@211.5 = 423	2@211.5 = 423	Bb5	2@201 = 402
Ba6	9@300 = 2 700	Bb6	9@300 = 2 700	9@300 = 2 700	Bb6	9@300 = 2 700	9@300 = 2 700	Bb6	9@300 = 2 700
Ba7	601	Bb7	623	623	Bb7	644	644	Bb7	665
Ba8	2@264.5 = 529	Bb8	2@253.5 = 507	2@253.5 = 507	Bb8	2@243 = 486	2@243 = 486	Bb8	2@232.5 = 465

B LINE

	T-8			T-9			T-10		
	a – a		b – b	a – a		b – b	a – a		b – b
Ha1	7 025	Hb1	7 338	7 338	Hb1	7 606	7 606	Hb1	7 874
Ha2	6 025	Hb2	6 338	6 338	Hb2	6 606	6 606	Hb2	6 874
Ha3	24@250 = 6 000	Hb3	25@250 = 6 250	25@250 = 6 250	Hb3	26@250 = 6 500	26@250 = 6 500	Hb3	27@250 = 6 750
Ha4	15@250 = 3 750	Hb4	11@250 = 2 750	11@250 = 2 750	Hb4	12@250 = 3 000	12@250 = 3 000	Hb4	13@250 = 3 250
Ha5	25	Hb5	88	88	Hb5	106	106	Hb5	124
Ba1	723	Bb1	748	748	Bb1	769	769	Bb1	790
Ba2	3 277	Bb2	3 252	3 252	Bb2	3 231	3 231	Bb2	3 210
Ba3	473	Bb3	498	498	Bb3	519	519	Bb3	540
Ba4	2@327 = 654	Bb4	2@339.5 = 679	2@339.5 = 679	Bb4	2@350 = 700	2@350 = 700	Bb4	2@360.5 = 721
Ba5	2@238 = 476	Bb5	2@225.5 = 451	2@225.5 = 451	Bb5	2@215 = 430	2@215 = 430	Bb5	2@204.5 = 409
Ba6	9@300 = 2 700	Bb6	9@300 = 2 700	9@300 = 2 700	Bb6	9@300 = 2 700	9@300 = 2 700	Bb6	9@300 = 2 700
Ba7	591	Bb7	616	616	Bb7	637	637	Bb7	658
Ba8	2@269.5 = 539	Bb8	2@257 = 514	2@257 = 514	Bb8	2@246.5 = 493	2@246.5 = 493	Bb8	2@236 = 472



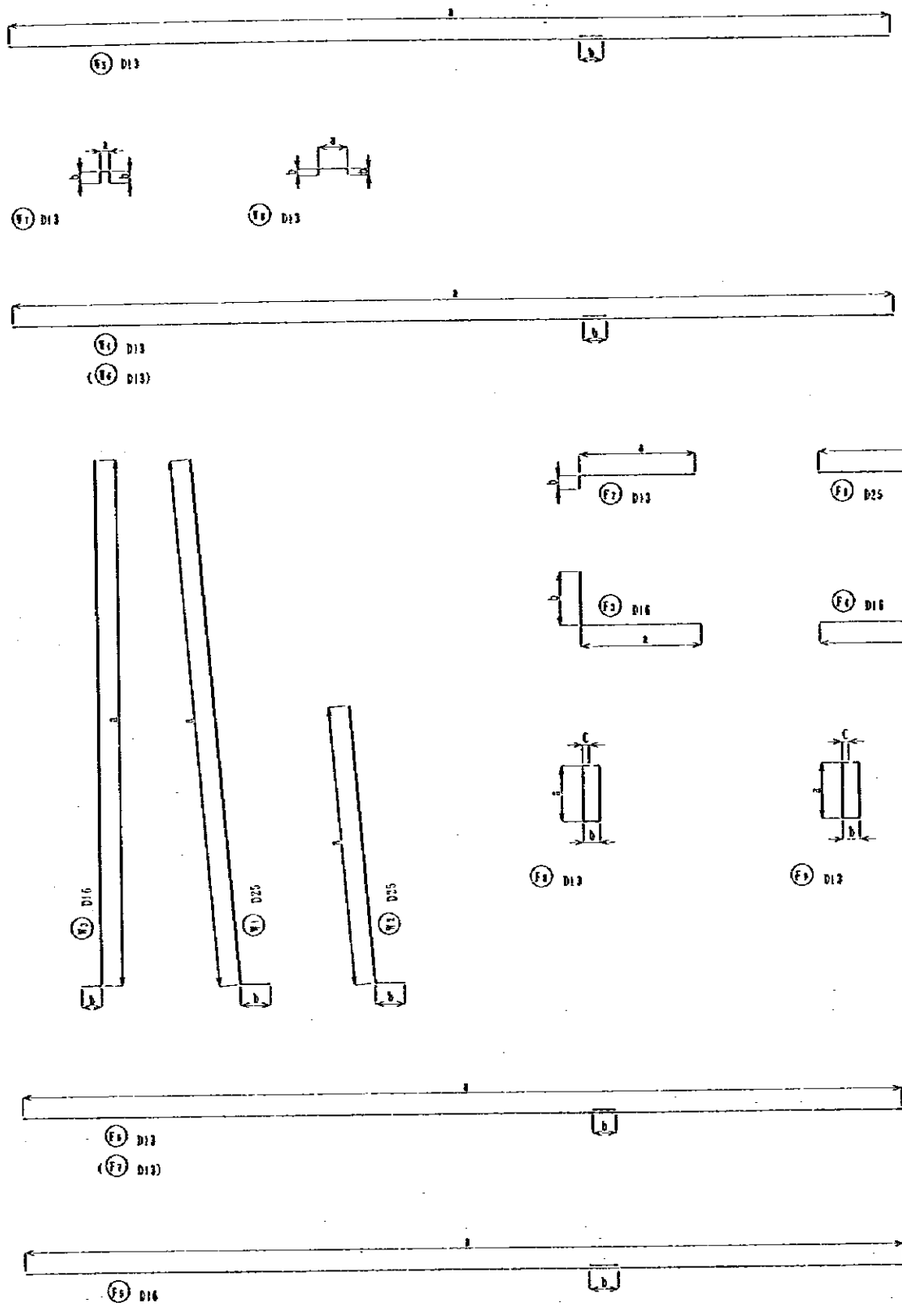
Slit Shape in Front of Wall
(Thickness t=30 mm)

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (II)
DATE	DWG NO. W-13



REIS NO.	ϕ (mm)	LENGTH (mm)	a	b	c
T 8					
W 1	D 25	7 490	7 247~6 967	375	——
2	〃	4 690	4 313	375	——
3	D 16	7 330	7 225~6 946	240	——
4	D 13	15 190	14 800	390	——
5	〃	9 418	9 409	——	——
6	〃	15 200	14 803	390	——
7	〃	500	110	195	——
8	〃	650	637~204	111	——
F 1	D 25	4 760	3 957	800	——
2	D 13	1 790	1 593	195	——
3	D 16	2 250	1 450	800	——
4	〃	4 070	3 830	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 160	828	279	111
9	〃	2 180	834	288	111
T 9					
W 1	D 25	7 760	7 517~7 247	375	——
2	〃	4 690	4 313	375	——
3	D 16	7 600	7 454~7 225	240	——
4	D 13	15 190	14 800	390	——
5	〃	10 220	10 018	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	670	658~226	111	——
F 1	D 25	4 740	3 936	800	——
2	D 13	1 810	1 614	195	——
3	D 16	2 250	1 450	800	——
4	〃	4 070	3 830	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 160	828	279	111
9	〃	2 180	834	288	111
T 10					
W 1	D 25	8 030	7 786~7 547	375	——
2	〃	4 690	4 313	375	——
3	D 16	7 870	7 762~7 494	240	——
4	D 13	15 190	14 800	390	——
5	〃	11 830	11 866	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	670	679~207	111	——
F 1	D 25	4 720	3 915	800	——
2	D 13	1 830	1 635	195	——
3	D 16	2 250	1 450	800	——
4	〃	4 070	3 830	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 160	828	279	111
9	〃	2 180	834	288	111

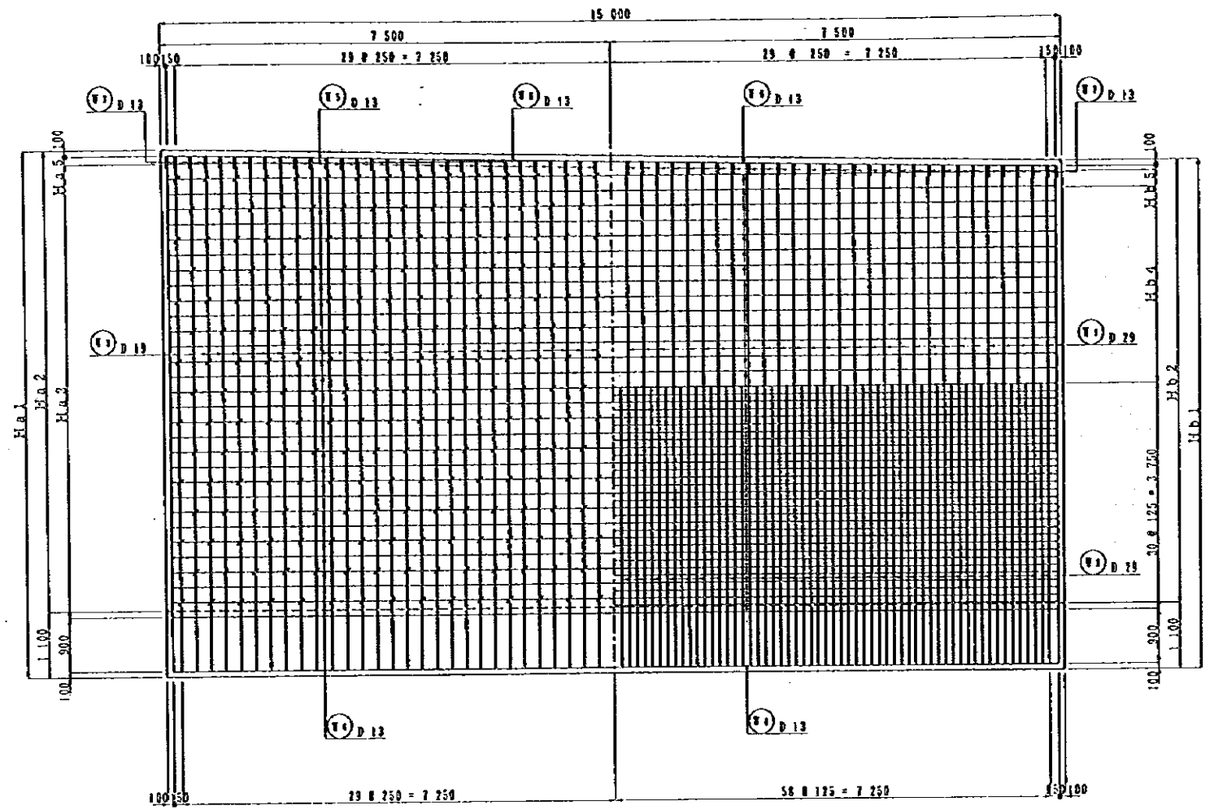
REIS NO.	ϕ (mm)	LENGTH (mm)	a	b	c
T 8					
W 1	D 25	7 380	7 160~6 846	375	——
2	〃	4 690	4 313	375	——
3	D 16	7 230	7 135~6 825	240	——
4	D 13	15 190	14 800	390	——
5	〃	4 220	4 217	——	——
6	〃	15 200	14 803	390	——
7	〃	500	110	195	——
8	〃	640	630~198	111	——
F 1	D 25	4 770	3 964	800	——
2	D 13	1 790	1 586	195	——
3	D 16	2 250	1 450	800	——
4	〃	4 070	3 830	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 160	828	279	111
9	〃	2 180	834	288	111
T 9					
W 1	D 25	7 670	7 429~7 160	375	——
2	〃	4 690	4 313	375	——
3	D 16	7 520	7 406~7 138	240	——
4	D 13	15 190	14 800	390	——
5	〃	5 940	5 933	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	660	651~219	111	——
F 1	D 25	4 750	3 943	800	——
2	D 13	1 810	1 602	195	——
3	D 16	2 250	1 450	800	——
4	〃	4 070	3 830	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 160	828	279	111
9	〃	2 180	834	288	111
T 10					
W 1	D 25	7 940	7 698~7 429	375	——
2	〃	4 690	4 313	375	——
3	D 16	7 780	7 674~7 406	240	——
4	D 13	15 190	14 800	390	——
5	〃	6 940	6 940	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	660	672~200	111	——
F 1	D 25	4 720	3 922	800	——
2	D 13	1 830	1 628	195	——
3	D 16	2 250	1 450	800	——
4	〃	4 070	3 830	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 160	828	279	111
9	〃	2 180	834	288	111

NOTES:

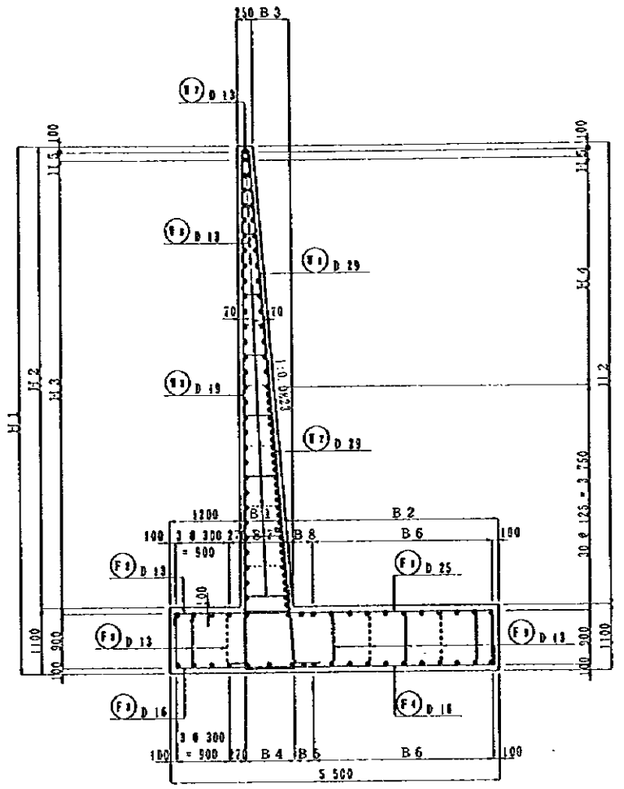
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (12)
DATE
DWG NO. W-14



SIDE VIEW
S=1/100



SECTION
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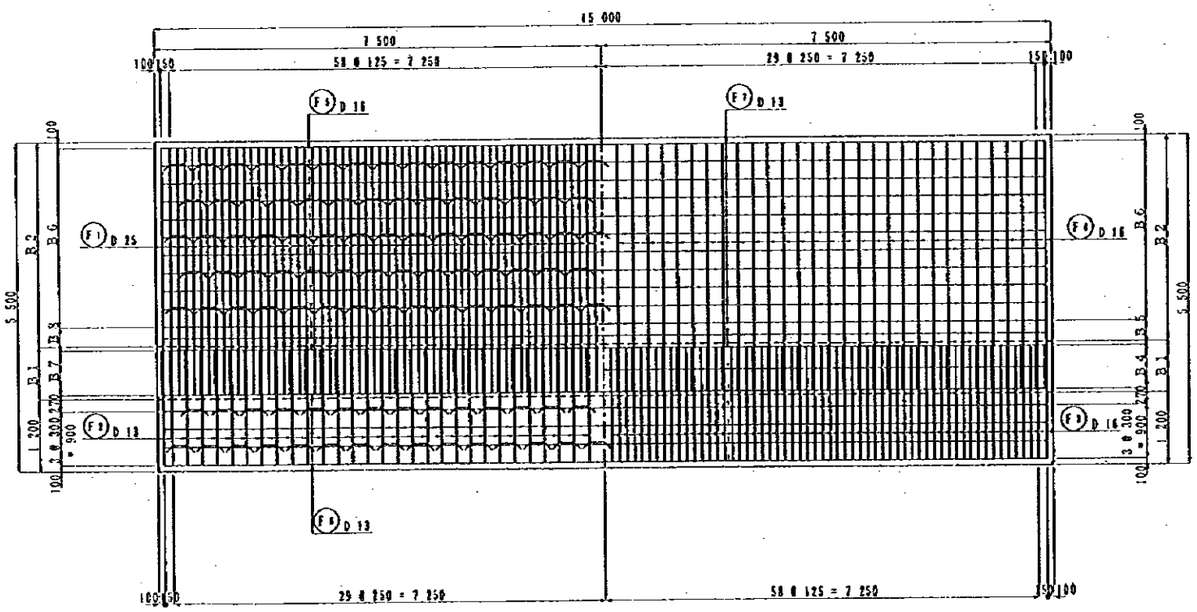


PLAN
S=1/100

NOTES:

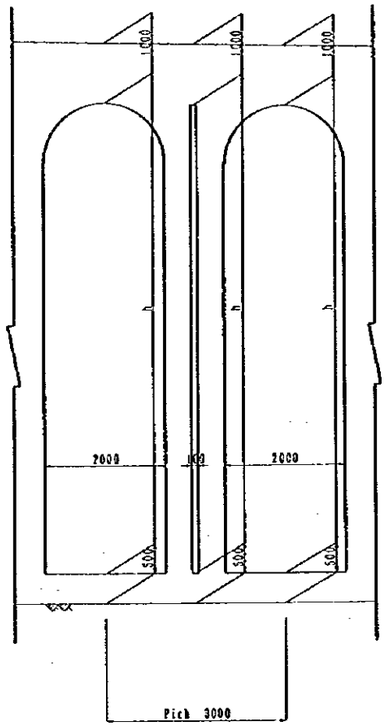
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (13)
DATE	DWG NO. W-15

A LINE	T-11			
	a – a		b – b	
Ha1	8 062	Hb1	8 330	
Ha2	6 962	Hb2	7 230	
Ha3	27@250 = 6 750	Hb3	28@250 = 7 000	
Ha4	12@250 = 3 000	Hb4	13@250 = 3 250	
Ha5	212	Hb5	230	
Ba1	823	Bb1	845	
Ba2	3 477	Bb2	3 455	
Ba3	573	Bb3	595	
Ba4	765	Bb4	787	
Ba5	2@182.5 = 365	Bb5	2@171.5 = 343	
Ba6	10@300 = 3 000	Bb6	10@300 = 3 000	
Ba7	691	Bb7	713	
Ba8	2@219.5 = 439	Bb8	2@208.5 = 417	

B LINE	T-10			
	a – a		b – b	
Ha1	7 974	Hb1	8 242	
Ha2	6 874	Hb2	7 142	
Ha3	27@250 = 6 750	Hb3	28@250 = 7 000	
Ha4	12@250 = 3 000	Hb4	13@250 = 3 250	
Ha5	124	Hb5	142	
Ba1	816	Bb1	838	
Ba2	3 484	Bb2	3 462	
Ba3	566	Bb3	588	
Ba4	2@379 = 758	Bb4	2@390 = 780	
Ba5	2@186 = 372	Bb5	2@175 = 350	
Ba6	10@300 = 3 000	Bb6	10@300 = 3 000	
Ba7	684	Bb7	706	
Ba8	2@223 = 446	Bb8	2@212 = 424	



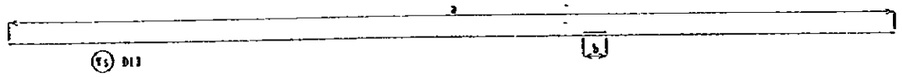
Slit Shape in Front of Wall
(Thickness t=30 mm)

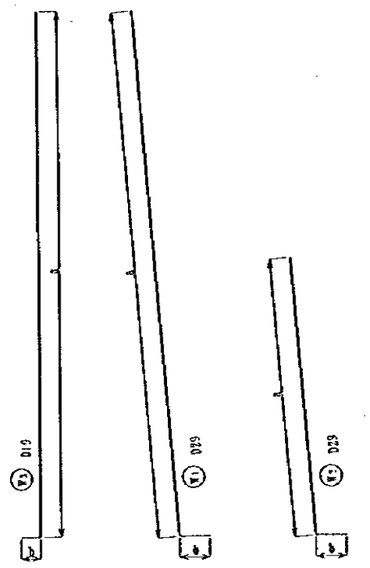
NOTES:

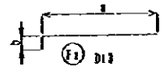
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

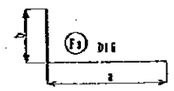
JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

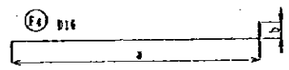
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (14)
DATE
DWG NO. W-16

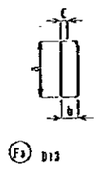


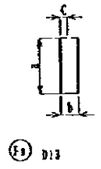


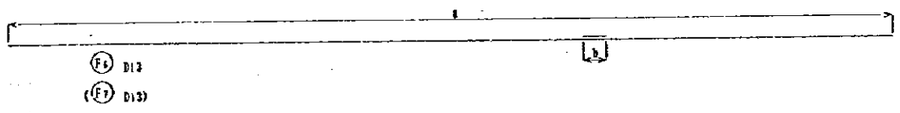


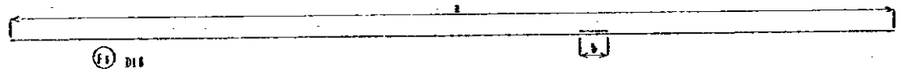












REIN FO.	◇ (mm)	LENGTH (mm)	a	b	c
T 01					
W 1	D 29	8 460	8 157~7 889	435	——
2	〃	5 110	4 666	435	——
3	D 19	8 290	8 130~7 862	285	——
4	D 13	15 190	14 800	390	——
5	〃	13 270	12 873	390	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	710	729~226	111	——
F 1	D 25	5 070	4 167	900	——
2	D 13	2 080	1 883	195	——
3	D 16	2 550	1 650	900	——
4	〃	4 370	4 130	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 360	928	279	111
9	〃	2 360	934	288	111

