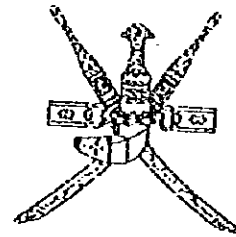


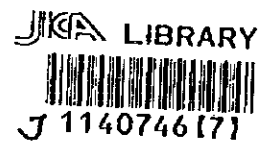
SULTANATE OF OMAN
MINISTRY OF COMMUNICATIONS
DIRECTORATE GENERAL OF ROADS



CONSTRUCTION OF FLYOVER
AT
NASEEM GARDEN ROUNDABOUT
BATINAH HIGHWAY

TENDER DOCUMENT

DRAWINGS



PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

MARCH, 1997

SSF
CR(5)
97-015

DRAWING SCHEDULE
(FO1-R/A2 A'NASEEM GARDEN)

SHEET NO.	TITLE	SHEET NO.	TITLE	SHEET NO.	TITLE
A	GENERAL	B	STRUCTURE - BRIDGE	W	STRUCTURE - RETAINING WALL
G-1	Drawing Schedule	B-1	General View (A-Line)	W-1	General View (1)-1
G-2	General Note	B-2	General View (B-Line)	W-2	General View (1)-2
R	ROAD	B-3	Flaming Plan (A-Line)	W-3	Re-bar Arrangement (1)
R-1	Alignment Layout	B-4	Co-ordinate List (A-Line)	W-4	Re-bar Arrangement (2)
R-2	Setting Out Details	B-5	Flaming Plan (B-Line)	W-5	Re-bar Arrangement (3)
R-3	Plan	B-6	Co-ordinate List (B-Line)	W-6	Re-bar Arrangement (4)
R-4	Profile	B-7	General View of Bridge (A-Line)	W-7	Re-bar Arrangement (5)
R-5	Typical Cross Section	B-8	Structural Detail of Main Girder (A-Line)	W-8	Re-bar Arrangement (6)
R-6	Detailed Plan	B-9	Detail of Tendon (A-Line)	W-9	Re-bar Arrangement (7)
R-7	Pavement Details	B-10	Re-bar Arrangement (A-Line) (1/2)	W-10	Re-bar Arrangement (8)
R-8	Drainage Structure (1/3)	B-11	Re-bar Arrangement (A-Line) (2/2)	W-11	Re-bar Arrangement (9)
R-9	Drainage Structure (2/3)	B-12	Bar Schedule of Main Girder (A-Line)	W-12	Re-bar Arrangement (10)
R-10	Drainage Structure (3/3)	B-13	Railing and Cantilever Slab (A-Line)	W-13	Re-bar Arrangement (11)
R-11	Retaining Wall	B-14	Detail of Shoe and Anchor Bar (A-Line)	W-14	Re-bar Arrangement (12)
R-12	Slope Protection	B-15	General View of Bridge (B-Line)	W-15	Re-bar Arrangement (13)
R-13	Irish Crossing	B-16	Structural Detail (B-Line)	W-16	Re-bar Arrangement (14)
R-14	Road Marking and Traffic Sign	B-17	Detail of Tendon (B-Line)	W-17	Re-bar Arrangement (15)
R-15	Removal and Relocation of Utilities	B-18	Re-bar Arrangement (B-Line) (1/2)	W-18	Re-bar Arrangement (16)
		B-19	Re-bar Arrangement (B-Line) (2/2)	W-19	Re-bar Arrangement (17)
		B-20	Bar Schedule of Main Girder (B-Line)	W-20	Re-bar Arrangement (18)
		B-21	Railing and Cantilever Slab (B-Line)	W-21	Re-bar Arrangement (19)
		B-22	Detail of Shoe and Anchor Bar (B-Line)	W-22	Re-bar Arrangement (20)
		B-23	Expansion Joint	W-23	General View (2)-1
		B-24	Handrail	W-24	General View (2)-2
		B-25	Drainage Details	W-25	Re-bar Arrangement (1)
		B-26	Structural Detail of A1 Abutment (A,B-Line)	W-26	Re-bar Arrangement (2)
		B-27	Structural Detail of A2 Abutment (A,B-Line)	W-27	Re-bar Arrangement (3)
		B-28	Structural Details of P1~P8 (A,B-Line) (1/2)	W-28	Re-bar Arrangement (4)
		B-29	Structural Details of P1~P8 (A,B-Line) (2/2)	W-29	Re-bar Arrangement (5)
		B-30	Re-bar Arrangement of A1 (A,B-Line) (1/3)	W-30	Re-bar Arrangement (6)
		B-31	Re-bar Arrangement of A1 (A,B-Line) (2/3)	W-31	Re-bar Arrangement (7)
		B-32	Re-bar Arrangement of A1 (A,B-Line) (3/3)	W-32	Re-bar Arrangement (8)
		B-33	Re-bar Arrangement of A2 (A,B-Line) (1/3)	W-33	Re-bar Arrangement (9)
		B-34	Re-bar Arrangement of A2 (A,B-Line) (2/3)	W-34	Re-bar Arrangement (10)
		B-35	Re-bar Arrangement of A2 (A,B-Line) (3/3)	W-35	Re-bar Arrangement (11)
		B-36	Re-bar Arrangements of P1~P8 (A,B-Line) (1/2)	W-36	Re-bar Arrangement (12)
		B-37	Re-bar Arrangements of P1~P8 (A,B-Line) (1/2)	W-37	Re-bar Arrangement (13)
		B-38	Re-bar Arrangement of Approach Slab	W-38	Re-bar Arrangement (14)
		B-39	Bar Bending Diagram	W-39	Re-bar Arrangement (15)
				W-40	Re-bar Arrangement (16)
				W-41	Re-bar Arrangement (17)
				W-42	Re-bar Arrangement (18)
				W-43	Re-bar Arrangement (19)
				W-44	Re-bar Arrangement (20)
				T	TEMPORARY WORKS
				T-1	Construction Sequence
				T-2	Detour Layout (1/2)
				T-3	Detour Layout (2/2)