REIN FO.	◇ (mm)	LENGTH (mm)	a	b	c
T 01					
W 1	D 29	8 370	8 069~7 800	435	——
2	〃	5 110	4 666	435	——
3	D 19	8 200	8 042~7 774	285	——
4	D 13	15 190	14 800	390	——
5	〃	7 950	7 948	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	200	722~229	111	——
F 1	D 25	5 080	4 174	900	——
2	D 13	2 050	1 876	195	——
3	D 16	2 550	1 650	900	——
4	〃	4 370	4 130	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 360	928	279	111
9	〃	2 360	934	288	111

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (1S)
DATE
DWG NO. W-17

A-LINE

REIN NO.	φ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 1							
W 1	D 19	4 220	2.235	61	9.431	575.4	
2	"	2 550	"	58	5.789	335.8	
3	D 13	4 420	0.994	61	4.395	249.8	
4	"	15 190	"	34	15.039	513.4	
5	"	7 510	"	4	7.465	29.9	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	490	"	207	0.487	100.8	
F 1	D 13	3 280	2.235	119	7.331	872.4	
2	D 13	1 130	0.994	61	1.093	66.7	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 150	"	10	15.099	151.0	
6	"	15 150	"	3	15.099	45.3	
7	"	15 190	"	14	15.099	211.4	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3807.6	
T 2							
W 1	D 19	4 660	2.235	61	10.415	635.3	
2	"	2 550	"	58	5.789	335.8	
3	D 13	4 560	0.994	61	4.533	276.5	
4	"	15 190	"	38	15.099	573.8	
5	"	5 280	"	4	5.248	21.0	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	500	"	236	0.497	117.3	
F 1	D 19	3 250	2.235	119	7.266	864.4	
2	D 13	1 120	0.994	61	1.113	67.9	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	3	15.099	45.3	
7	"	15 190	"	13	15.059	196.8	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3540.3	
T 3							
W 1	D 19	5 080	2.235	61	11.354	692.6	
2	"	2 550	"	58	5.789	335.8	
3	D 13	4 930	0.994	61	4.950	301.9	
4	"	15 190	"	42	15.099	634.2	
5	"	6 740	"	2	6.700	13.4	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	520	"	236	0.517	122.0	
F 1	D 19	3 230	2.235	119	7.219	859.1	
2	D 13	1 140	0.994	61	1.133	69.1	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	9	15.059	135.9	
6	"	15 190	"	3	15.059	45.3	
7	"	15 190	"	13	15.099	196.3	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						4061.3	

D 19	5506.6
D 16	747.9
D 13	5554.7
TOTAL WEIGHT	11809.2

B-LINE

REIN NO.	φ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 1							
W 1	D 19	4 430	2.235	61	9.901	563.1	
2	"	2 550	"	58	5.789	335.8	
3	D 13	4 030	0.994	61	4.006	244.4	
4	"	15 190	"	34	15.059	513.4	
5	"	8 620	"	2	8.568	17.1	
6	"	15 260	"	2	15.185	30.3	
7	"	500	"	61	0.497	30.3	
8	"	500	"	177	0.497	88.0	
F 1	D 19	3 280	2.235	119	7.331	872.4	
2	D 13	1 030	0.994	61	1.089	66.1	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.059	151.0	
6	"	15 190	"	3	15.059	45.3	
7	"	15 190	"	14	15.059	211.4	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3763.7	
T 2							
W 1	D 19	4 570	2.235	61	10.214	623.1	
2	"	2 550	"	58	5.789	335.8	
3	D 13	4 470	0.994	61	4.443	271.0	
4	"	15 190	"	36	15.099	543.6	
5	"	10 880	"	4	10.815	43.3	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	510	"	207	0.507	104.9	
F 1	D 19	3 260	2.235	119	7.286	867.0	
2	D 13	1 120	0.994	61	1.113	67.9	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	3	15.099	45.3	
7	"	15 190	"	13	15.059	196.8	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3504.9	
T 3							
W 1	D 19	4 990	2.235	61	11.153	680.3	
2	"	2 550	"	58	5.789	335.8	
3	D 13	4 890	0.994	61	4.861	296.5	
4	"	15 190	"	34	15.099	543.6	
5	"	8 220	"	4	8.176	32.7	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	520	"	207	0.517	107.0	
F 1	D 19	3 230	2.235	119	7.219	859.1	
2	D 13	1 140	0.994	61	1.133	69.1	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	3	15.099	45.3	
7	"	15 190	"	14	15.099	196.3	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3972.4	

D 19	5472.4
D 16	747.9
D 13	5420.7
TOTAL WEIGHT	11641.0

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY

TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (16)

DATE

DWG NO. W-18

A – L I N E

REIN NO.	ϕ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 4							
W 1	D 22	5 730	3.042	61	17.431	1 063.3	
2	"	3 090	"	58	9.400	545.2	
3	D 16	5 630	1.552	61	8.738	533.0	
4	D 13	15 190	0.994	45	15.099	679.5	
5	"	7 980	"	4	7.932	31.7	
6	"	15 209	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	560	"	266	0.557	148.2	
F 1	D 19	3 650	2.235	119	8.158	970.8	
2	D 13	1 420	0.994	61	1.411	86.1	
3	D 16	1 750	1.552	119	2.716	323.2	
4	D 13	3 230	0.994	61	3.211	195.9	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	4	15.099	60.4	
7	"	15 190	"	15	15.099	226.5	
8	"	1 560	"	29	1.551	45.0	
9	"	1 570	"	116	1.561	181.1	
						5301.4	
T 5							
W 1	D 22	6 130	3.042	61	18.647	1 137.5	
2	"	3 090	"	58	9.400	545.2	
3	D 16	6 020	1.552	61	9.343	569.9	
4	D 13	15 190	0.994	49	15.099	739.9	
5	"	8 640	"	2	8.588	17.2	
6	"	15 209	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	570	"	295	0.567	167.3	
F 1	D 19	3 630	2.235	119	8.113	965.4	
2	D 13	1 450	0.994	61	1.441	87.9	
3	D 16	1 750	1.552	119	2.716	323.2	
4	D 13	3 230	0.994	61	3.211	195.9	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	4	15.099	60.4	
7	"	15 190	"	15	15.099	226.5	
8	"	1 560	"	29	1.551	45.0	
9	"	1 570	"	116	1.561	181.1	
						5473.9	

D 22	3251.2	
D 19	1936.2	
D 16	1749.3	
D 13	3788.6	
TOTAL WEIGHT	10775.3	

B – L I N E

REIN NO.	ϕ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 4							
W 1	D 22	5 640	3.042	61	17.157	1 046.6	
2	"	3 099	"	58	9.430	545.2	
3	D 16	5 540	1.552	61	8.598	524.5	
4	D 13	15 190	0.994	45	15.099	679.5	
5	"	9 100	"	2	9.045	18.1	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	560	"	266	0.557	148.2	
F 1	D 19	3 660	2.235	119	8.180	973.4	
2	D 13	1 420	0.994	61	1.411	86.1	
3	D 16	1 750	1.552	119	2.716	323.2	
4	D 13	3 230	0.994	61	3.211	195.9	
5	"	15 190	"	10	15.099	151.0	
6	"	15 150	"	4	15.099	60.4	
7	"	15 150	"	15	15.099	226.5	
8	"	1 560	"	29	1.551	45.0	
9	"	1 570	"	116	1.561	181.1	
						5265.2	
T 5							
W 1	D 22	6 020	3.042	61	18.313	1 117.1	
2	"	3 090	"	58	9.430	545.2	
3	D 16	5 920	1.552	61	9.185	560.5	
4	D 13	15 190	0.994	47	15.099	709.7	
5	"	9 750	"	4	9.692	38.8	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	560	"	295	0.557	164.3	
F 1	D 19	3 630	2.235	119	8.113	965.4	
2	D 13	1 440	0.994	61	1.431	87.3	
3	D 16	1 750	1.552	119	2.716	323.2	
4	D 13	3 230	0.994	61	3.211	195.9	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	4	15.099	60.4	
7	"	15 150	"	15	15.099	226.5	
8	"	1 560	"	29	1.551	45.0	
9	"	1 570	"	116	1.561	181.1	
						5431.9	

D 22	3254.1
D 19	1938.8
D 16	1731.4
D 13	3772.8
TOTAL WEIGHT	10697.1

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (17)
DATE
DWG NO. W-19

A - L I N E

BEIS NO.	ϕ (mm)	LENGTH (m)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 6							
W 1	D 22	6 720	3.042	61	20.443	1 247.0	
2	"	3 290	"	58	10.008	580.5	
3	D 16	6 620	1.552	61	10.274	626.7	
4	D 13	15 190	0.994	51	15.099	770.0	
5	"	9 450	"	4	9.393	37.6	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	610	"	325	0.606	197.0	
F 1	D 22	4 140	3.042	119	12.594	1 498.7	
2	D 13	1 720	0.994	61	1.710	104.3	
3	D 16	2 150	1.552	119	3.337	397.1	
4	"	3 570	"	61	5.541	338.0	
5	"	15 280	"	11	23.715	260.9	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	17	15.099	256.7	
8	"	1 960	"	29	1.948	56.5	
9	"	1 980	"	116	1.968	228.3	
						6735.3	
T 7							
W 1	D 22	7 060	3.042	61	21.477	1 310.1	
2	"	3 290	"	58	10.008	580.5	
3	D 16	6 950	1.552	61	10.786	657.9	
4	D 13	15 190	0.994	55	15.099	830.4	
5	"	7 830	"	2	7.783	15.6	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	630	"	325	0.626	203.5	
F 1	D 22	4 120	3.042	119	12.533	1 491.4	
2	D 13	1 740	0.994	61	1.730	105.5	
3	D 16	2 150	1.552	119	3.337	397.1	
4	"	3 570	"	61	5.541	338.0	
5	"	15 280	"	11	23.715	260.9	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	17	15.099	256.7	
8	"	1 960	"	29	1.948	56.5	
9	"	1 980	"	116	1.968	228.3	
						6868.4	
					D 22	8768.2	
					D 16	3732.6	
					D 13	3618.9	
					TOTAL WEIGHT	13403.7	

B - L I N E

BEIS NO.	ϕ (mm)	LENGTH (m)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 6							
W 1	D 22	6 580	3.042	61	20.016	1 221.0	
2	"	3 290	"	58	10.008	580.5	
3	D 16	6 480	1.552	61	10.057	613.5	
4	D 13	15 190	0.994	51	15.099	770.0	
5	"	8 850	"	3	8.797	17.6	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	610	"	295	0.606	178.8	
F 1	D 22	4 140	3.042	119	12.655	1 505.9	
2	D 13	1 710	0.994	61	1.700	103.7	
3	D 16	2 150	1.552	119	3.337	397.1	
4	"	3 570	"	61	5.541	338.0	
5	"	15 280	"	11	23.715	260.9	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	17	15.099	256.7	
8	"	1 960	"	29	1.948	56.5	
9	"	1 980	"	116	1.968	228.3	
						6664.5	
T 7							
W 1	D 22	6 920	3.042	61	21.051	1 284.1	
2	"	3 290	"	58	10.008	580.5	
3	D 16	6 810	1.552	61	10.569	644.7	
4	D 13	15 190	0.994	53	15.099	800.9	
5	"	7 370	"	4	7.326	29.3	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	620	"	325	0.616	200.2	
F 1	D 22	4 130	3.042	119	12.563	1 495.0	
2	D 13	1 730	0.994	61	1.720	104.9	
3	D 16	2 150	1.552	119	3.337	397.1	
4	"	3 570	"	61	5.541	338.0	
5	"	15 280	"	11	23.715	260.9	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	17	15.099	256.7	
8	"	1 960	"	29	1.948	56.5	
9	"	1 980	"	116	1.968	228.3	
						6812.4	
					D 22	8647.0	
					D 16	3250.2	
					D 13	3559.7	
					TOTAL WEIGHT	13476.9	

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (18)
DATE
DWG NO. W-20

A – L I N E

REIN NO.	φ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 8							
W 1	D 25	7 450	3.973	61	29.758	1 815.2	
2	"	4 690	"	58	18.633	1 080.7	
3	D 16	7 330	1.552	61	11.376	693.9	
4	D 13	15 190	0.994	62	15.099	936.1	
5	"	9 410	"	2	9.354	18.7	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	650	"	354	0.646	228.7	
F 1	D 25	4 760	3.973	119	18.911	2 250.4	
2	D 13	1 790	0.994	61	1.779	108.5	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9001.9	
T 9							
W 1	D 25	7 760	3.973	61	30.830	1 880.6	
2	"	4 698	"	58	18.633	1 080.7	
3	D 16	7 600	1.552	61	11.795	719.5	
4	D 13	15 190	0.994	64	15.099	966.3	
5	"	10 820	"	2	10.755	21.5	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	670	"	354	0.666	235.8	
F 1	D 25	4 740	3.973	119	18.832	2 241.0	
2	D 13	1 810	0.994	61	1.799	109.7	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9124.8	
T 10							
W 1	D 25	8 030	3.973	61	31.903	1 946.1	
2	"	4 650	"	58	18.633	1 080.7	
3	D 16	7 870	1.552	61	12.214	745.1	
4	D 13	15 190	0.994	66	15.099	996.5	
5	"	11 870	"	2	11.799	23.6	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	670	"	384	0.666	255.7	
F 1	D 25	4 720	3.973	119	18.753	2 231.6	
2	D 13	1 830	0.994	89	1.819	111.0	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9248.8	
					D 25	15607.0	
					D 16	5414.7	
					D 13	6365.0	
					TOTAL WEIGHT	27386.7	

B – L I N E

REIN NO.	φ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 8							
B 1	D 25	7 380	3.973	61	29.321	1 788.6	
2	"	4 698	"	58	18.633	1 080.7	
3	D 16	7 230	1.552	61	11.221	684.5	
4	D 13	15 190	0.994	62	15.099	936.1	
5	"	4 220	"	2	4.195	8.4	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	640	"	354	0.636	225.1	
F 1	D 25	4 770	3.973	119	18.951	2 255.2	
2	D 13	1 790	0.994	61	1.779	108.5	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 260	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						8956.8	
T 9							
W 1	D 25	7 670	3.973	61	30.473	1 858.9	
2	"	4 690	"	58	18.633	1 080.7	
3	D 16	7 520	1.552	61	11.671	711.9	
4	D 13	15 190	0.994	64	15.099	966.3	
5	"	5 940	"	2	5.904	11.8	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	660	"	354	0.656	232.2	
F 1	D 25	4 750	3.973	119	18.872	2 245.8	
2	D 13	1 810	0.994	61	1.799	109.7	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9097.0	
T 10							
W 1	D 25	7 940	3.973	61	31.548	1 924.3	
2	"	4 650	"	58	18.633	1 080.7	
3	D 16	7 780	1.552	61	12.075	736.6	
4	D 13	15 190	0.994	66	15.099	996.5	
5	"	6 940	"	2	6.898	13.8	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	660	"	384	0.656	251.9	
F 1	D 25	4 730	3.973	119	18.792	2 236.2	
2	D 13	1 830	0.994	61	1.819	111.0	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9220.7	
					D 25	15551.1	
					D 16	5389.8	
					D 13	6324.8	
					TOTAL WEIGHT	27264.5	

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (19)
DATE
DWG NO. W-21

A – L I N E

REIN NO.	ϕ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 11							
R 1	D 29	8 460	5.059	61	42.759	2 610.7	
2	"	5 110	"	58	25.851	1 499.4	
3	D 19	8 250	2.235	61	18.528	1 130.2	
4	D 13	15 150	0.994	69	15.059	1 041.8	
5	"	13 270	"	2	13.190	26.4	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	710	"	384	0.706	271.1	
F 1	D 25	5 070	3.973	119	20.143	2 397.0	
2	D 13	2 080	0.994	61	2.068	126.1	
3	D 16	2 550	1.552	119	3.958	471.0	
4	"	4 370	"	61	6.782	413.7	
5	"	15 280	"	13	23.715	308.3	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	19	15.099	286.9	
8	"	2 360	"	58	2.346	136.1	
9	"	2 380	"	145	2.366	343.1	
						11197.8	

D 29	4110.1
D 25	2397.0
D 19	1130.2
D 16	1193.0
D 13	2367.5
TOTAL WEIGHT	11197.8

B – L I N E

REIN NO.	ϕ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 11							
B 1	D 29	8 370	5.059	61	42.344	2 583.0	
2	"	5 110	"	58	25.851	1 499.4	
3	D 19	8 200	2.235	61	18.327	1 117.9	
4	D 13	15 150	0.994	69	15.059	1 041.8	
5	"	7 950	"	2	7.902	15.8	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	700	"	384	0.696	267.3	
F 1	D 25	5 080	3.973	119	20.193	2 401.8	
2	D 13	2 080	0.994	61	2.068	126.1	
3	D 16	2 550	1.552	119	3.958	471.0	
4	"	4 370	"	61	6.782	413.7	
5	"	15 280	"	13	23.715	308.3	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	19	15.099	286.9	
8	"	2 360	"	58	2.346	136.1	
9	"	2 380	"	145	2.366	343.1	
						11148.2	

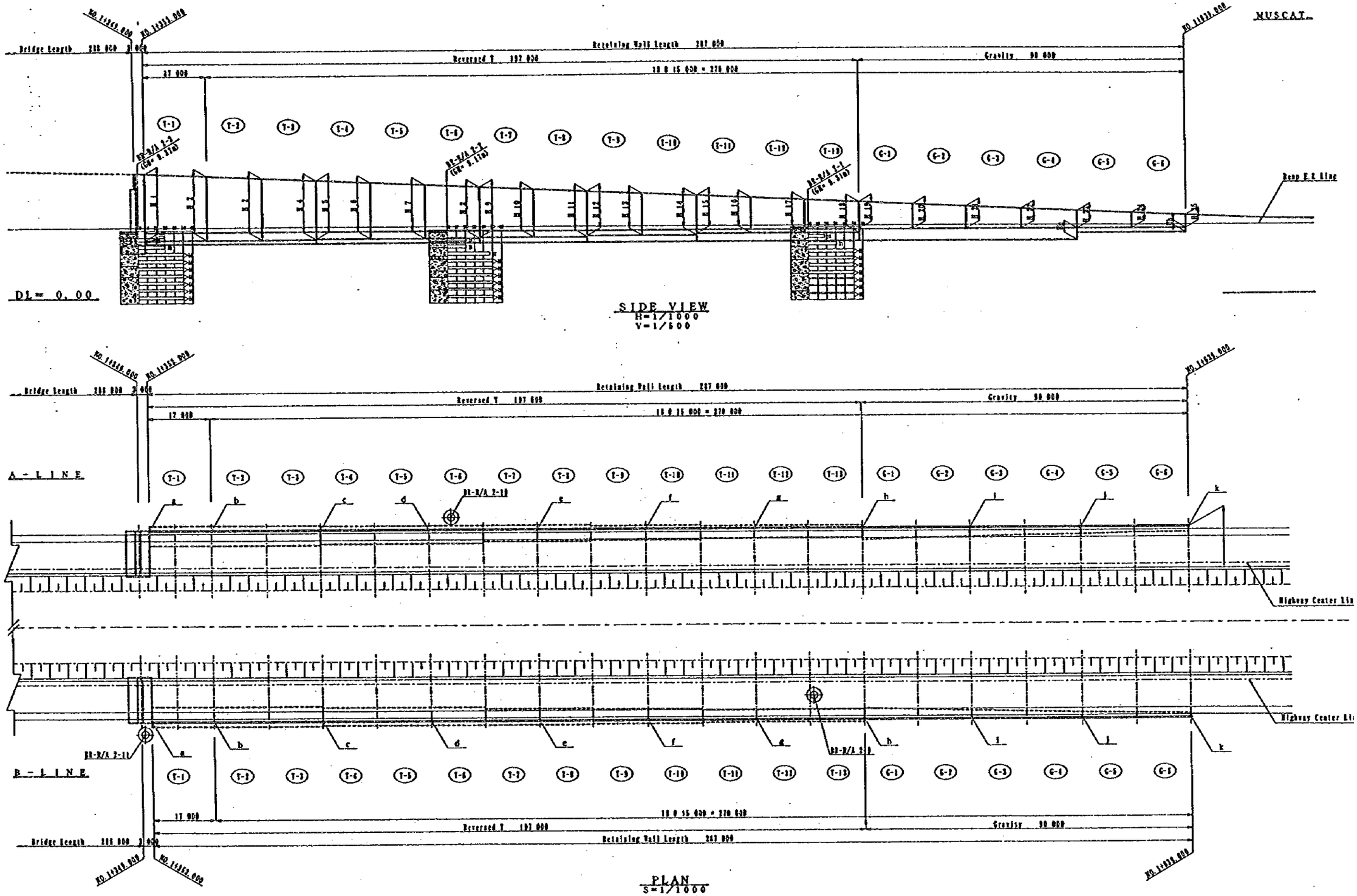
D 29	4083.4
D 25	2401.8
D 19	1117.9
D 16	1193.0
D 13	2352.1
TOTAL WEIGHT	11148.2