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

PROJECT: DD ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY

TITLE : DRAWING SCHEDULE

DATE

DWG NO. G - 1



1140746(7)

GENERAL NOTES

LOADING SPECIFICATIONS

The loading specifications used for the design of structures are as follows:

- HIGHWAY DESIGN MANUAL, February 1994, Sultanate of Oman
- STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1990, American Association of State Highway and Transportation Officials
- SPECIFICATIONS FOR HIGHWAY BRIDGES, February 1994, Japan Road Association

According to the above specifications, basic design condition are as follows:

1. CLASSIFICATION OF LIVE LOAD

- Special truck type A (Oman)
- Special truck type B (Oman)
- HS20-44 increased 100% (AASHTO)
- TL-25 (Japan)

2. SEISMIC LOAD

0.1g of acceleration coefficient for seismic loads is applied in accordance with the Highway Design Manual in the Sultanate of Oman.

3. DESIGN METHOD

Allowable stress design is applied for this detailed design study in accordance with Specifications for Highway Bridges by Japan Road Association. Allowable stress design is similar to service load design by AASHTO.

4. STRUCTURAL ANALYSIS

The load distribution is calculated by using of Guyon - Masonnet's method based on orthotropic plate theory.

MATERIALS FOR STRUCTURES

1. CONCRETE

Design strength of concrete is specified as follows:

Class of concrete (28 days)	Specified strength		Characteristic strength at 28 days		Application	
	(kgf/cm ²)	(N/mm ²)	Cylinders (kgf/cm ²) (N/mm ²)	Cubes (kgf/cm ²) (N/mm ²)		
16	160	16	163	20	204	Blinding(leveling), Stone masonry
24	240	24	245	30	306	Substructure, Retaining wall, Box culvert
32	320	32	326	40	408	Floor slab, Cross beam, Felloe guard & parapet (precast), Cast-in-place concrete pile
40 ^A	400	40	408	50	510	Prestressed concrete girder

^A Concrete class 40 is not prescribed in General Specification for Roads in the Sultanate of Oman, however, it is necessary for prestressed concrete girder.

2. REINFORCING STEEL

Reinforcing bars are deformed bars according to AASHTOM31/M31M.

Grades and tensile requirements are specified as follows:

Grade	Tensile strength,	Yielded strength,
	min (kgf/cm ²)	min (kgf/cm ²)
Grade40	4921	2812
Grade60	6327	4218

Bar designation numbers used in this design are correspond to ones by AASHTO as follows:

AASHTO No.	3	4	5	6	7	8	9	10
This design	D9	D13	D16	D19	D22	D25	D28	D32

3. PRESTRESSING TENDON

Prestressing strand comply with the requirements of AASHTOM203, M204 and M275 or BS5896 and BS4486. Prestressing strands for this design are based on Japanese specifications prescribed as follows:

Type	Area (mm ²)	Designation	Ultimate strength (kgf/mm ²)	Yielded strength (kgf/mm ²)
12T15.2	1664.40	SWPR7B	190	160
1T15.2	138.70	SWPR7B	190	160

ALLOWABLE STRESSES

1. CONCRETE

The allowable stresses in concrete for each class and type are as follows:

(1) Prestressed concrete structures (kgf/cm²)