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (20)
DATE
DWG NO. W-22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Retaining Wall Length
Reversed T
Gravity
Ramp E.L Line
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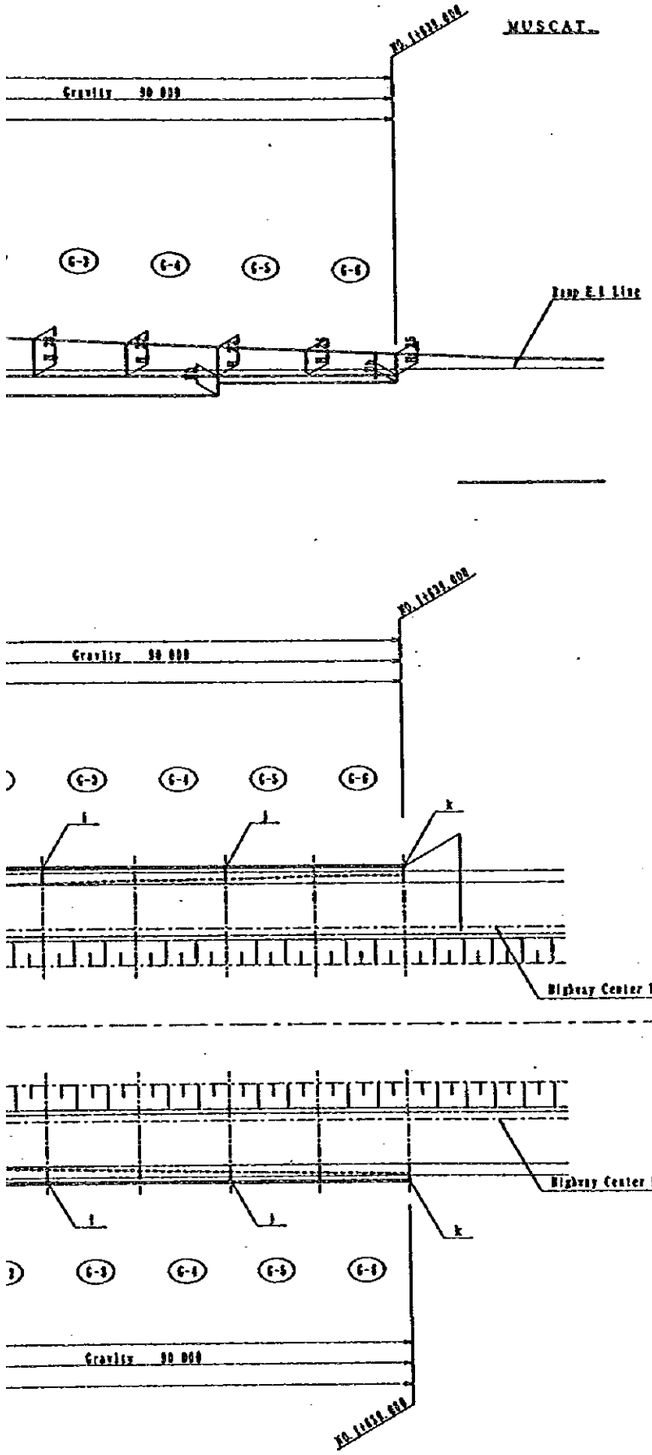
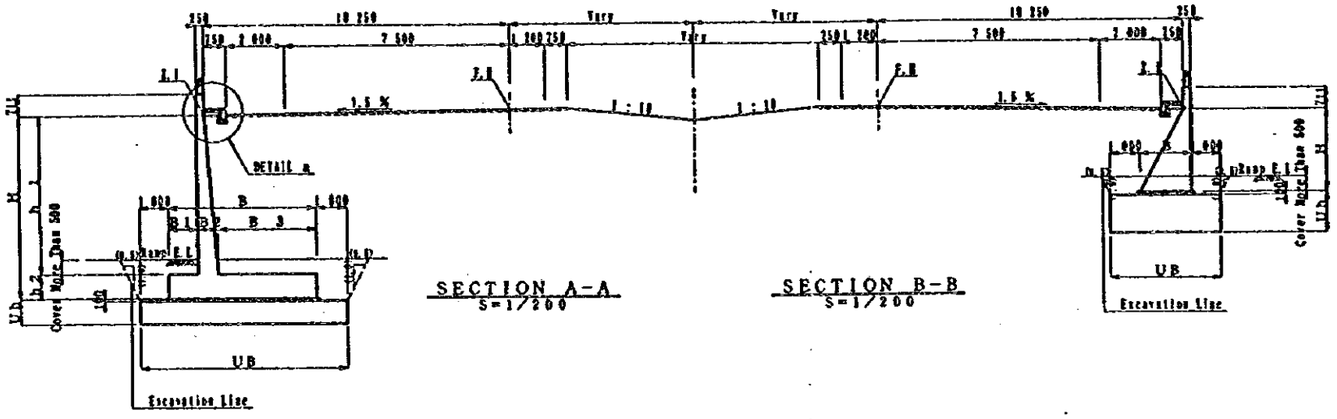
SIDE VIEW
H=1/1000
V=1/500
A-LINE
B-LINE
Highway Center Line
PLAN
S=1/1000

NOTES:





SECTION A-A
S=1/200

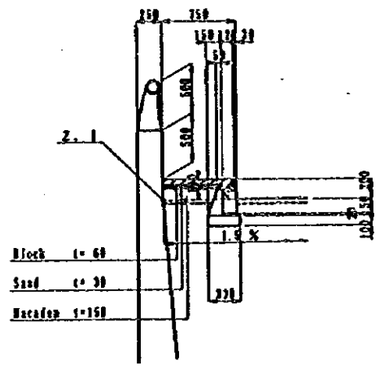
SECTION B-B
S=1/200

Reversed T

TYPE	MARK	H	h 1	h 2	B	B 1	B 2	B 3	U h	U B
ALINE	T- 1	11+8 900	7 800	1 100	6 500	1 200	892	3 406	500	7 500
	T- 2	9+8 638	7 538				870	3 430		
	T- 3	8+8 369	7 269				848	3 452		
	T- 4	7+8 100	7 000				826	3 474		
	T- 5	6+8 000	6 686	1 000	5 000	1 000	800	3 200	600	7 000
	T- 6	6+7 686	6 372				775	3 225		
	T- 7	5+7 372	6 061				751	3 249		
	T- 8	4+7 061	5 783				726	3 274		
	T- 9	3+6 961	5 483	900	4 500	1 000	697	2 803	700	6 500
	T-10	10+6 683	5 157				677	2 823		
	T-11	11+6 383	4 721				654	2 846		
	T-12	11+6 183	4 283	700	4 000	800	612	2 588	900	6 000
	T-13	13+5 857	3 737				591	2 609		
	T-14	14+5 421	3 484				562	2 638		
	T-15	15+5 221	7 785	500	3 500	600	512	2 388	1 100	5 500
	T-16	16+4 783	7 524				488	2 412		
	T-17	17+4 217	7 256				457	2 443		
	T-18	18+3 984	6 988				444	2 456		
BLINE	T- 1	11+8 885	6 675	1 100	5 500	1 200	891	3 409	500	7 500
	T- 2	9+8 624	6 361				869	3 431		
	T- 3	8+8 356	6 004				847	3 453		
	T- 4	8+8 086	5 646				825	3 475		
	T- 5	7+7 988	5 243	1 000	5 000	1 000	799	3 201	600	7 000
	T- 6	6+7 675	4 840				774	3 226		
	T- 7	7+7 361	4 403				750	3 250		
	T- 8	5+7 004	3 966				722	3 278		
	T- 9	5+6 904	3 565	900	4 500	1 000	693	2 807	700	6 500
	T-10	10+6 546	3 164				667	2 833		
	T-11	11+6 143					637	2 863		
	T-12	12+5 943		700	4 000	800	596	2 604	900	6 000
	T-13	13+5 540					570	2 630		
	T-14	14+5 103					541	2 659		
	T-15	15+4 903		500	3 500	600	495	2 405	1 100	5 500
	T-16	16+4 466					470	2 430		
	T-17	17+4 065					448	2 452		
	T-18	18+3 664					426	2 474		

Gravity

TYPE	MARK	H	B	U h	U B
ALINE	G- 1	811+3 484	2 471	1 600	4 471
	G- 2	20+2 968	2 142		4 142
	G- 3	21+2 785	2 025		4 025
	G- 4	22+2 319	1 728		3 728
	G- 5	23+2 187	1 644	600	3 644
	G- 6	24+1 772	1 380		3 380
		25+1 690	1 327		3 327
BLINE	G- 1	819+3 164	2 267	1 600	4 267
	G- 2	20+2 812	2 043		4 043
	G- 3	21+2 459	1 818		3 818
	G- 4	22+2 159	1 626		3 626
	G- 5	23+1 858	1 434	600	3 434
	G- 6	24+1 609	1 276		3 276
		25+1 359	1 116		3 116



DETAIL a
S=1/60

	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
		PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
	JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FURUYAMA CONSULTANTS INTERNATIONAL	TITLE :	R/A-2, A' NASEEM GARDEN GENERAL VIEW FOR WALL (2)-1
		DATE	DWG NO. W-23

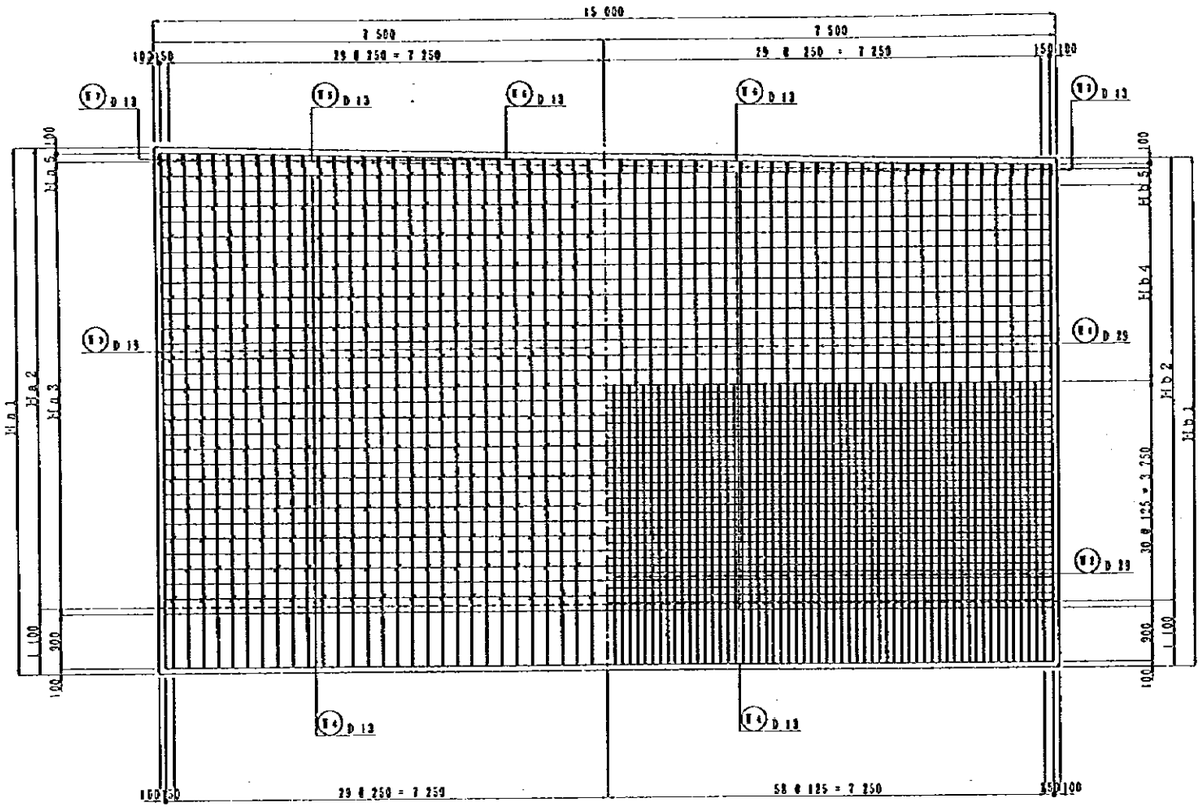
Point		a	b	c	d	e	f	g	h	i	j	k
A LINE	N	+2620164.33770	+2620171.16052	+2620181.48294	+2620191.91104	+2620202.44470	+2620212.93954	+2620223.15729	+2620233.09343	+2620242.74699	+2620252.11699	+2620261.20251
	E	+ 805438.26879	+ 805457.06903	+ 805485.23721	+ 805513.36644	+ 805541.45632	+ 805569.56062	+ 805597.76683	+ 805626.07346	+ 805654.47771	+ 805682.97676	+ 805711.56777
	Z	16.973	16.665	16.127	15.449	14.910	14.284	13.410	12.611	11.912	11.314	10.817
B LINE	N	+2620121.96642	+2620128.78918	+2620139.11128	+2620149.53880	+2620160.07160	+2620170.70952	+2620181.45243	+2620192.30006	+2620203.05060	+2620213.51957	+2620223.70592
	E	+ 805453.11878	+ 805471.91904	+ 805500.08734	+ 805528.21679	+ 805556.30698	+ 805584.35754	+ 805612.36805	+ 805640.33817	+ 805668.34564	+ 805696.45957	+ 805724.67714
	Z	16.973	16.666	16.130	15.503	14.788	13.982	13.108	12.306	11.601	11.000	10.501

NOTES:

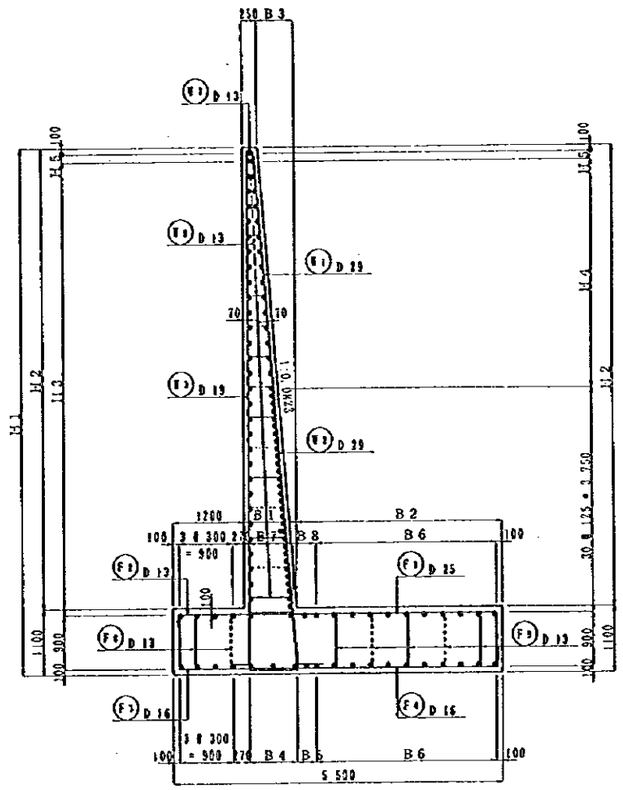
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN GENERAL VIEW FOR WALL (2)-2
DATE	DWG NO. W-24



SIDE VIEW
S=1/100



SECTION
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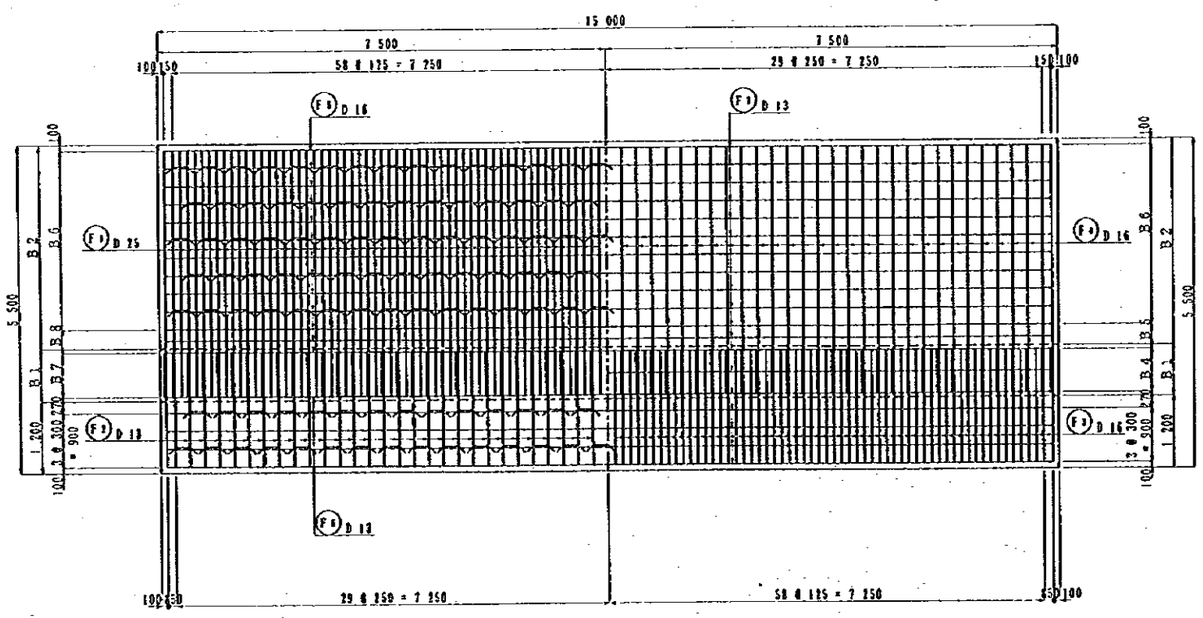


PLAN
S=1/100

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

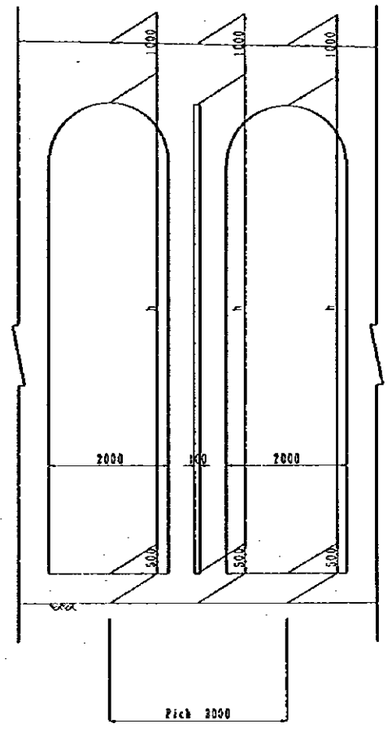
CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2 A' NASEEM GARDEN RE-BAR ARRANGEMENT (1)
DATE	DWG NO. W-25

	T-1				T-2				T-3			
	a – a		b – b		a – a		b – b		a – a		b – b	
Ha1	8 897	Hb1	8 638	Ha1	8 638	Hb1	8 369	Ha1	8 369	Hb1	8 100	
Ha2	7 797	Hb2	7 538	Ha2	7 538	Hb2	7 269	Ha2	7 269	Hb2	7 000	
Ha3	30@250 = 7 500	Hb3	30@250 = 7 500	Ha3	29@250 = 7 250	Hb3	29@250 = 7 250	Ha3	28@250 = 7 000	Hb3	28@250 = 7 000	
Ha4	15@250 = 3 750	Hb4	15@250 = 3 750	Ha4	14@250 = 3 500	Hb4	14@250 = 3 500	Ha4	13@250 = 3 250	Hb4	13@250 = 3 250	
Ha5	2@148.5 = 297	Hb5	38	Ha5	2@144 = 288	Hb5	19	Ha5	2@134.5 = 269	Hb5	——	
Ba1	892	Bb1	870	Ba1	870	Bb1	848	Ba1	848	Bb1	826	
Ba2	3 406	Bb2	3 430	Ba2	3 430	Bb2	3 452	Ba2	3 452	Bb2	3 474	
Ba3	642	Bb3	620	Ba3	620	Bb3	598	Ba3	598	Bb3	576	
Ba4	2@417 = 834	Bb4	2@406 = 812	Ba4	2@406 = 812	Bb4	2@395 = 790	Ba4	2@395 = 790	Bb4	2@384 = 768	
Ba5	2@148 = 296	Bb5	2@159 = 318	Ba5	2@159 = 318	Bb5	2@170 = 340	Ba5	2@170 = 340	Bb5	2@181 = 362	
Ba6	10@300 = 3 000	Bb6	10@300 = 3 000	Ba6	10@300 = 3 000	Bb6	10@300 = 3 000	Ba6	10@300 = 3 000	Bb6	10@300 = 3 000	
Ba7	760	Bb7	738	Ba7	738	Bb7	716	Ba7	716	Bb7	694	
Ba8	2@185 = 370	Bb8	2@196 = 392	Ba8	2@196 = 392	Bb8	2@207 = 414	Ba8	2@207 = 414	Bb8	2@218 = 436	

A LINE

	T-1				T-2				T-3			
	a – a		b – b		a – a		b – b		a – a		b – b	
Ha1	8 882	Hb1	8 624	Ha1	8 624	Hb1	8 356	Ha1	8 356	Hb1	8 088	
Ha2	7 782	Hb2	7 524	Ha2	7 524	Hb2	7 256	Ha2	7 256	Hb2	6 988	
Ha3	30@250 = 7 500	Hb3	30@250 = 7 500	Ha3	29@250 = 7 250	Hb3	29@250 = 7 250	Ha3	28@250 = 7 000	Hb3	27@250 = 6 750	
Ha4	15@250 = 3 750	Hb4	15@250 = 3 750	Ha4	14@250 = 3 500	Hb4	14@250 = 3 500	Ha4	13@250 = 3 250	Hb4	12@250 = 3 000	
Ha5	2@141 = 282	Hb5	24	Ha5	2@137 = 274	Hb5	6	Ha5	2@128 = 256	Hb5	238	
Ba1	890	Bb1	869	Ba1	869	Bb1	847	Ba1	847	Bb1	825	
Ba2	3 410	Bb2	3 431	Sa2	3 431	Bb2	3 453	Ba2	3 453	Bb2	3 475	
Ba3	640	Bb3	619	Ba3	619	Bb3	597	Ba3	597	Bb3	575	
Ba4	2@416 = 832	Bb4	2@405.5 = 811	Ba4	2@405.5 = 811	Bb4	2@394.5 = 789	Ba4	2@394.5 = 789	Bb4	2@383.5 = 767	
Ba5	2@149 = 298	Bb5	2@159.5 = 319	Ba5	2@159.5 = 319	Bb5	2@170.5 = 341	Ba5	2@170.5 = 341	Bb5	2@181.5 = 363	
Ba6	10@300 = 3 000	Bb6	10@300 = 3 000	Ba6	10@300 = 3 000	Bb6	10@300 = 3 000	Ba6	10@300 = 3 000	Bb6	10@300 = 3 000	
Ba7	758	Bb7	737	Ba7	737	Bb7	715	Ba7	715	Bb7	693	
Ba8	2@186 = 372	Bb8	2@196.5 = 393	Ba8	2@196.5 = 393	Bb8	2@207.5 = 415	Ba8	2@207.5 = 415	Bb8	2@218.5 = 437	

B LINE



Slit Shape in Front of Wall
(Thickness t=30 mm)

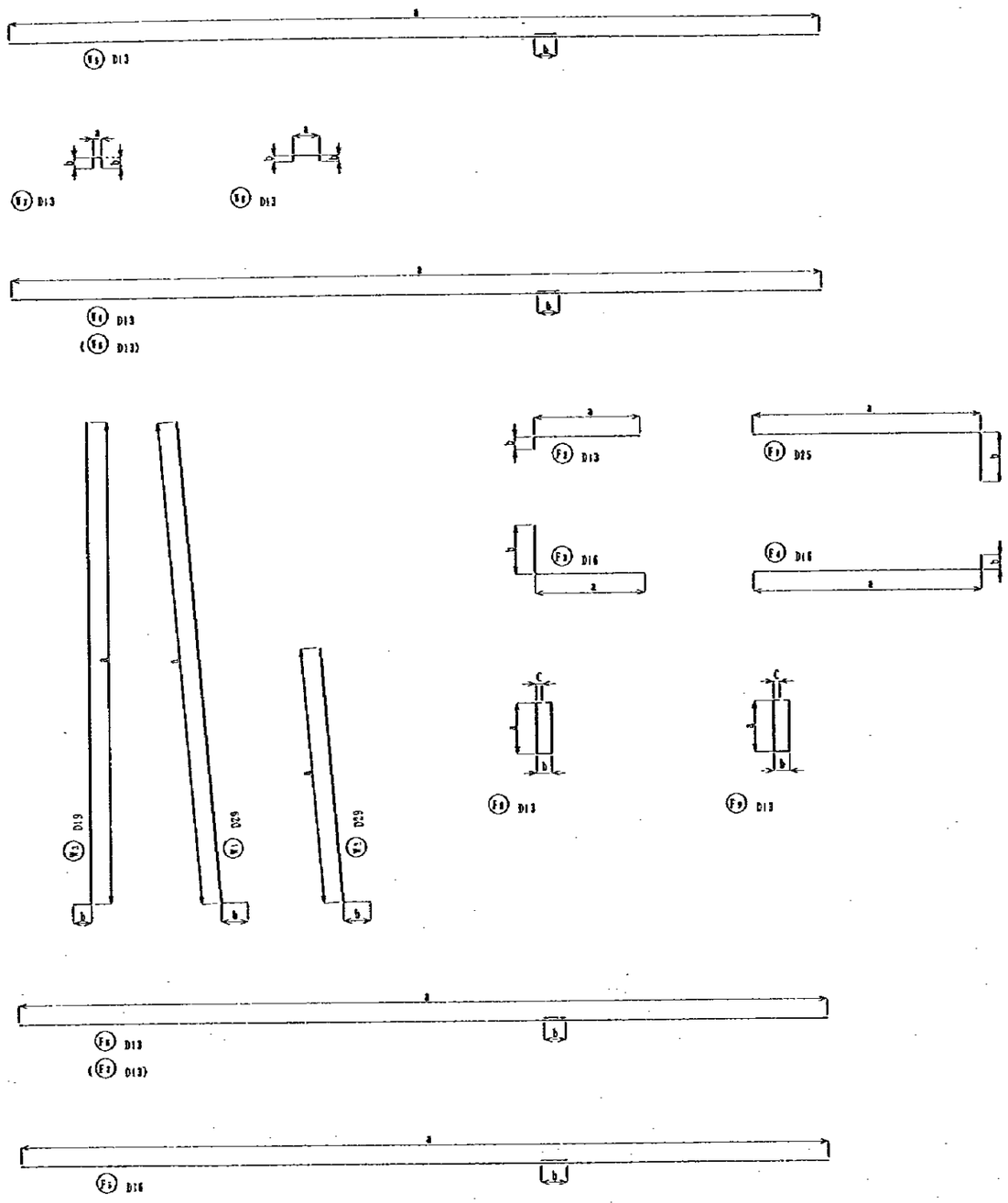
NOTES:

1

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (2)
DATE
DWG NO. W-26



REIS NO.	ϕ (mm)	LENGTH (mm)	a	b	c
T 1					
W 1	D 29	9 040	8 726~8 467	435	——
2	〃	5 110	4 666	435	——
3	D 19	8 860	8 697~8 438	285	——
4	D 13	15 190	14 800	390	——
5	〃	8 600	8 600	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	210	276~200	111	——
F 1	D 25	5 020	4 120	900	——
2	D 13	2 130	1 930	195	——
3	D 16	2 550	1 650	900	——
4	〃	4 370	4 130	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 360	928	279	111
9	〃	2 380	934	288	111
T 2					
W 1	D 29	8 270	8 467~8 197	435	——
2	〃	5 110	4 666	435	——
3	D 19	8 550	8 438~8 169	285	——
4	D 13	15 190	14 800	390	——
5	〃	8 030	8 030	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	710	754~228	111	——
F 1	D 25	5 050	4 142	900	——
2	D 13	2 110	1 908	195	——
3	D 16	2 550	1 650	900	——
4	〃	4 370	4 130	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 150	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 360	928	279	111
9	〃	2 380	934	288	111
T 3					
W 1	D 29	8 500	8 197~7 927	435	——
2	〃	5 110	4 666	435	——
3	D 19	8 320	8 165~7 900	285	——
4	D 13	15 190	14 800	390	——
5	〃	7 500	7 500	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	680	732~172	111	——
F 1	D 25	5 070	4 164	900	——
2	D 13	2 030	1 886	195	——
3	D 16	2 550	1 650	900	——
4	〃	4 370	4 130	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 150	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 360	928	279	111
9	〃	2 380	934	288	111

REIS NO.	ϕ (mm)	LENGTH (mm)	a	b	c
T 1					
W 1	D 29	9 020	8 711~8 452	435	——
2	〃	5 110	4 666	435	——
3	D 19	8 840	8 682~8 424	285	——
4	D 13	15 190	14 800	390	——
5	〃	8 200	8 200	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	710	724~199	111	——
F 1	D 25	5 030	4 122	900	——
2	D 13	2 130	1 928	195	——
3	D 16	2 550	1 650	900	——
4	〃	4 370	4 130	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 360	928	279	111
9	〃	2 380	934	288	111
T 2					
W 1	D 29	8 760	8 452~8 184	435	——
2	〃	5 110	4 666	435	——
3	D 19	8 590	8 424~8 156	285	——
4	D 13	15 190	14 800	390	——
5	〃	7 670	7 668	——	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	710	753~219	111	——
F 1	D 25	5 050	4 143	900	——
2	D 13	2 110	1 907	195	——
3	D 16	2 550	1 650	900	——
4	〃	4 370	4 130	240	——
5	〃	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 360	928	279	111
9	〃	2 380	934	288	111
T 3					
W 1	D 29	8 490	8 184~7 915	435	——
2	〃	5 110	4 666	435	——
3	D 19	8 310	8 156~7 888	285	——
4	D 13	15 190	14 800	390	——
5	〃	10 950	7 164~14 328	390	——
6	〃	15 200	14 802	390	——
7	〃	500	110	195	——
8	〃	690	731~197	111	——
F 1	D 25	5 070	4 165	900	——
2	D 13	2 080	1 885	195	——
3	D 16	2 550	1 650	900	——
4	〃	4 370	4 130	240	——
5	〃	15 288	14 800	480	——
6	D 13	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	2 360	928	279	111
9	〃	2 380	934	288	111

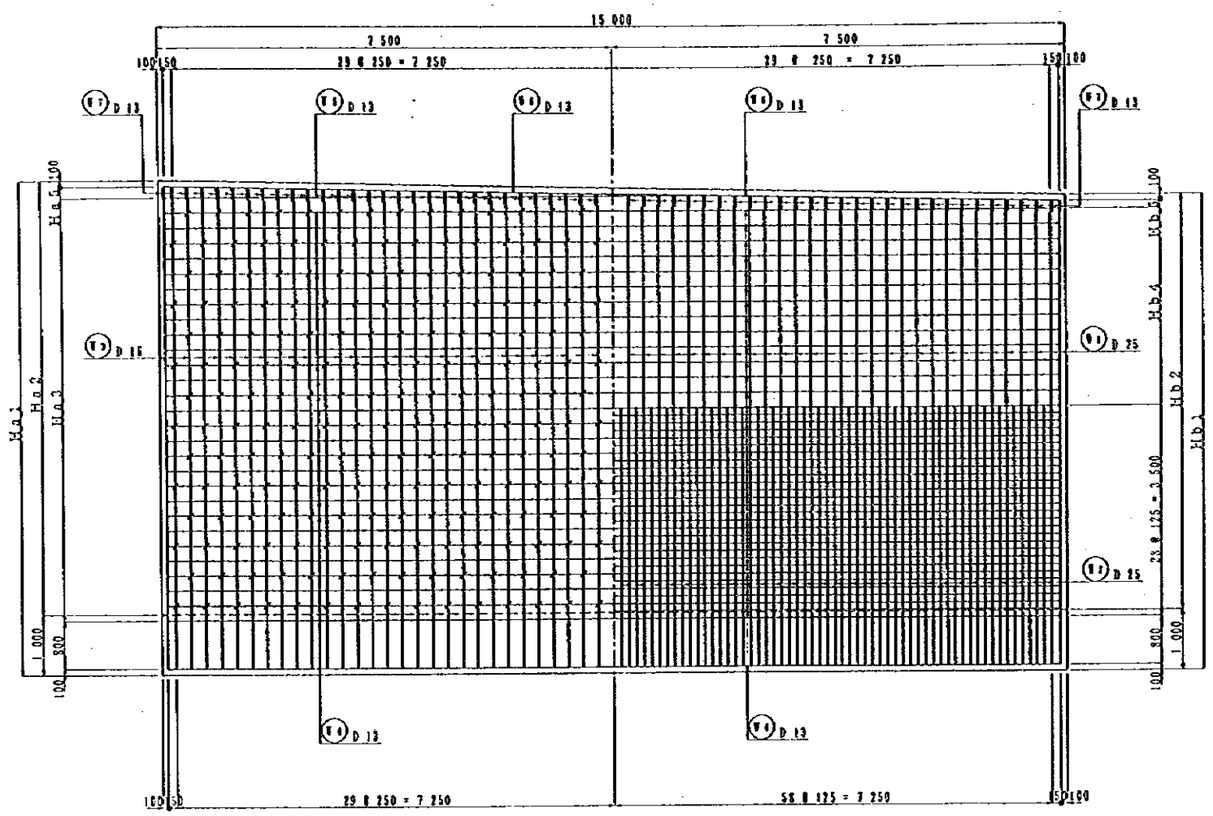
NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

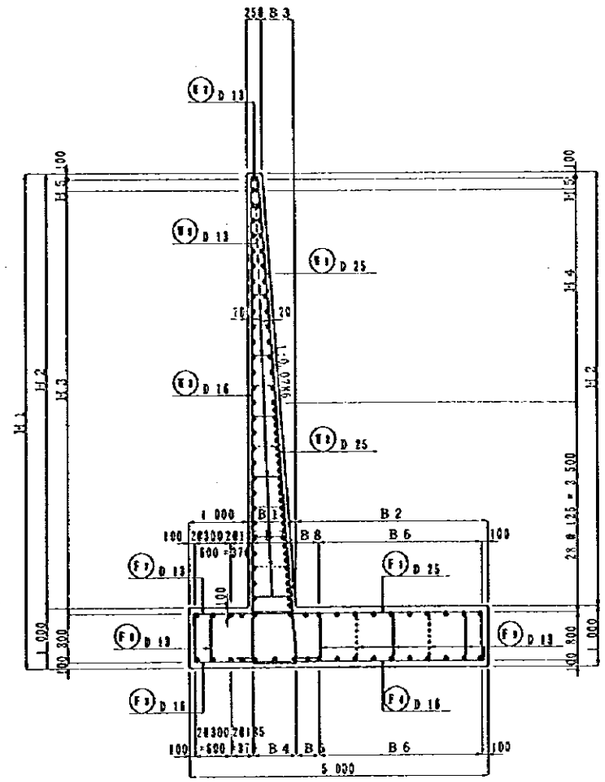
JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (3)
DATE
DWG NO. W-27

7



SIDE VIEW
S=1/100



SECTION
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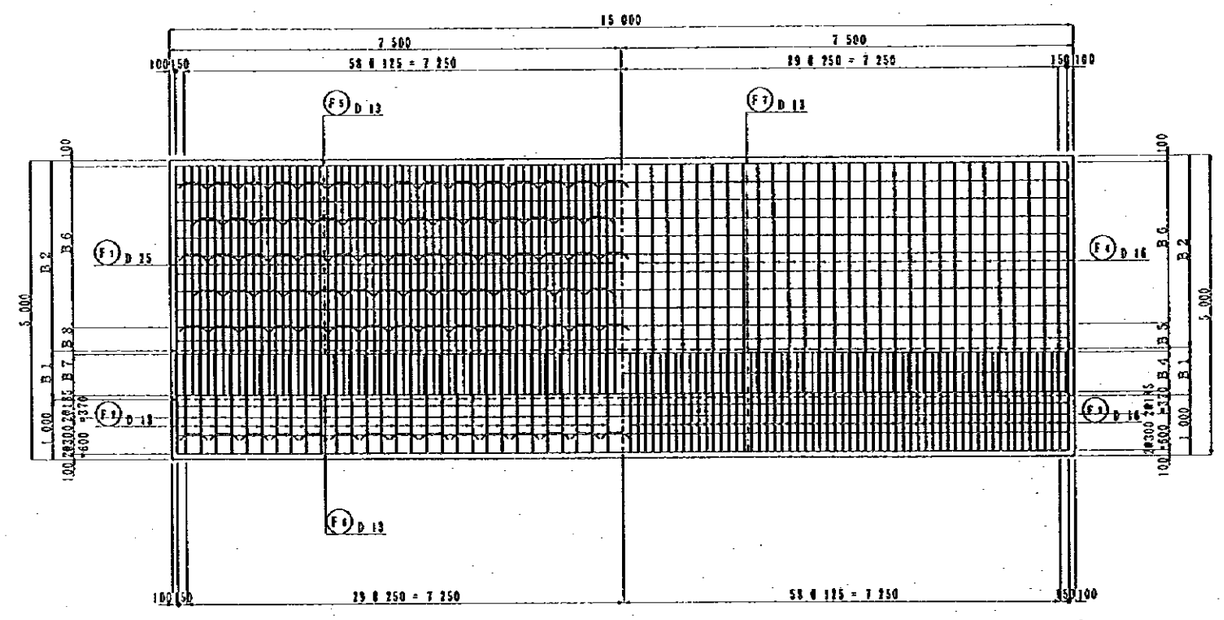


PLAN
S=1/100

NOTES:

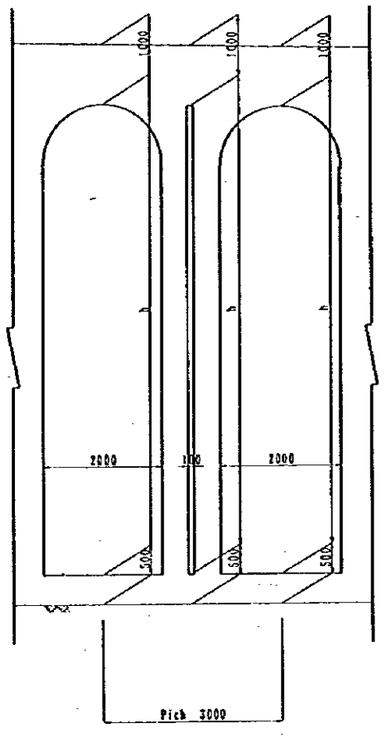
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (4)
DATE	DWG NO. W-28

A LINE	T-4				T-5				T-6			
		a – a		b – b		a – a		b – b		a – a		b – b
	Ha1	8 000	Hb1	7 686	Ha1	7 686	Hb1	7 372	Ha1	7 372	Hb1	7 013
	Ha2	7 000	Hb2	6 686	Ha2	6 686	Hb2	6 372	Ha2	6 372	Hb2	6 013
	Ha3	28@250 = 7 000	Hb3	26@250 = 6 500	Ha3	26@250 = 6 500	Hb3	25@250 = 6 250	Ha3	25@250 = 6 250	Hb3	24@250 = 6 000
	Ha4	13@250 = 3 250	Hb4	12@250 = 3 000	Ha4	12@250 = 3 000	Hb4	11@250 = 2 750	Ha4	11@250 = 2 750	Hb4	10@250 = 2 500
	Ha5	——	Hb5	186	Ha5	186	Hb5	122	Ha5	122	Hb5	13
	Ba1	800	Bb1	775	Ba1	775	Bb1	751	Ba1	751	Bb1	722
	Ba2	3 200	Bb2	3 225	Ba2	3 225	Bb2	3 249	Ba2	3 249	Bb2	3 278
	Ba3	550	Bb3	525	Ba3	525	Bb3	501	Ba3	501	Bb3	472
	Ba4	2@365.5 = 731	Bb4	2@353 = 706	Ba4	2@353 = 706	Bb4	2@341 = 682	Ba4	2@341 = 682	Bb4	2@326.5 = 653
	Ba5	2@199.5 = 399	Bb5	2@212 = 424	Ba5	2@212 = 424	Bb5	2@224 = 448	Ba5	2@224 = 448	Bb5	2@238.5 = 477
	Ba6	9@300 = 2 700	Bb6	9@300 = 2 700	Ba6	9@300 = 2 700	Bb6	9@300 = 2 700	Ba6	9@300 = 2 700	Bb6	9@300 = 2 700
	Ba7	668	Bb7	643	Ba7	643	Bb7	619	Ba7	619	Bb7	590
	Ba8	2@231 = 462	Bb8	2@243.5 = 487	Ba8	2@243.5 = 487	Bb8	2@255.5 = 511	Ba8	2@255.5 = 511	Bb8	2@270 = 540

B LINE	T-4				T-5				T-6			
		a – a		b – b		a – a		b – b		a – a		b – b
	Ha1	7 988	Hb1	7 675	Ha1	7 675	Hb1	7 361	Ha1	7 361	Hb1	7 004
	Ha2	6 988	Hb2	6 675	Ha2	6 675	Hb2	6 361	Ha2	6 361	Hb2	6 004
	Ha3	27@250 = 6 750	Hb3	26@250 = 6 500	Ha3	26@250 = 6 500	Hb3	25@250 = 6 250	Ha3	25@250 = 6 250	Hb3	24@250 = 6 000
	Ha4	13@250 = 3 250	Hb4	12@250 = 3 000	Ha4	12@250 = 3 000	Hb4	11@250 = 2 750	Ha4	11@250 = 2 750	Hb4	10@250 = 2 500
	Ha5	238	Hb5	175	Ha5	175	Hb5	111	Ha5	111	Hb5	4
	Ba1	799	Bb1	774	Ba1	774	Bb1	750	Ba1	750	Bb1	722
	Ba2	3 201	Bb2	3 226	Ba2	3 226	Bb2	3 250	Ba2	3 250	Bb2	3 278
	Ba3	549	Bb3	524	Ba3	524	Bb3	500	Ba3	500	Bb3	472
	Ba4	2@365 = 730	Bb4	2@352.5 = 705	Ba4	2@352.5 = 705	Bb4	2@340.5 = 681	Ba4	2@340.5 = 681	Bb4	2@326.5 = 653
	Ba5	2@200 = 400	Bb5	2@212.5 = 425	Ba5	2@212.5 = 425	Bb5	2@224.5 = 449	Ba5	2@224.5 = 449	Bb5	2@238.5 = 477
	Ba6	9@300 = 2 700	Bb6	9@300 = 2 700	Ba6	9@300 = 2 700	Bb6	9@300 = 2 700	Ba6	9@300 = 2 700	Bb6	9@300 = 2 700
	Ba7	667	Bb7	642	Ba7	642	Bb7	618	Ba7	618	Bb7	590
	Ba8	2@231.5 = 463	Bb8	2@244 = 488	Ba8	2@244 = 488	Bb8	2@256 = 512	Ba8	2@256 = 512	Bb8	2@270 = 540