	Class32	Class40
Allowable compressive stress		
- Temporary stress before losses due to creep and shrinkage	140	180
- Stress at service load after losses have occurred	110	140
Allowable tensile stress		
- Temporary stress before losses due to creep and shrinkage	-12	-15
- Stress at service load after losses have occurred at dead load	0	0
- Stress at service load after losses have occurred at service load	-12	-15
Allowable shearing stress		
- Stress at service load after losses have occurred at service load		5.5
- Stress at service load after losses have occurred at ultimate load		53
Allowable diagonal stress		
- Stress at service load after losses have occurred at service load		-10

(2) Reinforced concrete structures (kgf/cm²)

	Class20	Class24	Class28	Class32
Allowable compressive stress				
- Flexural compressive stress	65	80	90	100
- Axial compressive stress	50	65	75	85
Allowable shear stress				
- only by concrete	3.5	3.9	4.2	4.5
- with diagonal reinforcement	15	17	18	19
- Punching shear stress	8.0	9.0	9.5	10.0
Allowable bond stress				
- with round bar	7.0	8.0	8.5	9.0
- with deformed bar	14	16	17	18

(3) Cast-in-place concrete pile

Cast-in-concrete piles are constructed by concrete class32, but its allowable stresses are for concrete class24.

(4) Reinforcing Bar

Allowable stresses(kgf/cm²) for each grade of reinforcing bar are as follows:

	Grade40	Grade60
General use	1400	1800
Under water	1400	1600

OTHER DESIGN CONDITIONS

- Lap splicing is applied for all reinforcing bars
- Minimum N-value of bearing layer is 30.

OTHERS

- Elevations, stations and coordinates are shown in meters.
- Other dimensions are shown in millimeters

NOTES:

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FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