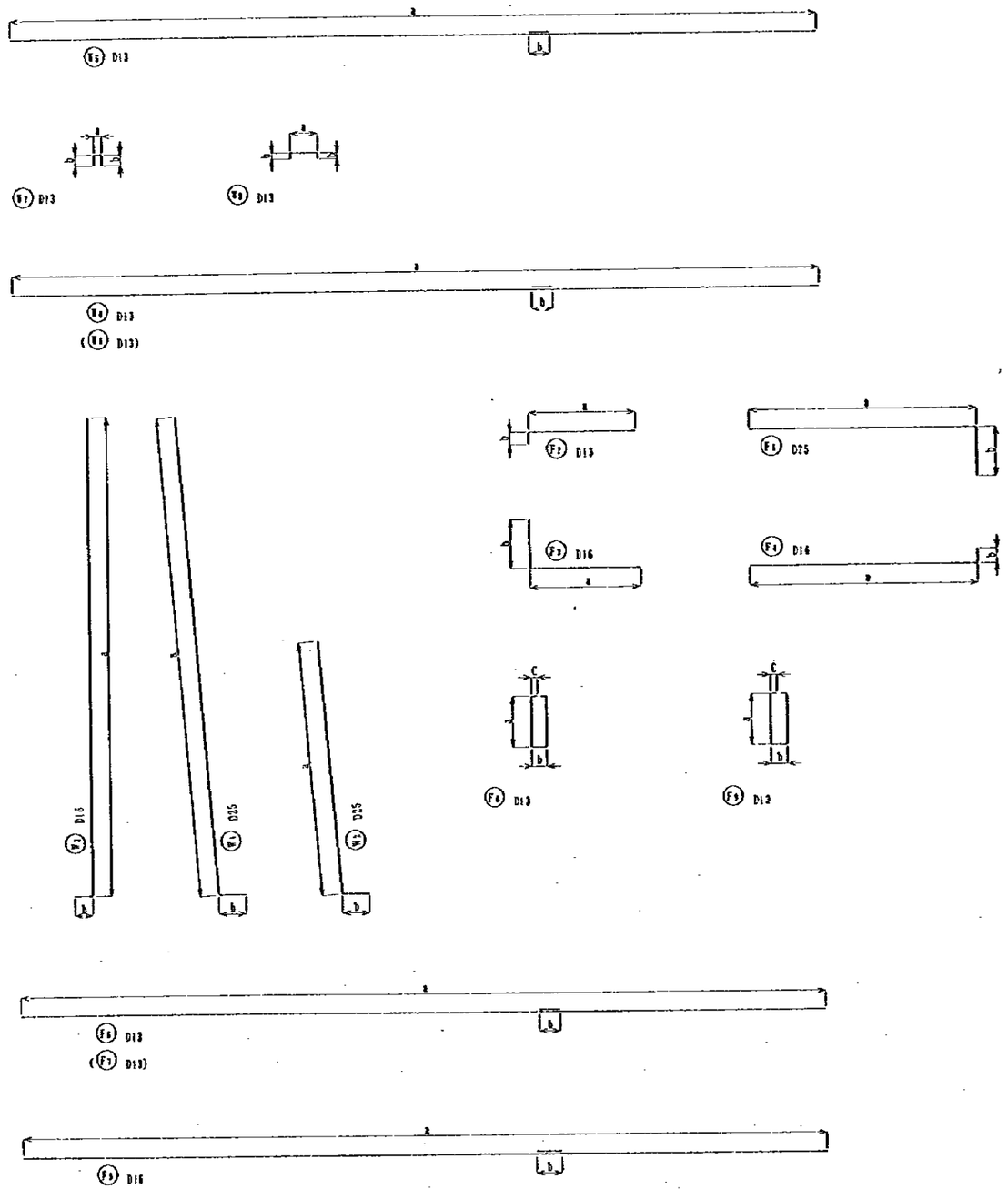
Slit Shape in Front of Wall
(Thickness t=30 mm)

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (5)
DATE
DWG NO. W-29



REIN NO.	ϕ (mm)	LENGTH (mm)	a	b	c
T 4					
W 1	D 25	8 050	7 824~2 509	375	——
2	"	4 690	4 313	375	——
3	D 16	7 850	7 800~7 486	240	——
4	D 13	15 190	14 800	350	——
5	"	11 950	11 943	——	——
6	"	15 200	14 803	390	——
7	"	500	110	195	——
8	"	670	682~210	111	——
F 1	D 25	4 720	3 913	600	——
2	D 13	1 840	1 638	195	——
3	D 16	2 250	1 450	800	——
4	"	4 070	3 830	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 803	390	——
7	"	15 190	14 800	390	——
8	"	2 160	828	279	111
9	"	2 180	834	288	111
T 5					
W 1	D 25	7 730	7 509~7 194	375	——
2	"	4 690	4 313	375	——
3	D 16	7 570	7 486~7 172	240	——
4	D 13	15 190	14 800	390	——
5	"	8 850	8 885	——	——
6	"	15 200	14 803	390	——
7	"	500	110	195	——
8	"	670	657~225	111	——
F 1	D 25	4 240	3 937	800	——
2	D 13	1 810	1 613	195	——
3	D 16	2 250	1 450	800	——
4	"	4 070	3 830	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	2 160	828	279	111
9	"	2 180	834	288	111
T 6					
W 1	D 25	7 390	7 194~6 834	375	——
2	"	4 690	4 313	375	——
3	D 16	7 240	7 172~6 813	240	——
4	D 13	15 190	14 800	390	——
5	"	5 100	5 097	——	——
6	"	15 200	14 804	390	——
7	"	500	110	195	——
8	"	640	633~200	111	——
F 1	D 25	4 720	3 961	800	——
2	D 13	1 730	1 583	195	——
3	D 16	2 250	1 450	800	——
4	"	4 070	3 830	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	2 160	828	279	111
9	"	2 180	834	288	111

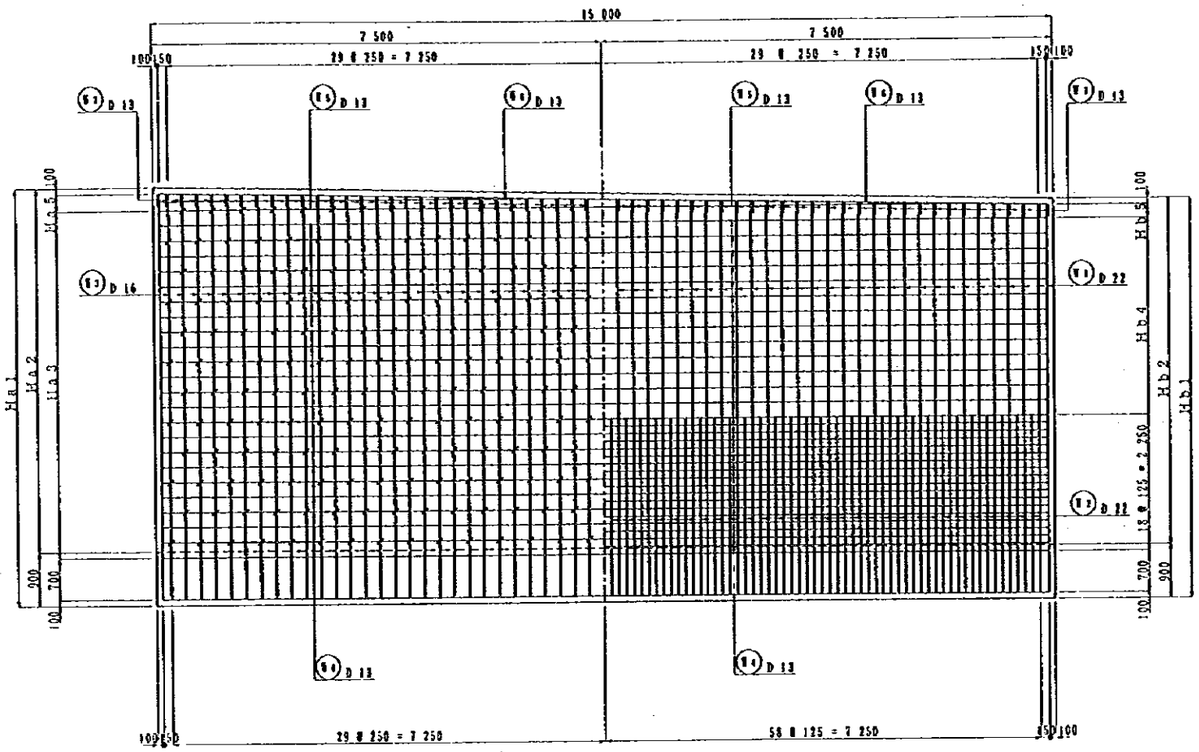
REIN NO.	ϕ (mm)	LENGTH (mm)	a	b	c
T 4					
W 1	D 25	8 030	7 812~2 498	375	——
2	"	4 690	4 313	375	——
3	D 16	7 850	7 788~7 475	240	——
4	D 13	15 190	14 800	330	——
5	"	11 410	11 406	——	——
6	"	15 200	14 803	390	——
7	"	500	110	195	——
8	"	670	681~209	111	——
F 1	D 25	4 720	3 913	600	——
2	D 13	1 840	1 637	195	——
3	D 16	2 250	1 450	800	——
4	"	4 070	3 830	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	2 160	828	279	111
9	"	2 180	834	288	111
T 5					
W 1	D 25	7 720	7 498~7 183	375	——
2	"	4 690	4 313	375	——
3	D 16	7 560	7 475~7 161	240	——
4	D 13	15 190	14 800	390	——
5	"	8 360	8 360	——	——
6	"	15 200	14 803	390	——
7	"	500	110	195	——
8	"	670	656~224	111	——
F 1	D 25	4 240	3 938	800	——
2	D 13	1 810	1 612	195	——
3	D 16	2 250	1 450	800	——
4	"	4 070	3 830	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	2 160	828	279	111
9	"	2 180	834	288	111
T 6					
W 1	D 25	7 380	7 183~6 825	375	——
2	"	4 690	4 313	375	——
3	D 16	7 230	7 161~6 834	240	——
4	D 13	15 190	14 800	390	——
5	"	4 670	4 664	——	——
6	"	15 200	14 804	390	——
7	"	500	110	195	——
8	"	640	632~199	111	——
F 1	D 25	4 720	3 962	800	——
2	D 13	1 730	1 588	195	——
3	D 16	2 250	1 450	800	——
4	"	4 070	3 830	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	2 160	828	279	111
9	"	2 180	834	288	111

NOTES:

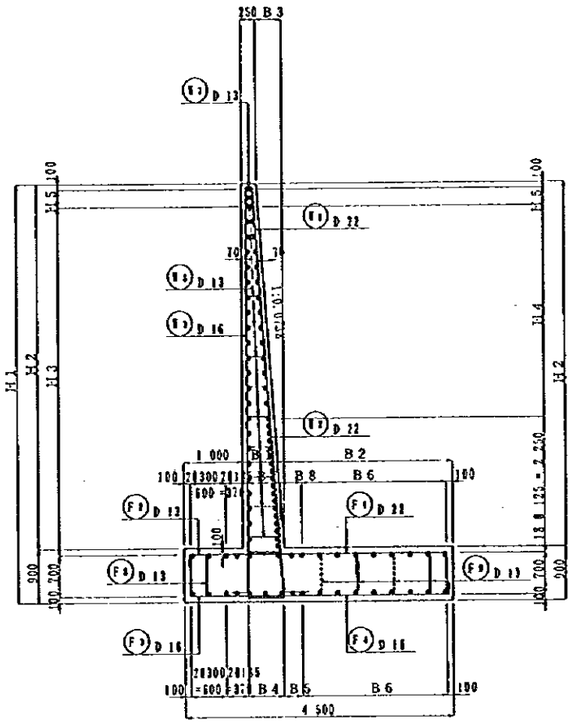
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

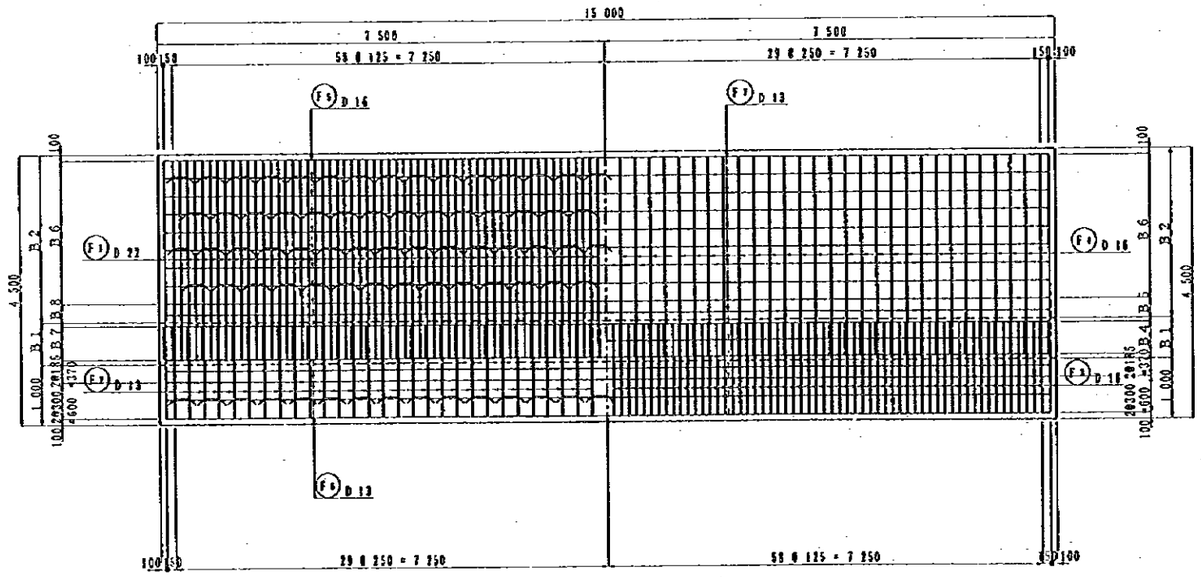
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (6)
DATE
DWG NO. W-30



SIDE VIEW
S=1/100



SECTION
S=1/100



PLAN
S=1/100

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

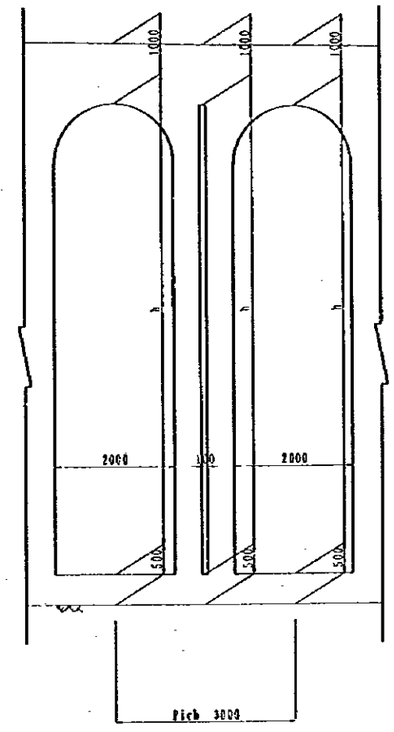
CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (7)
DATE	DWG NO. W-31

A LINE

	T-7 a－a		T-7 b－b	T-8 a－a		T-8 b－b
Ha1	6 913	Hb1	6 554	6 554	Hb1	6 152
Ha2	6 013	Hb2	5 654	5 654	Hb2	5 252
Ha3	23@250 = 5 750	Hb3	22@250 = 5 500	22@250 = 5 500	Hb3	21@250 = 5 250
Ha4	14@250 = 3 500	Hb4	13@250 = 3 250	13@250 = 3 250	Hb4	12@250 = 3 000
Ha5	2@131.5 = 263	Hb5	154	154	Hb5	2
Ba1	694	Bb1	667	667	Bb1	637
Ba2	2 806	Bb2	2 833	2 833	Bb2	2 863
Ba3	444	Bb3	417	417	Bb3	387
Ba4	2@306 = 612	Bb4	2@293 = 586	2@293 = 586	Bb4	2@278 = 556
Ba5	2@159 = 318	Bb5	2@172 = 344	2@172 = 344	Bb5	2@187 = 374
Ba6	8@300 = 2 400	Bb6	8@300 = 2 400	8@300 = 2 400	Bb6	8@300 = 2 400
Ba7	561	Bb7	534	534	Bb7	504
Ba8	2@184.5 = 369	Bb8	2@198 = 396	2@198 = 396	Bb8	2@213 = 426

B LINE

	T-7 a－a		T-7 b－b	T-8 a－a		T-8 b－b
Ha1	6 904	Hb1	6 546	6 546	Hb1	6 143
Ha2	6 004	Hb2	5 646	5 646	Hb2	5 243
Ha3	23@250 = 5 750	Hb3	22@250 = 5 500	22@250 = 5 500	Hb3	20@250 = 5 000
Ha4	14@250 = 3 500	Hb4	13@250 = 3 250	13@250 = 3 250	Hb4	11@250 = 2 750
Ha5	2@127 = 254	Hb5	146	146	Hb5	243
Ba1	693	Bb1	667	667	Bb1	637
Ba2	2 807	Bb2	2 833	2 833	Bb2	2 863
Ba3	443	Bb3	417	417	Bb3	387
Ba4	2@306 = 612	Bb4	2@292.5 = 585	2@292.5 = 585	Bb4	2@277.5 = 555
Ba5	2@159 = 318	Bb5	2@172.5 = 345	2@172.5 = 345	Bb5	2@187.5 = 375
Ba6	8@300 = 2 400	Bb6	8@300 = 2 400	8@300 = 2 400	Bb6	8@300 = 2 400
Ba7	560	Bb7	534	534	Bb7	504
Ba8	2@185 = 370	Bb8	2@198 = 396	2@198 = 396	Bb8	2@213 = 426



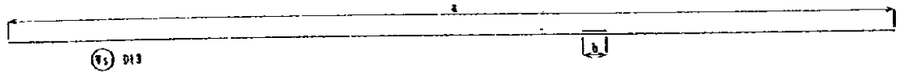
Slit Shape in Front of Wall
(Thickness t=30 mm)

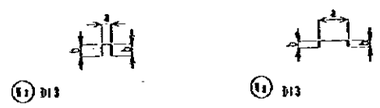
NOTES:

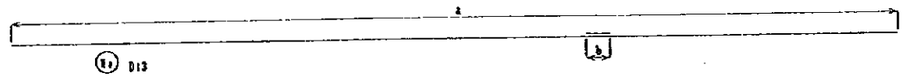
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

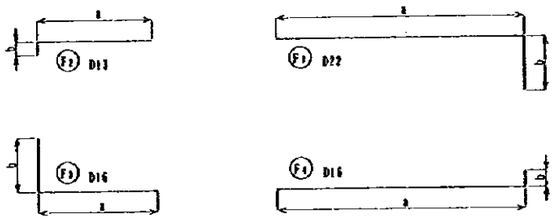
JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

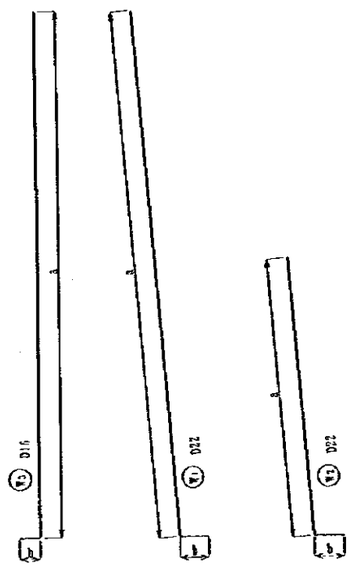
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (8)
DATE
DWG NO. W-32

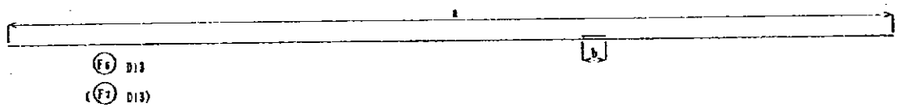


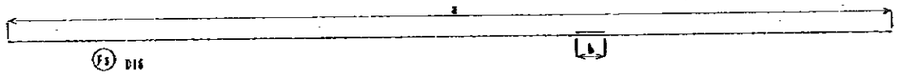












BEIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 7					
W 1	D 22	6 880	6 731~6 371	330	——
2	"	3 290	2 958	330	——
3	D 16	6 780	6 718~6 354	240	——
4	D 13	15 190	14 800	390	——
5	"	8 250	5 494~10 989	——	——
6	"	15 200	14 804	350	——
7	"	500	110	195	——
8	"	620	575~206	111	——
F 1	D 22	4 130	3 429	200	——
2	D 13	1 730	1 531	195	——
3	D 16	2 150	1 450	700	——
4	"	3 570	3 330	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 960	728	279	111
9	"	1 980	732	285	111
T 8					
W 1	D 22	6 500	6 371~5 968	330	——
2	"	3 290	2 958	330	——
3	D 16	6 400	6 354~5 952	240	——
4	D 13	15 190	14 800	390	——
5	"	5 750	5 746	——	——
6	"	15 200	14 805	390	——
7	"	500	110	195	——
8	"	610	568~216	111	——
F 1	D 22	4 160	3 456	200	——
2	D 13	1 700	1 504	195	——
3	D 16	2 150	1 450	700	——
4	"	3 570	3 330	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 960	728	279	111
9	"	1 950	732	285	111

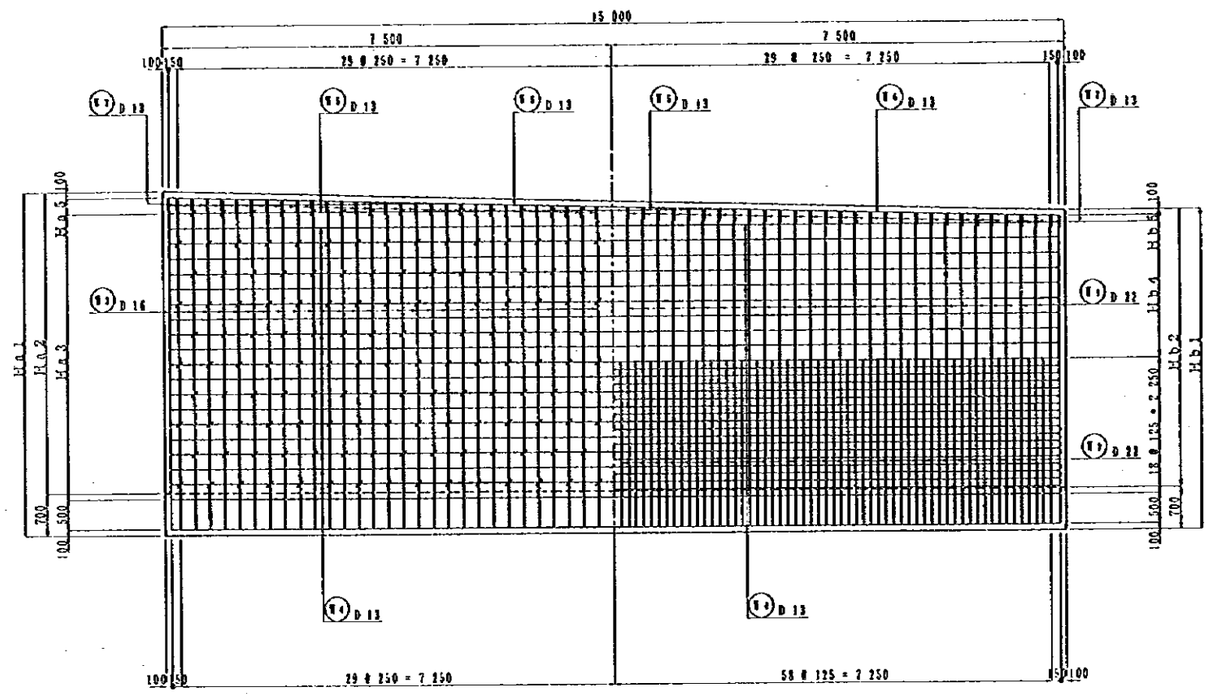
BEIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 7					
W 1	D 22	6 880	6 722~6 363	330	——
2	"	3 290	2 958	330	——
3	D 16	6 770	6 704~6 346	240	——
4	D 13	15 190	14 800	390	——
5	"	7 990	5 371~10 643	——	——
6	"	15 200	14 804	350	——
7	"	500	110	195	——
8	"	620	574~205	111	——
F 1	D 22	4 130	3 430	200	——
2	D 13	1 730	1 530	195	——
3	D 16	2 150	1 450	700	——
4	"	3 570	3 330	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 960	728	279	111
9	"	1 980	732	285	111
T 8					
W 1	D 22	6 500	6 363~5 959	330	——
2	"	3 290	2 958	330	——
3	D 16	6 390	6 346~5 943	240	——
4	D 13	15 190	14 800	390	——
5	"	10 259	5 434~14 739	390	——
6	"	15 200	14 805	390	——
7	"	500	110	195	——
8	"	610	568~216	111	——
F 1	D 22	4 160	3 456	200	——
2	D 13	1 700	1 504	195	——
3	D 16	2 150	1 450	700	——
4	"	3 570	3 339	240	——
5	"	15 280	14 800	480	——
6	D 13	15 190	14 800	390	——
7	"	15 190	14 800	390	——
8	"	1 960	728	279	111
9	"	1 980	732	285	111

NOTES:

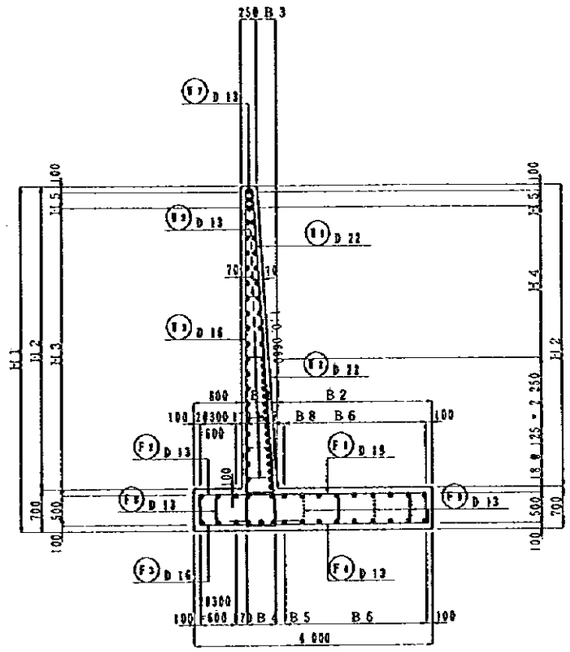
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

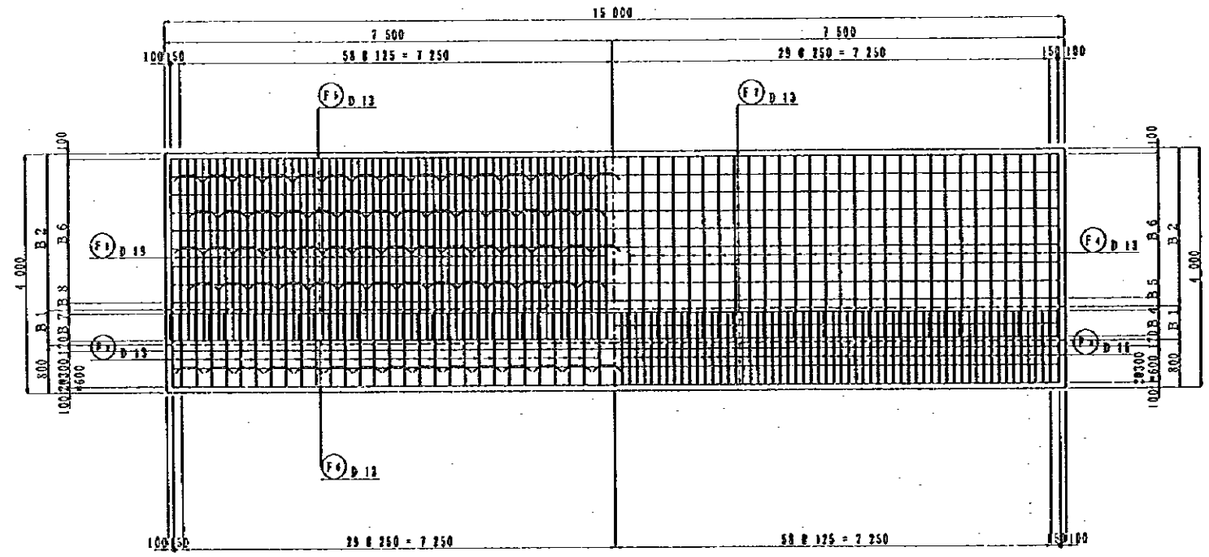
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (9)
DATE
DWG NO. W-33



SIDE VIEW
S=1/100



SECTION
S=1/100



PLAN
S=1/100

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

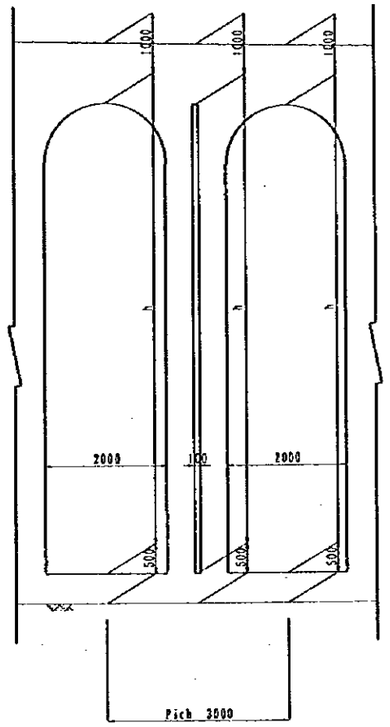
CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (10)
DATE	DTG NO. W-34

A LINE

	T-9			T-10		
	a – a		b – b	a – a		b – b
Ha1	5 952	Hb1	5 549	5 549	Hb1	4 932
Ha2	5 252	Hb2	4 849	4 849	Hb2	4 232
Ha3	20@250 = 5 000	Hb3	19@250 = 4 750	19@250 = 4 750	Hb3	16@250 = 4 000
Ha4	11@250 = 2 750	Hb4	10@250 = 2 500	10@250 = 2 500	Hb4	7@250 = 1 750
Ha5	2@126 = 252	Hb5	99	99	Hb5	232
Ba1	597	Bb1	570	570	Bb1	529
Ba2	2 603	Bb2	2 630	2 630	Bb2	2 671
Ba3	347	Bb3	320	320	Bb3	279
Ba4	2@248 = 496	Bb4	2@234.5 = 469	2@234.5 = 469	Bb4	2@214 = 428
Ba5	134	Bb5	161	161	Bb5	202
Ba6	8@300 = 2 400	Bb6	8@300 = 2 400	8@300 = 2 400	Bb6	8@300 = 2 400
Ba7	463	Bb7	436	436	Bb7	395
Ba8	167	Bb8	194	194	Bb8	235

B LINE

	T-9			T-10		
	a – a		b – b	a – a		b – b
Ha1	5 943	Hb1	5 540	5 540	Hb1	5 103
Ha2	5 243	Hb2	4 840	4 840	Hb2	4 403
Ha3	20@250 = 5 000	Hb3	19@250 = 4 750	19@250 = 4 750	Hb3	17@250 = 4 250
Ha4	11@250 = 2 750	Hb4	10@250 = 2 500	10@250 = 2 500	Hb4	8@250 = 2 000
Ha5	243	Hb5	90	90	Hb5	153
Ba1	596	Bb1	570	570	Bb1	541
Ba2	2 604	Bb2	2 630	2 630	Bb2	2 659
Ba3	346	Bb3	320	320	Bb3	291
Ba4	2@247.5 = 495	Bb4	2@234.5 = 469	2@234.5 = 469	Bb4	2@220 = 440
Ba5	135	Bb5	161	161	Bb5	190
Ba6	8@300 = 2 400	Bb6	8@300 = 2 400	8@300 = 2 400	Bb6	8@300 = 2 400
Ba7	462	Bb7	436	436	Bb7	407
Ba8	168	Bb8	194	194	Bb8	223



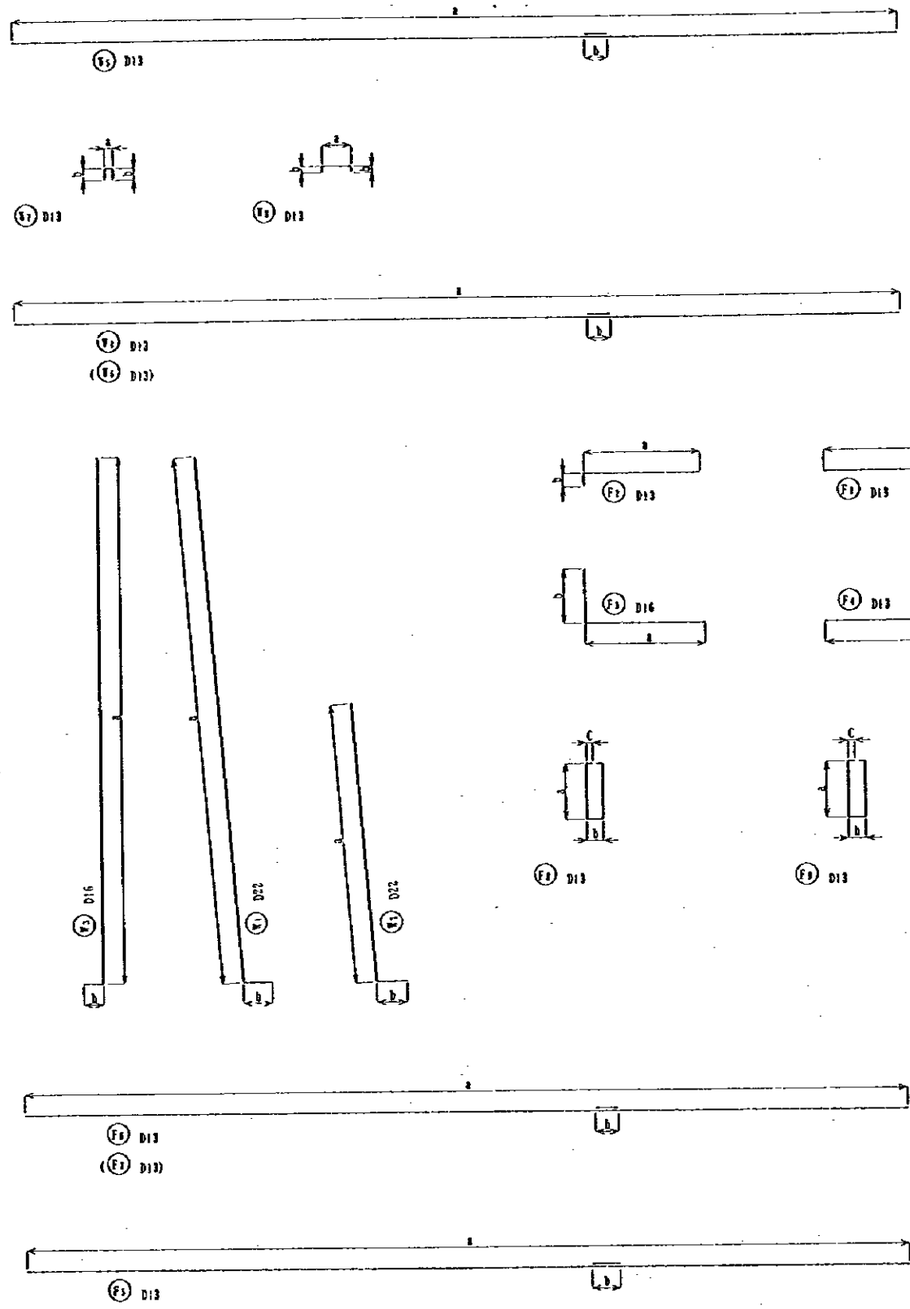
Slit Shape in Front of Wall
(Thickness t=30 mm)

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (11)
DATE
DWG NO. W-35



REIS NO.	ϕ (mm)	LENGTH (mm)	a	b	c
T 9					
N 1	D 22	5 900	5 765~5 361	330	——
2	〃	3 090	2 756	330	——
3	D 16	5 800	5 752~5 349	240	——
4	D 13	15 190	14 800	390	——
5	〃	7 040	4 690~9 380	——	——
6	〃	15 200	14 805	390	——
7	〃	500	110	195	——
8	〃	570	478~214	111	——
F 1	D 19	3 640	3 137	500	——
2	D 13	1 430	1 233	195	——
3	D 16	1 750	1 250	500	——
4	D 13	3 230	3 030	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 560	528	279	111
9	〃	1 570	529	282	111
T 10					
N 1	D 22	5 390	5 361~4 742	330	——
2	〃	3 090	2 756	330	——
3	D 16	5 290	5 349~4 732	240	——
4	D 13	15 190	14 800	390	——
5	〃	8 680	2 407~14 563	390	——
6	〃	15 210	14 813	390	——
7	〃	500	110	195	——
8	〃	560	452~221	111	——
F 1	D 19	3 670	3 164	500	——
2	D 13	1 410	1 206	195	——
3	D 16	1 750	1 250	500	——
4	D 13	3 230	3 030	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 560	528	279	111
9	〃	1 570	529	282	111

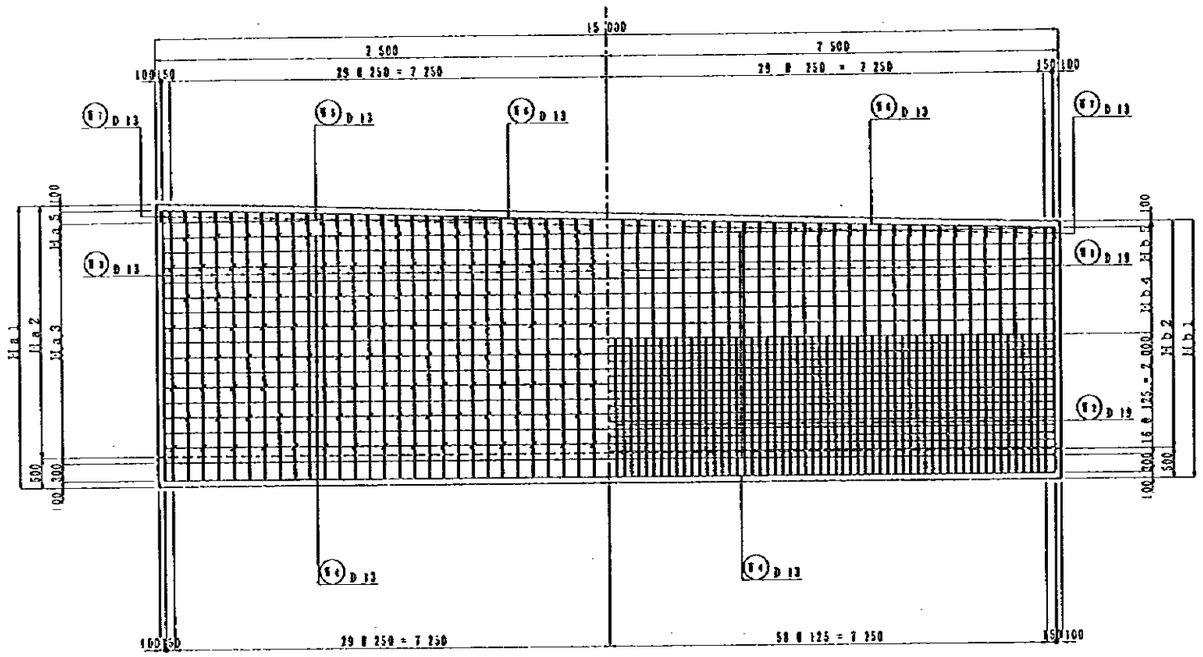
REIS NO.	ϕ (mm)	LENGTH (mm)	a	b	c
T 9					
N 1	D 22	5 890	5 755~5 353	330	——
2	〃	3 090	2 756	330	——
3	D 16	5 750	5 743~5 340	240	——
4	D 13	15 190	14 800	390	——
5	〃	9 060	5 045	——	——
6	〃	15 200	14 805	390	——
7	〃	500	110	195	——
8	〃	570	478~214	111	——
F 1	D 19	3 640	3 138	500	——
2	D 13	1 430	1 232	195	——
3	D 16	1 750	1 250	500	——
4	D 13	3 230	3 030	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 560	528	279	111
9	〃	1 570	529	282	111
T 10					
N 1	D 22	5 470	5 352~4 914	330	——
2	〃	3 090	2 756	330	——
3	D 16	5 370	5 340~4 903	240	——
4	D 13	15 190	14 800	390	——
5	〃	7 380	3 889~11 670	——	——
6	〃	15 200	14 806	390	——
7	〃	500	110	195	——
8	〃	560	452~188	111	——
F 1	D 19	3 670	3 164	500	——
2	D 13	1 410	1 206	195	——
3	D 16	1 750	1 250	500	——
4	D 13	3 230	3 030	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 560	528	279	111
9	〃	1 570	529	282	111

NOTES:

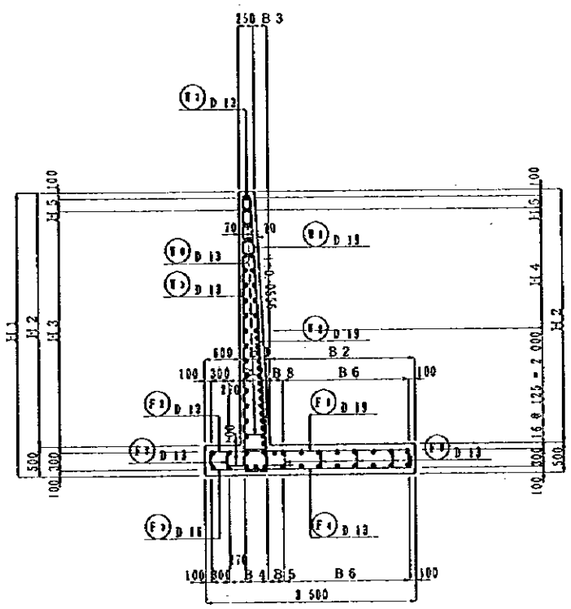
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (12)
DATE
DWG NO. W-36