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

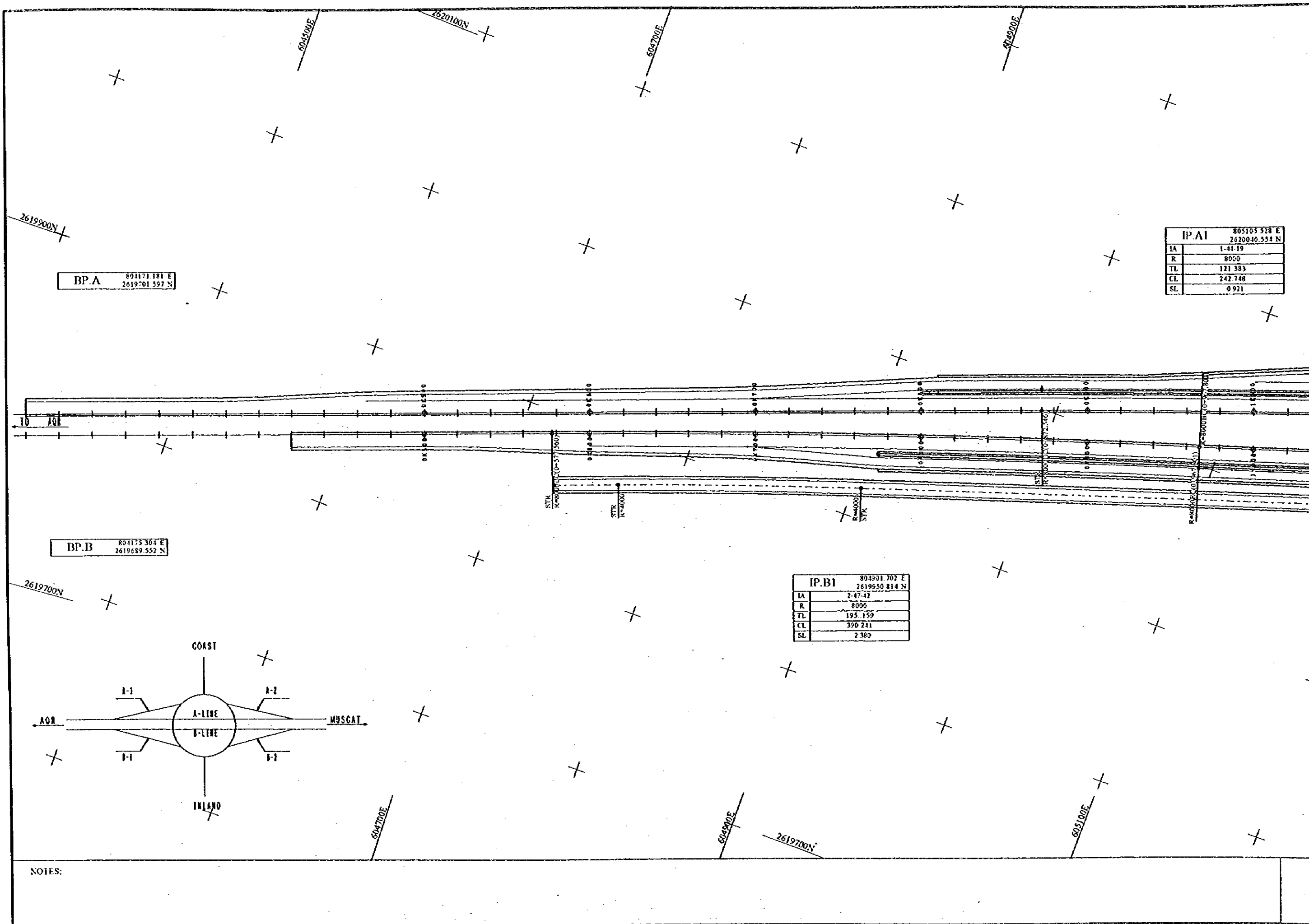
TITLE GENERAL NOTES

DATE

DWG NO.