SIDE VIEW
S=1/100



SECTION
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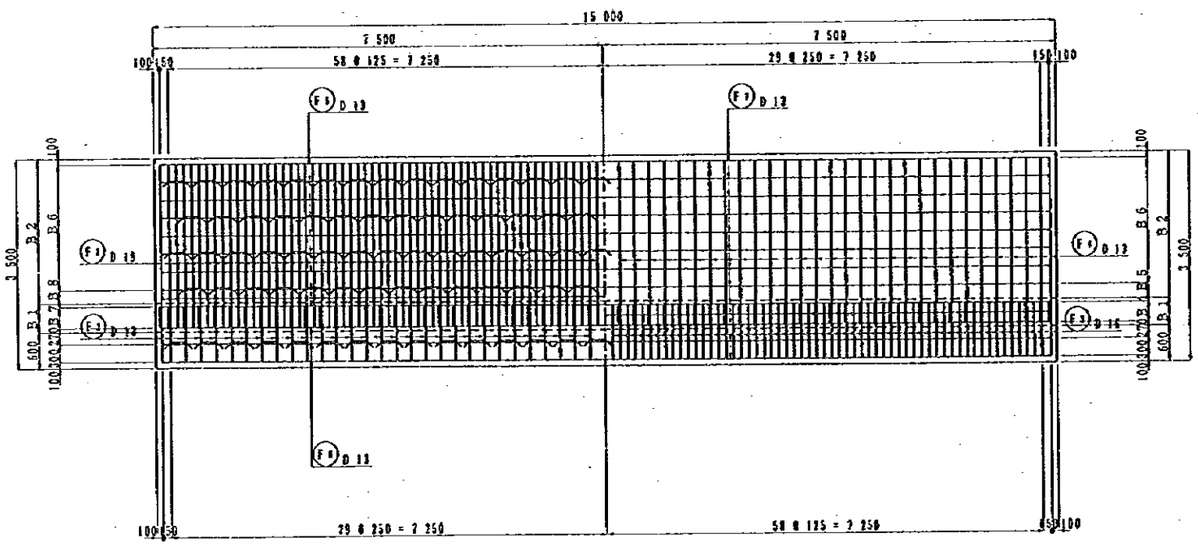


PLAN
S=1/100

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

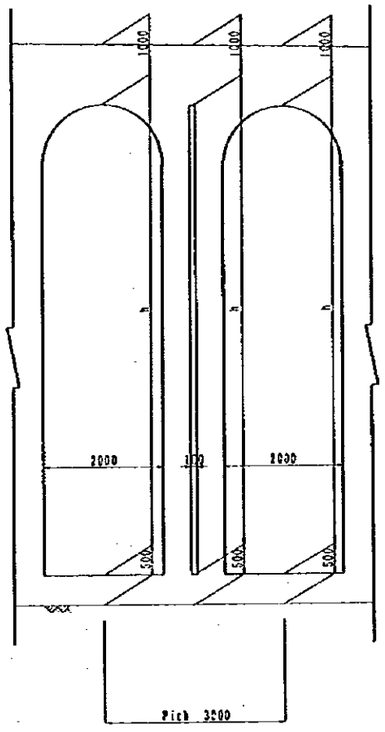
CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (13)
DATE	DWG NO. W-37

A LINE

	(T-11) a − a		(T-11) b − b	(T-12) a − a		(T-12) b − b	(T-13) a − a		(T-13) b − b
Ha1	4 732	Hb1	4 475	4 475	Hb1	4 076	4 076	Hb1	3 676
Ha2	4 232	Hb2	3 975	3 975	Hb2	3 576	3 576	Hb2	3 176
Ha3	16@250 = 4 000	Hb3	15@250 = 3 750	15@250 = 3 750	Hb3	14@250 = 3 500	14@250 = 3 500	Hb3	12@250 = 3 000
Ha4	8@250 = 2 000	Hb4	7@250 = 1 750	7@250 = 1 750	Hb4	6@250 = 1 500	6@250 = 1 500	Hb4	4@250 = 1 000
Ha5	232	Hb5	225	225	Hb5	76	76	Hb5	176
Ba1	485	Bb1	471	471	Bb1	449	449	Bb1	426
Ba2	2 415	Bb2	2 429	2 429	Bb2	2 451	2 451	Bb2	2 474
Ba3	235	Bb3	221	221	Bb3	199	199	Bb3	176
Ba4	2@183.5 = 367	Bb4	2@176.5 = 353	2@176.5 = 353	Bb4	2@165 = 330	2@165 = 330	Bb4	2@154 = 308
Ba5	263	Bb5	277	277	Bb5	300	2@150 = 300	Bb5	2@161 = 322
Ba6	7@300 = 2 100	Bb6	7@300 = 2 100	7@300 = 2 100	Bb6	7@300 = 2 100	7@300 = 2 100	Bb6	7@300 = 2 100
Ba7	350	Bb7	336	336	Bb7	314	314	Bb7	291
Ba8	280	Bb8	294	2@147 = 294	Bb8	2@158 = 316	2@158 = 316	Bb8	2@169.5 = 339

B LINE

	(T-11) a − a		(T-11) b − b	(T-12) a − a		(T-12) b − b	(T-13) a − a		(T-13) b − b
Ha1	4 903	Hb1	4 466	4 466	Hb1	4 065	4 065	Hb1	3 664
Ha2	4 403	Hb2	3 966	3 966	Hb2	3 565	3 565	Hb2	3 164
Ha3	17@250 = 4 250	Hb3	15@250 = 3 750	15@250 = 3 750	Hb3	12@250 = 3 000	12@250 = 3 000	Hb3	12@250 = 3 000
Ha4	10@250 = 2 500	Hb4	7@250 = 1 750	7@250 = 1 750	Hb4	6@250 = 1 500	6@250 = 1 500	Hb4	4@250 = 1 000
Ha5	153	Hb5	216	216	Hb5	65	65	Hb5	164
Ba1	495	Bb1	470	470	Bb1	448	448	Bb1	426
Ba2	2 405	Bb2	2 430	2 430	Bb2	2 452	2 452	Bb2	2 474
Ba3	245	Bb3	220	220	Bb3	198	198	Bb3	176
Ba4	2@188 = 376	Bb4	2@176 = 352	2@176 = 352	Bb4	2@165 = 330	2@165 = 330	Bb4	2@153.5 = 307
Ba5	2@127 = 254	Bb5	2@139 = 278	2@139 = 278	Bb5	2@150 = 300	2@150 = 300	Bb5	2@161.5 = 323
Ba6	7@300 = 2 100	Bb6	7@300 = 2 100	7@300 = 2 100	Bb6	7@300 = 2 100	7@300 = 2 100	Bb6	7@300 = 2 100
Ba7	360	Bb7	335	335	Bb7	313	313	Bb7	291
Ba8	2@135 = 270	Bb8	2@147.5 = 295	2@147.5 = 295	Bb8	2@158.5 = 317	2@158.5 = 317	Bb8	2@169.5 = 339



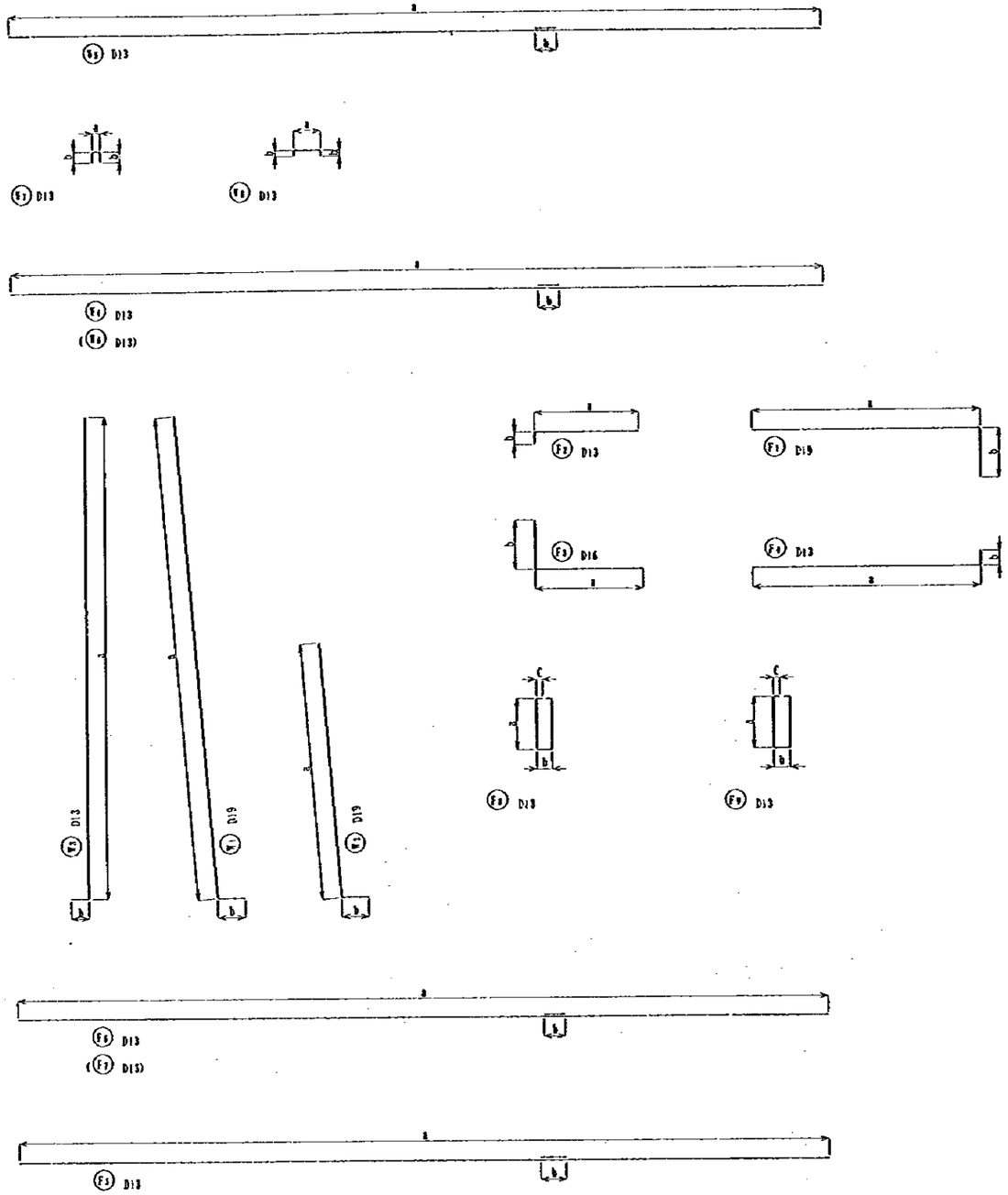
Slit Shape in Front of Fall
(Thickness t=30 mm)

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (14)
DATE	DWG NO. W-38



REIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 11					
W 1	D 19	4 700	4 539～4 282	285	——
2	〃	2 590	2 304	285	——
3	D 13	4 600	4 521～4 275	195	——
4	〃	15 190	14 800	390	——
5	〃	13 940	13 541	390	——
6	〃	15 200	14 832	390	——
7	〃	500	110	195	——
8	〃	490	365～171	111	——
F 1	D 19	3 250	2 950	300	——
2	D 13	1 120	929	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 160	328	279	111
9	〃	1 170	329	282	111
T 12					
W 1	D 19	4 310	4 282～3 862	285	——
2	〃	2 590	2 304	285	——
3	D 13	4 280	4 275～3 876	195	——
4	〃	15 190	14 800	390	——
5	〃	8 460	8 458	——	——
6	〃	15 200	14 805	390	——
7	〃	500	110	195	——
8	〃	430	351～185	111	——
F 1	D 19	3 270	2 954	300	——
2	D 13	1 110	906	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 160	328	279	111
9	〃	1 170	329	282	111
T 13					
W 1	D 19	3 970	3 882～3 481	285	——
2	〃	2 590	2 304	285	——
3	D 13	3 880	3 876～3 476	195	——
4	〃	15 190	14 800	390	——
5	〃	2 740	2 850～12 225	390	——
6	〃	15 200	14 805	390	——
7	〃	500	110	195	——
8	〃	490	329～190	111	——
F 1	D 19	3 290	2 985	300	——
2	D 13	1 080	884	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 160	328	279	111
9	〃	1 170	329	282	111

REIN NO.	φ (mm)	LENGTH (mm)	a	b	c
T 11					
W 1	D 19	4 780	4 719～4 273	285	——
2	〃	2 590	2 304	285	——
3	D 13	4 680	4 703～4 266	195	——
4	〃	15 190	14 800	390	——
5	〃	9 748	5 258～13 835	390	——
6	〃	15 200	14 806	390	——
7	〃	500	110	195	——
8	〃	500	375～181	111	——
F 1	D 19	3 249	2 940	300	——
2	D 13	1 130	930	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 160	328	279	111
9	〃	1 170	329	282	111
T 12					
W 1	D 19	4 360	4 273～3 871	285	——
2	〃	2 590	2 304	285	——
3	D 13	4 270	4 286～3 865	195	——
4	〃	15 190	14 800	390	——
5	〃	8 080	8 080	——	——
6	〃	15 200	14 805	390	——
7	〃	500	110	195	——
8	〃	450	350～184	111	——
F 1	D 19	3 270	2 965	300	——
2	D 13	1 100	905	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 160	328	279	111
9	〃	1 170	329	282	111
T 13					
W 1	D 19	3 960	3 871～3 469	285	——
2	〃	2 590	2 304	285	——
3	D 13	3 860	3 865～3 464	195	——
4	〃	15 190	14 800	390	——
5	〃	7 110	3 431～11 783	——	——
6	〃	15 200	14 805	390	——
7	〃	500	110	195	——
8	〃	490	328～190	111	——
F 1	D 19	3 290	2 987	300	——
2	D 13	1 080	883	195	——
3	D 16	1 350	1 050	300	——
4	D 13	2 930	2 730	195	——
5	〃	15 190	14 800	390	——
6	〃	15 190	14 800	390	——
7	〃	15 190	14 800	390	——
8	〃	1 160	328	279	111
9	〃	1 170	329	282	111

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (15)
DATE
DWG NO. W-39

A－L I N E

REIN NO.	φ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 1							
W 1	D 29	9 040	5.059	61	45.733	2 789.7	
2	"	5 110	"	58	25.851	1 499.4	
3	D 19	8 360	2.235	61	18.683	1 207.9	
4	D 13	15 190	0.994	75	15.099	1 132.4	
5	"	8 600	"	2	8.548	17.1	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	710	"	443	0.706	312.8	
F 1	D 25	5 070	3.973	119	19.944	2 373.3	
2	D 13	2 130	0.994	61	2.117	129.1	
3	D 16	2 550	1.552	119	3.958	471.0	
4	"	4 370	"	61	6.782	413.7	
5	"	15 280	"	13	23.715	308.3	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	19	15.099	286.9	
8	"	2 360	"	58	2.346	136.1	
9	"	2 380	"	145	2.366	343.1	
						11558.8	
T 2							
W 1	D 29	8 770	5.059	61	44.367	2 706.4	
2	"	5 110	"	58	25.851	1 499.4	
3	D 19	8 599	2.235	61	19.199	1 171.1	
4	D 13	15 190	0.994	73	15.099	1 102.2	
5	"	8 030	"	2	7.982	16.0	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	710	"	413	0.706	291.6	
F 1	D 25	5 050	3.973	119	20.064	2 387.6	
2	D 13	2 110	0.994	61	2.097	127.9	
3	D 16	2 550	1.552	119	3.958	471.0	
4	"	4 370	"	61	6.782	413.7	
5	"	15 280	"	13	23.715	308.3	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	19	15.099	286.9	
8	"	2 360	"	58	2.346	136.1	
9	"	2 380	"	145	2.366	343.1	
						11397.3	
T 3							
W 1	D 23	8 500	5.059	61	43.002	2 623.1	
2	"	5 110	"	58	25.851	1 499.4	
3	D 19	8 329	2.235	61	18.595	1 134.3	
4	D 13	15 190	0.994	71	15.099	1 072.0	
5	"	7 500	"	2	7.455	14.9	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	680	"	413	0.676	279.2	
F 1	D 25	5 070	3.973	119	20.143	2 397.0	
2	D 13	2 090	0.994	61	2.077	126.7	
3	D 16	2 550	1.552	119	3.958	471.0	
4	"	4 370	"	61	6.782	413.7	
5	"	15 280	"	13	23.715	308.3	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	19	15.099	286.9	
8	"	2 360	"	58	2.346	136.1	
9	"	2 380	"	145	2.366	343.1	
						11241.7	

D 29	12617.4
D 25	7157.9
D 19	3513.3
D 16	3579.0
D 13	7328.2
TOTAL WEIGHT	34195.8

B－L I N E

REIN NO.	φ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	U WEIGHT	WEIGHT	REMARKS
T 1							
W 1	D 29	9 020	5.059	61	45.632	2 783.6	
2	"	5 110	"	58	25.851	1 499.4	
3	D 19	8 849	2.235	61	19.757	1 205.2	
4	D 13	15 190	0.994	75	15.099	1 132.4	
5	"	8 200	"	2	8.151	16.3	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	710	"	443	0.706	312.8	
F 1	D 25	5 030	3.973	119	19.994	2 378.1	
2	D 13	2 130	0.994	61	2.117	129.1	
3	D 16	2 550	1.552	119	3.958	471.0	
4	"	4 370	"	61	6.782	413.7	
5	"	15 280	"	13	23.715	308.3	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	19	15.099	286.9	
8	"	2 360	"	58	2.346	136.1	
9	"	2 380	"	145	2.366	343.1	
						11552.0	
T 2							
W 1	D 29	8 760	5.059	61	44.317	2 703.3	
2	"	5 110	"	58	25.851	1 499.4	
3	D 19	8 589	2.235	61	19.196	1 169.7	
4	D 13	15 190	0.994	73	15.099	1 102.2	
5	"	7 670	"	2	7.624	15.2	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	710	"	413	0.706	291.6	
F 1	D 25	5 050	3.973	119	20.064	2 387.6	
2	D 13	2 110	0.994	61	2.097	127.9	
3	D 16	2 550	1.552	119	3.958	471.0	
4	"	4 370	"	61	6.782	413.7	
5	"	15 280	"	13	23.715	308.3	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	19	15.099	286.9	
8	"	2 360	"	58	2.346	136.1	
9	"	2 380	"	145	2.366	343.1	
						11392.0	
T 3							
W 1	D 29	8 490	5.059	61	42.951	2 620.0	
2	"	5 110	"	58	25.851	1 499.4	
3	D 19	8 310	2.235	61	18.573	1 133.0	
4	D 13	15 190	0.994	69	15.099	1 041.8	
5	"	10 950	"	4	10.884	43.5	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	690	"	413	0.856	283.3	
F 1	D 25	5 070	3.973	119	20.143	2 397.0	
2	D 13	2 089	0.994	61	2.068	126.1	
3	D 16	2 550	1.552	119	3.958	471.0	
4	"	4 370	"	61	6.782	413.7	
5	"	15 280	"	13	23.715	308.3	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	19	15.099	286.9	
8	"	2 360	"	58	2.346	136.1	
9	"	2 380	"	145	2.366	343.1	
						11239.2	

D 29	12805.1
D 25	7162.7
D 19	3507.9
D 16	3579.0
D 13	7328.5
TOTAL WEIGHT	34383.2

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (16)
DATE	DWG NO. W-40

00

A-LINE

BEIS NO.	ϕ (mm)	LENGTH (m)	NOMINAL WEIGHT	NUMB	G WEIGHT	WEIGHT	REMARKS
T 4							
V 1	D 25	8 050	3.973	61	31.993	1 951.0	
2	"	4 690	"	58	18.633	1 080.7	
3	D 16	7 880	1.552	61	12.245	746.9	
4	D 13	15 190	0.994	66	15.099	996.5	
5	"	11 550	"	2	11.478	23.0	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	670	"	384	0.666	255.7	
F 1	D 25	4 720	3.973	119	18.753	2 231.6	
2	D 13	1 840	0.994	61	1.829	111.6	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.059	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9267.5	
T 5							
V 1	D 25	7 730	3.973	61	30.711	1 873.4	
2	"	4 690	"	58	18.633	1 080.7	
3	D 16	7 570	1.552	61	11.749	716.7	
4	D 13	15 190	0.994	64	15.099	966.3	
5	"	8 890	"	2	8.837	17.7	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	670	"	354	0.666	235.8	
F 1	D 25	4 740	3.973	119	18.833	2 241.0	
2	D 13	1 810	0.994	61	1.799	109.7	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9111.0	
T 6							
V 1	D 25	7 350	3.973	61	29.369	1 791.6	
2	"	4 690	"	58	18.633	1 080.7	
3	D 16	7 240	1.552	61	11.236	685.4	
4	D 13	15 190	0.994	62	15.059	936.1	
5	"	5 100	"	2	5.069	10.1	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	660	"	354	0.656	225.1	
F 1	D 25	4 770	3.973	119	18.951	2 255.2	
2	D 13	1 750	0.994	61	1.739	108.5	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						8961.8	
					D 25	15585.3	
					D 16	5405.2	
					D 13	6389.8	
					TOTAL WEIGHT	27340.3	