G - 2

ROAD

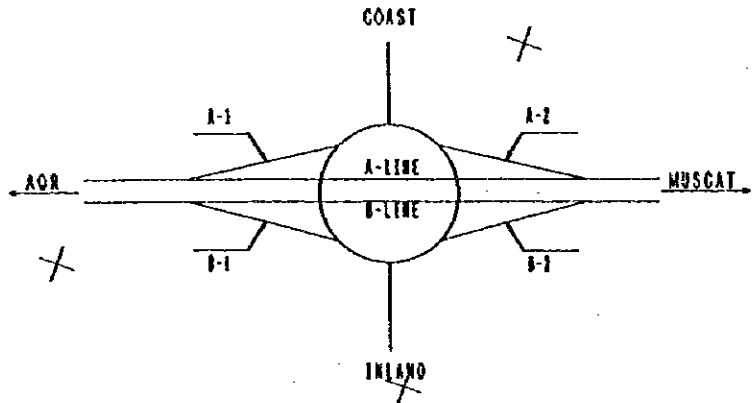


BP.A 894171.181 E
2619701.597 N

IP.A1	805105.528 E
	2620040.554 N
IA	1-44-19
R	8000
TL	121.383
CL	242.748
SL	0.921

BP.B 894175.304 E
2619659.552 N

IP.B1	804501.702 E
	2619950.814 N
IA	2-47-42
R	8000
TL	195.159
CL	390.241
SL	2.380



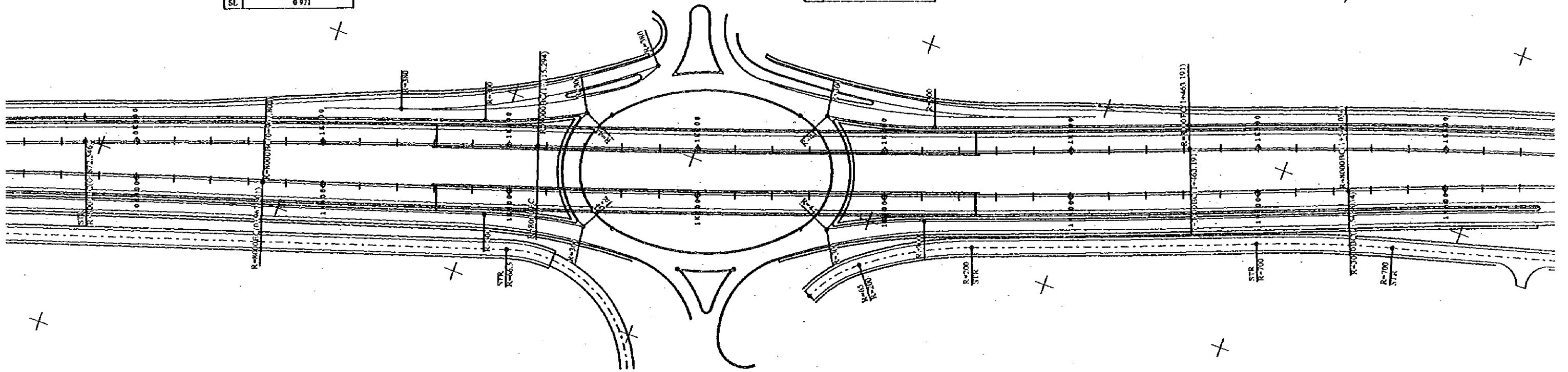
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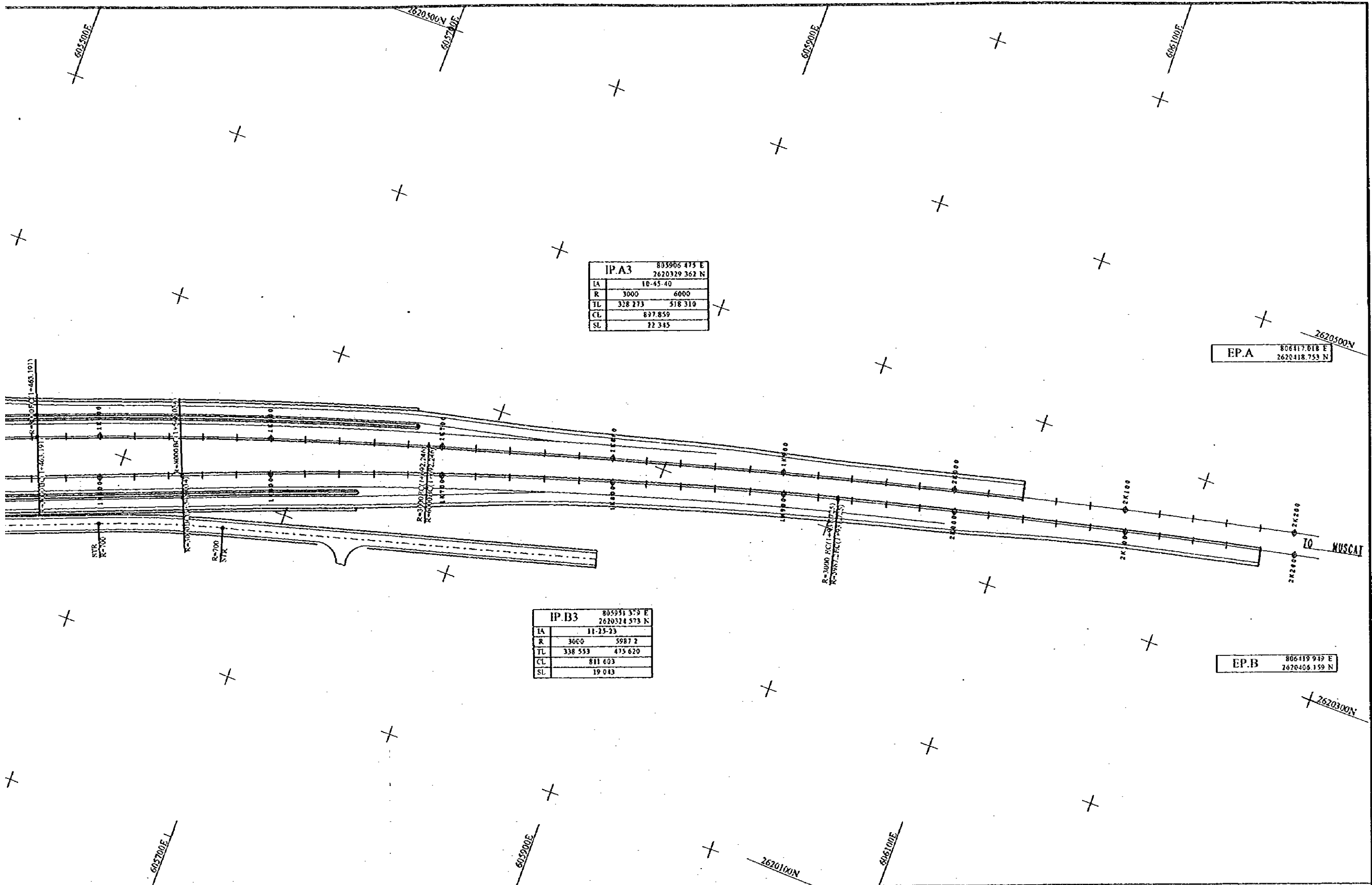
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R	1-44-19
FL	8000
CL	121.383
SL	242 749
	0 971

IP.A2	
LA	805386 110 E 2620132 809 N
R	2-29-33
FL	-8000
CL	173 976
SL	347 897
	1 892

IP.B2	
LA	805365 335 E 2620096 160 N
R	4-09-20
FL	-8000
CL	290 243
SL	582 132
	5 263

PLAN S=1:2000





IP.A3		805906 475 E	2620329 362 N
IA	10-45-40		
R	3000	6000	
TL	328 273	518 310	
CL	897.859		
SL	22 345		

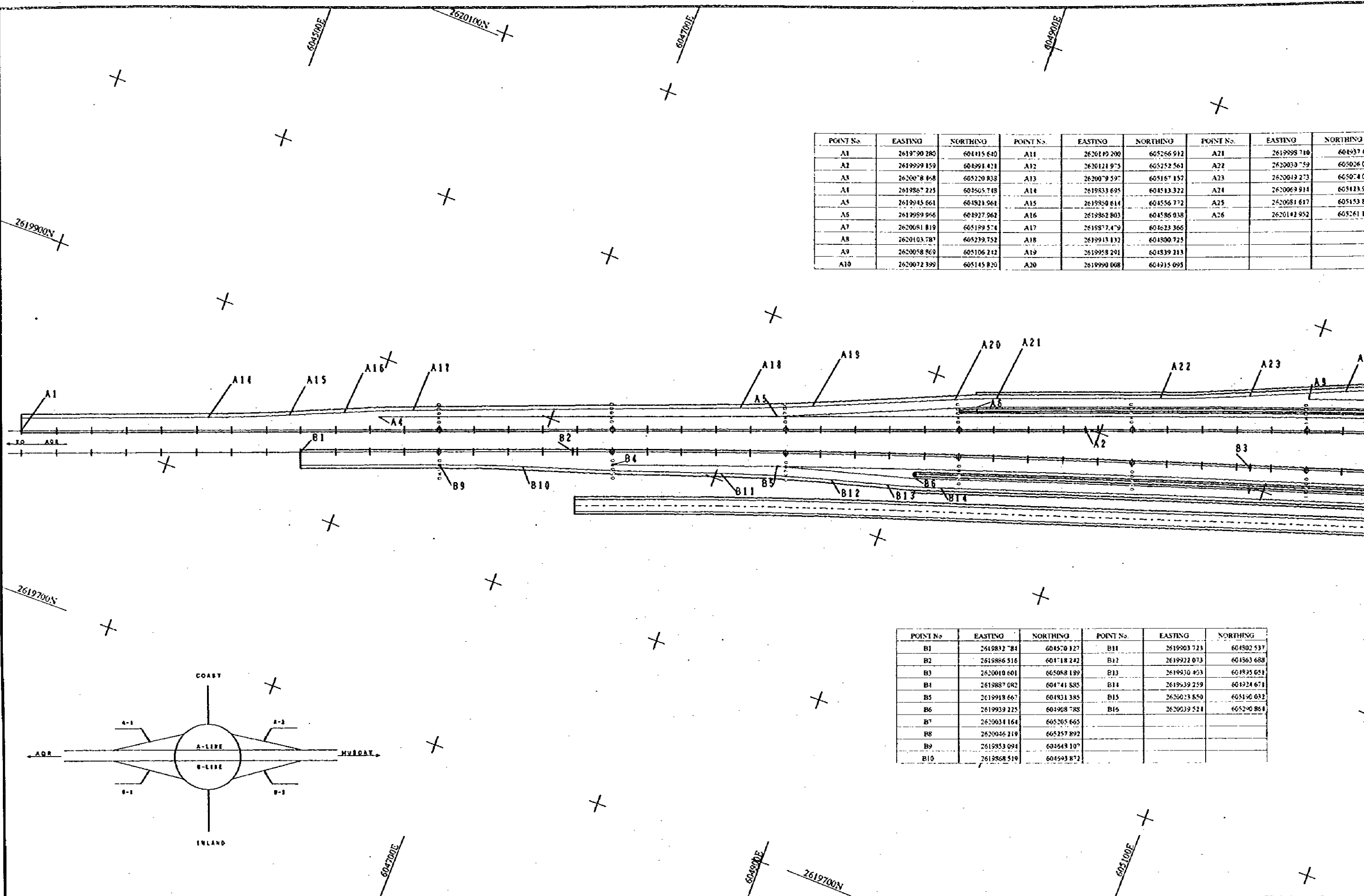
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IP.B3		805991 379 E	2620324 573 N
IA	11-25-23		
R	3000	5987 2	
TL	338 553	475 620	
CL	811 603		
SL	19 043		

EP.B		806419 949 E	2620406 159 N
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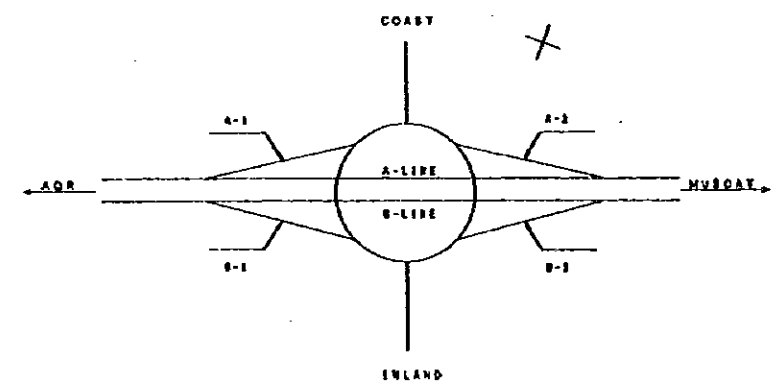
JAPAN INTERNATIONAL COOPERATION AGENCY
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JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE : RA/2 A'NASEEM GARDEN ALIGNMENT LAYOUT
DATE : _____ DWG.NO. R-1