B-LINE

BEIS NO.	ϕ (mm)	LENGTH (m)	NOMINAL WEIGHT	NUMB	G WEIGHT	WEIGHT	REMARKS
T 4							
V 1	D 25	8 030	3.973	61	31.903	1 946.1	
2	"	4 690	"	58	18.633	1 080.7	
3	D 16	7 880	1.552	61	12.230	746.0	
4	D 13	15 190	0.994	66	15.099	996.5	
5	"	11 410	"	2	11.348	22.7	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	670	"	384	0.666	255.7	
F 1	D 25	4 720	3.973	119	18.753	2 231.6	
2	D 13	1 840	0.994	61	1.829	111.6	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.059	75.5	
7	"	15 190	"	18	15.059	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9269.6	
T 5							
V 1	D 25	7 720	3.973	61	30.672	1 871.0	
2	"	4 690	"	58	18.633	1 080.7	
3	D 16	7 560	1.552	61	11.733	715.7	
4	D 13	15 190	0.994	64	15.099	966.3	
5	"	8 360	"	2	8.310	16.6	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	670	"	354	0.666	235.8	
F 1	D 25	4 740	3.973	119	18.833	2 241.0	
2	D 13	1 810	0.994	61	1.799	109.7	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						9106.5	
T 6							
V 1	D 25	7 350	3.973	61	29.321	1 788.6	
2	"	4 690	"	58	18.633	1 080.7	
3	D 16	7 230	1.552	61	11.221	684.5	
4	D 13	15 190	0.994	62	15.059	936.1	
5	"	4 678	"	2	4.647	9.3	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	640	"	354	0.636	225.1	
F 1	D 25	4 770	3.973	119	18.951	2 255.2	
2	D 13	1 799	0.994	61	1.779	108.5	
3	D 16	2 250	1.552	119	3.492	415.5	
4	"	4 070	"	61	6.317	385.3	
5	"	15 280	"	12	23.715	284.6	
6	D 13	15 190	0.994	5	15.059	75.5	
7	"	15 190	"	18	15.099	271.8	
8	"	2 160	"	29	2.147	62.3	
9	"	2 180	"	145	2.167	314.2	
						8952.7	
					D 25	15575.6	
					D 16	5402.4	
					D 13	6346.8	
					TOTAL WEIGHT	27324.8	

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY

TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (17)

DATE

DWG NO. W-41

A－LINE

BEIN NO.	φ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	T WEIGHT	WEIGHT	REMARKS
T 7							
W 1	D 22	6 880	3.042	61	20.959	1 278.5	
2	"	3 250	"	58	10.008	580.5	
3	D 16	6 780	1.552	61	10.523	641.9	
4	D 13	15 190	0.994	53	15.099	800.2	
5	"	8 250	"	4	8.201	32.8	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	620	"	325	0.616	200.2	
F 1	D 22	4 130	3.042	119	12.563	1 495.0	
2	D 13	1 730	0.994	61	1.720	104.9	
3	D 16	2 150	1.552	119	3.337	397.1	
4	"	3 570	"	61	5.541	338.0	
5	"	15 280	"	11	23.715	260.9	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	17	15.099	256.7	
8	"	1 960	"	29	1.948	56.5	
9	"	1 980	"	116	1.968	228.3	
						6307.5	
T 8							
W 1	D 22	6 500	3.042	61	19.773	1 206.2	
2	"	3 250	"	58	10.008	580.5	
3	D 16	6 400	1.552	61	9.933	605.9	
4	D 13	15 190	0.994	51	15.099	770.0	
5	"	5 750	"	2	5.716	11.4	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	610	"	295	0.606	178.8	
F 1	D 22	4 160	3.042	119	12.655	1 505.9	
2	D 13	1 700	0.994	61	1.690	103.1	
3	D 16	2 150	1.552	119	3.337	397.1	
4	"	3 570	"	61	5.541	338.0	
5	"	15 280	"	11	23.715	260.9	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	17	15.099	256.7	
8	"	1 960	"	29	1.948	56.5	
9	"	1 980	"	116	1.968	228.3	
						6635.3	

D 22	6646.6	
D 16	3239.8	
D 13	3556.4	
TOTAL WEIGHT	13442.8	

B－LINE

BEIN NO.	φ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	T WEIGHT	WEIGHT	REMARKS
T 7							
W 1	D 22	6 880	3.042	61	20.929	1 276.7	
2	"	3 250	"	58	10.008	580.5	
3	D 16	6 770	1.552	61	10.507	640.9	
4	D 13	15 190	0.994	53	15.099	800.2	
5	"	7 950	"	4	7.942	31.8	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	620	"	325	0.606	197.0	
F 1	D 22	4 130	3.042	119	12.563	1 495.0	
2	D 13	1 730	0.994	61	1.720	104.9	
3	D 16	2 150	1.552	119	3.337	397.1	
4	"	3 570	"	61	5.541	338.0	
5	"	15 280	"	11	23.715	260.9	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	17	15.099	256.7	
8	"	1 960	"	29	1.948	56.5	
9	"	1 980	"	116	1.968	228.3	
						6360.5	
T 8							
W 1	D 22	6 500	3.042	61	19.773	1 206.2	
2	"	3 250	"	58	10.008	580.5	
3	D 16	6 250	1.552	61	9.917	604.9	
4	D 13	15 190	0.994	49	15.099	739.9	
5	"	10 299	"	4	10.228	40.9	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	610	"	295	0.606	178.8	
F 1	D 22	4 160	3.042	119	12.655	1 505.9	
2	D 13	1 700	0.994	61	1.690	103.1	
3	D 16	2 150	1.552	119	3.337	397.1	
4	"	3 570	"	61	5.541	338.0	
5	"	15 280	"	11	23.715	260.9	
6	D 13	15 190	0.994	5	15.099	75.5	
7	"	15 190	"	17	15.099	256.7	
8	"	1 960	"	29	1.948	56.5	
9	"	1 980	"	116	1.968	228.3	
						6633.7	

D 22	6644.8	
D 16	3337.8	
D 13	3551.6	
TOTAL WEIGHT	13434.3	

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT :	MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT :	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE :	R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (18)
DATE	DWG NO. W-42

A－L I N E

REIN NO.	ϕ (mm)	LENGTH (m)	NOMINAL WEIGHT	NUMB	E WEIGHT	WEIGHT	REMARKS
T 9							
W 1	D 22	5 900	3.042	61	17.948	1 094.8	
2	〃	3 090	〃	58	9.400	545.2	
3	D 16	5 800	1.552	61	9.002	549.1	
4	D 13	15 190	0.994	47	15.099	709.7	
5	〃	7 060	〃	4	8.998	28.0	
6	〃	15 200	〃	2	15.109	30.2	
7	〃	500	〃	61	0.497	30.3	
8	〃	570	〃	266	0.567	150.8	
F 1	D 19	3 640	2.235	119	8.135	968.1	
2	D 13	1 430	0.994	61	1.421	86.7	
3	D 16	1 750	1.552	119	2.716	323.2	
4	D 13	3 230	0.994	61	3.211	195.9	
5	〃	15 190	〃	10	15.099	151.0	
6	〃	15 190	〃	4	15.099	60.4	
7	〃	15 190	〃	15	15.099	226.5	
8	〃	1 560	〃	29	1.551	45.0	
9	〃	1 570	〃	116	1.561	181.1	
						5376.0	
T 10							
W 1	D 22	5 350	3.042	61	16.396	1 000.2	
2	〃	3 090	〃	58	9.400	545.2	
3	D 16	5 290	1.552	61	8.210	500.8	
4	D 13	15 190	0.994	43	15.099	649.2	
5	〃	8 680	〃	6	8.628	51.8	
6	〃	15 210	〃	2	15.119	30.2	
7	〃	500	〃	61	0.497	30.3	
8	〃	560	〃	236	0.557	131.5	
F 1	D 19	3 670	2.235	119	8.202	976.0	
2	D 13	1 410	0.994	61	1.402	85.5	
3	D 16	1 750	1.552	119	2.716	323.2	
4	D 13	3 230	0.994	61	3.211	195.9	
5	〃	15 190	〃	10	15.099	151.0	
6	〃	15 190	〃	4	15.099	60.4	
7	〃	15 190	〃	15	15.099	226.5	
8	〃	1 560	〃	29	1.551	45.0	
9	〃	1 570	〃	116	1.561	181.1	
						5153.7	
					D 22	3185.4	
					D 19	1944.1	
					D 16	1696.3	
					D 13	3703.9	
					TOTAL WEIGHT	10529.7	

B－L I N E

REIN NO.	ϕ (mm)	LENGTH (m)	NOMINAL WEIGHT	NUMB	E WEIGHT	WEIGHT	REMARKS
T 9							
W 1	D 22	5 850	3.042	61	17.917	1 092.9	
2	〃	3 090	〃	58	9.400	545.2	
3	D 16	5 790	1.552	61	8.986	548.1	
4	D 13	15 190	0.994	47	15.099	709.7	
5	〃	9 050	〃	2	8.996	18.0	
6	〃	15 200	〃	2	15.109	30.2	
7	〃	500	〃	61	0.497	30.3	
8	〃	570	〃	266	0.567	150.8	
F 1	D 19	3 640	2.235	119	8.135	968.1	
2	D 13	1 430	0.994	61	1.421	86.7	
3	D 16	1 750	1.552	119	2.716	323.2	
4	D 13	3 230	0.994	61	3.211	195.9	
5	〃	15 190	〃	10	15.099	151.0	
6	〃	15 190	〃	4	15.099	60.4	
7	〃	15 190	〃	15	15.099	226.5	
8	〃	1 560	〃	29	1.551	45.0	
9	〃	1 570	〃	116	1.561	181.1	
						5383.1	
T 10							
W 1	D 22	5 470	3.042	61	16.640	1 015.0	
2	〃	3 090	〃	58	9.400	545.2	
3	D 16	5 370	1.552	61	8.334	508.4	
4	D 13	15 190	0.994	43	15.099	649.3	
5	〃	7 380	〃	4	7.336	29.3	
6	〃	15 200	〃	2	15.109	30.2	
7	〃	500	〃	61	0.497	30.3	
8	〃	550	〃	266	0.547	145.5	
F 1	D 19	3 670	2.235	119	8.202	976.0	
2	D 13	1 410	0.994	61	1.402	85.5	
3	D 16	1 750	1.552	119	2.716	323.2	
4	D 13	3 230	0.994	61	3.211	195.9	
5	〃	15 190	〃	10	15.099	151.0	
6	〃	15 190	〃	4	15.099	60.4	
7	〃	15 190	〃	15	15.099	226.5	
8	〃	1 560	〃	29	1.551	45.0	
9	〃	1 570	〃	116	1.561	181.1	
						5197.8	
					D 22	3198.3	
					D 19	1944.1	
					D 16	1702.9	
					D 13	3715.6	
					TOTAL WEIGHT	10560.9	

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYANA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (19)
DATE
DWG NO. W-43

A – L I N E

BEIS NO.	ϕ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	C WEIGHT	WEIGHT	REMARKS
T 11							
W 1	D 19	4 700	2.235	61	10.504	640.7	
2	"	2 590	"	58	5.789	335.8	
3	D 13	4 600	0.994	61	4.572	278.9	
4	"	15 190	"	38	15.059	573.8	
5	"	13 940	"	2	13.856	27.7	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	450	"	236	0.437	104.9	
F 1	D 19	3 250	2.235	119	7.264	864.4	
2	D 13	1 120	0.994	61	1.113	67.9	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	9	15.099	135.9	
6	"	15 190	"	3	15.099	45.3	
7	"	15 190	"	13	15.099	196.3	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3937.3	
T 12							
W 1	D 19	4 370	2.235	61	9.767	595.8	
2	"	2 590	"	58	5.789	335.8	
3	D 13	4 280	0.994	61	4.254	259.5	
4	"	15 190	"	36	15.099	543.6	
5	"	8 460	"	2	8.405	16.8	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	450	"	207	0.437	100.8	
F 1	D 19	3 270	2.235	119	7.308	869.7	
2	D 13	1 110	0.994	61	1.103	67.3	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.099	151.0	
6	"	15 150	"	3	15.099	45.3	
7	"	15 190	"	13	15.099	196.3	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3937.6	
T 13							
W 1	D 19	3 970	2.235	61	8.873	541.3	
2	"	2 550	"	58	5.789	335.8	
3	D 13	3 880	0.994	61	3.857	235.3	
4	"	15 190	"	33	15.099	498.2	
5	"	7 740	"	4	7.696	30.8	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	450	"	177	0.437	86.2	
F 1	D 19	3 290	2.235	119	7.353	875.0	
2	D 13	1 050	0.994	61	1.074	65.5	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	3	15.099	45.3	
7	"	15 190	"	13	15.099	196.3	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3701.4	
					D 19	5394.3	
					D 16	747.9	
					D 13	5334.1	
					TOTAL WEIGHT	11476.3	

B – L I N E

BEIS NO.	ϕ (mm)	LENGTH (mm)	NOMINAL WEIGHT	NUMB	C WEIGHT	WEIGHT	REMARKS
T 11							
W 1	D 19	4 780	2.235	61	10.680	651.7	
2	"	2 590	"	58	5.789	335.8	
3	D 13	4 680	0.994	61	4.652	283.8	
4	"	15 190	"	38	15.099	573.8	
5	"	9 740	"	4	9.682	38.7	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	500	"	236	0.497	117.3	
F 1	D 19	3 240	2.235	119	7.241	861.7	
2	D 13	1 130	0.994	61	1.123	68.5	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	3	15.099	45.3	
7	"	15 190	"	14	15.099	211.4	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3594.7	
T 12							
W 1	D 19	4 360	2.235	61	9.745	594.4	
2	"	2 590	"	58	5.789	335.8	
3	D 13	4 270	0.994	61	4.244	258.9	
4	"	15 190	"	32	15.099	483.2	
5	"	8 080	"	2	8.032	16.1	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	450	"	207	0.437	100.8	
F 1	D 19	3 270	2.235	119	7.308	869.7	
2	D 13	1 100	0.994	61	1.093	66.7	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.099	151.0	
6	"	15 150	"	3	15.099	45.3	
7	"	15 190	"	14	15.099	211.4	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3789.0	
T 13							
W 1	D 19	3 960	2.235	61	8.851	539.9	
2	"	2 550	"	58	5.789	335.8	
3	D 13	3 860	0.994	61	3.837	234.1	
4	"	15 199	"	32	15.099	483.2	
5	"	7 180	"	4	7.067	28.3	
6	"	15 200	"	2	15.109	30.2	
7	"	500	"	61	0.497	30.3	
8	"	450	"	177	0.437	86.2	
F 1	D 19	3 290	2.235	119	7.353	875.0	
2	D 13	1 080	0.994	61	1.074	65.5	
3	D 16	1 350	1.552	119	2.095	249.3	
4	D 13	2 930	0.994	61	2.912	177.6	
5	"	15 190	"	10	15.099	151.0	
6	"	15 190	"	3	15.099	45.3	
7	"	15 190	"	14	15.099	211.4	
8	"	1 160	"	29	1.153	33.4	
9	"	1 170	"	116	1.163	134.9	
						3711.4	
					D 19	5399.8	
					D 16	747.9	
					D 13	5347.4	
					TOTAL WEIGHT	11495.1	

NOTES:

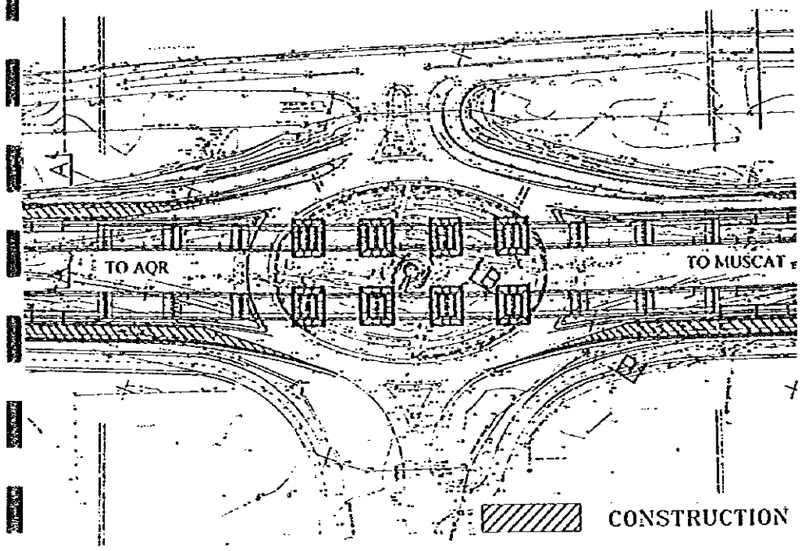
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

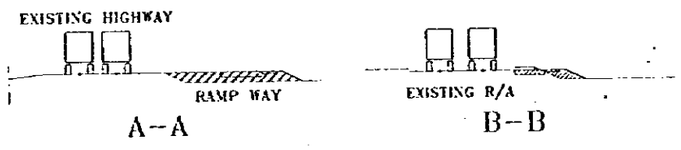
JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FURUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : R/A-2, A' NASEEM GARDEN RE-BAR ARRANGEMENT (20)
DATE
DWG NO. W-44

TEMPORARY WORKS

FIRST CONSTRUCTION STAGE

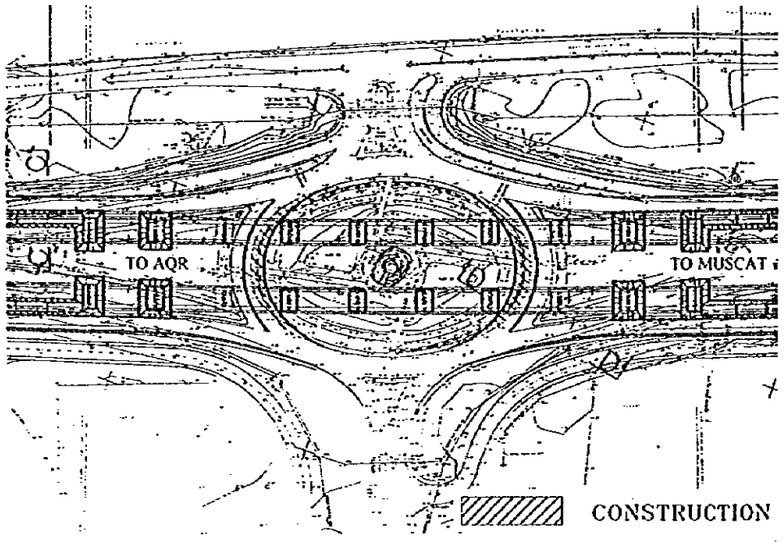


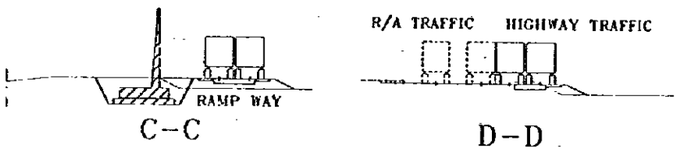


The traffic on the existing highway

Construction of ramp way (For temporary road)
Construction of substructure (Internal area of existing R/A)

SECOND CONSTRUCTION STAGE

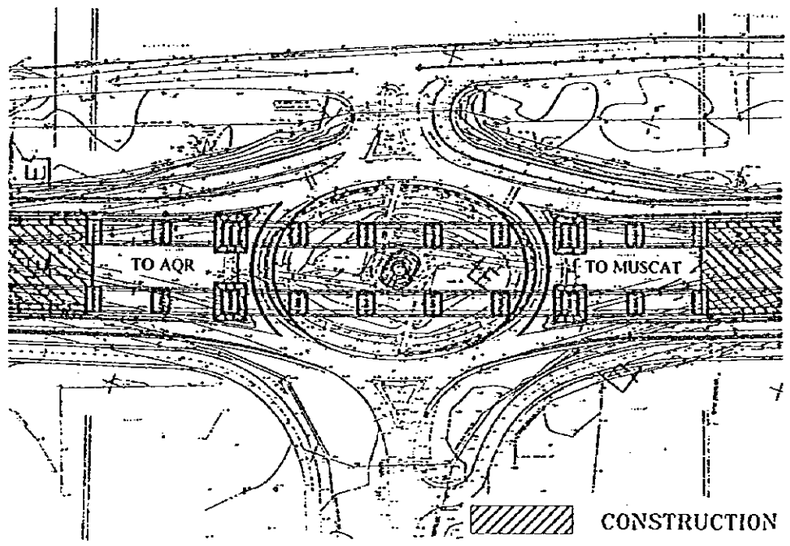


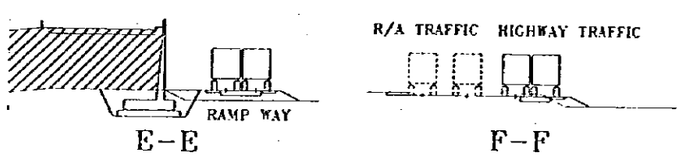


The traffic detour to ramp way

Construction of substructure (External area of existing R/A)
Construction of retaining wall

THIRD CONSTRUCTION STAGE





The traffic shift to internal area of existing R/A

Construction of substructure (External area of remaining section)
Embankment for retaining wall section

NOTES:

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
	PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FUKUYAMA CONSULTANTS INTERNATIONAL	TITLE: SEQUENCE OF A'NASEEM GARDEN F/O CONSTRUCTION
	DATE / DWG NO. T-1