POINT No.	EASTING	NORTHING	POINT No.	EASTING	NORTHING	POINT No.	EASTING	NORTHING
A1	2619790 280	604115 640	A11	2620199 200	605266 912	A21	2619998 710	604937 1
A2	2619959 159	604991 421	A12	2620121 975	605252 561	A22	2620039 759	605026 0
A3	2620078 468	605220 838	A13	2620079 597	605167 157	A23	2620049 273	605074 0
A4	2619867 225	604505 748	A14	2619833 695	604513 322	A24	2620069 914	605123 5
A5	2619945 661	604821 961	A15	2619850 614	604556 772	A25	2620081 617	605153 1
A6	2619959 966	604927 962	A16	2619862 803	604586 038	A26	2620142 952	605261 1
A7	2620081 819	605189 574	A17	2619877 479	604623 366			
A8	2620103 787	605239 752	A18	2619913 132	604800 725			
A9	2620058 869	605106 212	A19	2619958 291	604839 213			
A10	2620072 399	605145 820	A20	2619990 608	604915 095			

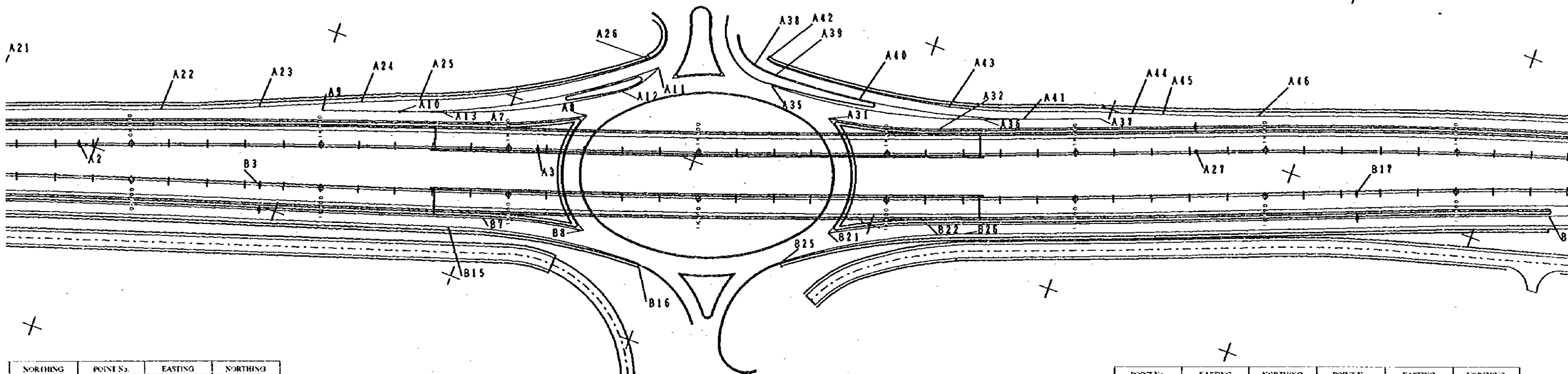
POINT No.	EASTING	NORTHING	POINT No.	EASTING	NORTHING
B1	2619832 784	604570 127	B11	2619903 723	604802 537
B2	2619886 516	604718 242	B12	2619922 073	604863 688
B3	2620010 601	605088 189	B13	2619930 403	604835 651
B4	2619887 082	604741 585	B14	2619939 259	604824 671
B5	2619918 667	604831 385	B15	2620023 850	605190 032
B6	2619939 225	604908 788	B16	2620039 521	605290 864
B7	2620034 164	605205 665			
B8	2620046 219	605257 892			
B9	2619853 094	604543 107			
B10	2619868 519	604593 872			



NOTES:
 (1) FINAL CONTROL COORDINATES, WGS 84 DATUM, ZONE 48 UTM, CM 57.

POINT No.	EASTING	NORTHING	POINT No.	EASTING	NORTHING
A11	2620180 200	605266 912	A21	2619998 710	604937 401
A12	2620121 975	605152 561	A22	2620030 759	605026 091
A13	2620079 597	605167 137	A23	2620049 273	605074 063
A14	2619833 665	604513 322	A24	2620069 914	605121 966
A15	2619850 614	604556 772	A25	2620081 617	605153 860
A16	2619882 803	604588 038	A26	2620142 957	605261 134
A17	2619877 479	604623 356			
A18	2619943 132	604800 725			
A19	2619958 291	604839 213			
A20	2619990 068	604915 095			

POINT No.	EASTING	NORTHING	POINT No.	EASTING	NORTHING	POINT No.	EASTING	NORTHING
A27	2620194 284	605548 863	A37	2620193 555	605495 545	A47		
A28	2620266 967	605766 021	A38	2620158 893	605313 606	A48		
A29	2620354 950	606102 411	A39	2620157 509	605326 223	A49		
A30	2620319 097	605925 750	A40	2620150 422	605326 647	A50		
A31	2620145 339	605350 702	A41	2620179 741	605457 996	A51		
A32	2620159 505	605415 723	A42	2620163 905	605319 211	A52		
A33	2620277 389	605755 385	A43	2620172 420	605417 932	A53		
A34	2620294 207	605833 947	A44	2620201 743	605510 183			
A35	2620151 352	605325 966	A45	2620206 648	605526 047			
A36	2620172 245	605437 347	A46	2620222 673	605573 595			

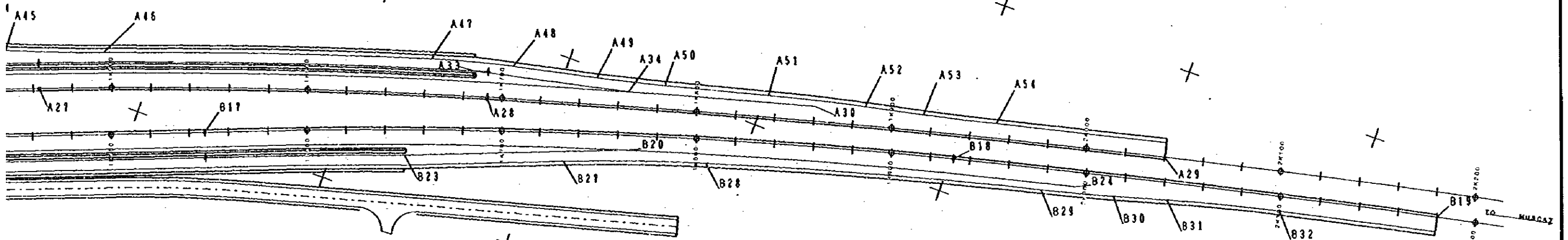


NORTHING	POINT No.	EASTING	NORTHING
604570 127	B11	2619903 723	604802 537
604718 242	B12	2619922 073	604863 688
605088 183	B13	2619939 403	604995 051
604741 885	B14	2619939 259	604924 671
604831 355	B15	2620033 850	605190 032
604908 788	B16	2620039 524	605290 864
605265 665			
605257 892			
604648 107			
604693 872			

POINT No.	EASTING	NORTHING	POINT No.	EASTING	NORTHING
B17	2620204 592	605635 952	B27	2620249 428	605814 121
B18	2620317 760	606001 361	B28	2620272 991	605882 833
B19	2620372 694	605743 453	B29	2620318 021	606049 628
B20	2620265 864	605812 982	B30	2620327 388	606084 537
B21	2620088 165	605380 509	B31	2620331 788	606110 899
B22	2620110 064	605428 142	B32	2620348 848	606167 197
B23	2620224 744	605735 872			
B24	2620325 416	606064 577			
B25	2620065 561	605361 929			
B26	2620111 603	605447 232			

PLAN S=1:2000

EASTING	NORTHING	POINT No.	EASTING	NORTHING	POINT No.	EASTING	NORTHING
2620194.284	605548.863	A37	2620193.555	605425.535	A47	2620275.849	60532.867
2620266.967	605566.021	A38	2620158.893	605313.606	A48	2620285.391	60573.761
2620354.950	606102.411	A39	2620157.509	605326.223	A49	2620295.488	605816.369
2620319.097	605925.750	A40	2620160.422	605372.647	A50	2620303.338	605850.286
2620145.339	605360.702	A41	2620179.744	605457.585	A51	2620316.440	605917.747
2620159.505	605416.723	A42	2620163.965	605312.211	A52	2620327.711	605950.131
2620277.389	605755.385	A43	2620172.420	605417.932	A53	2620333.791	605979.518
2620294.207	605833.947	A44	2620201.743	605510.189			
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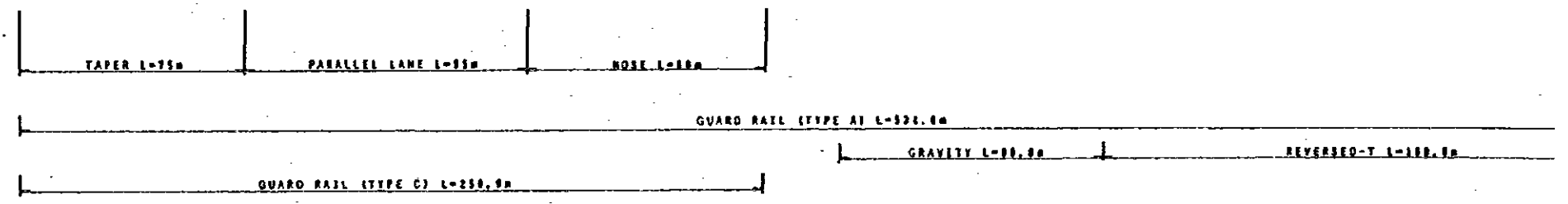
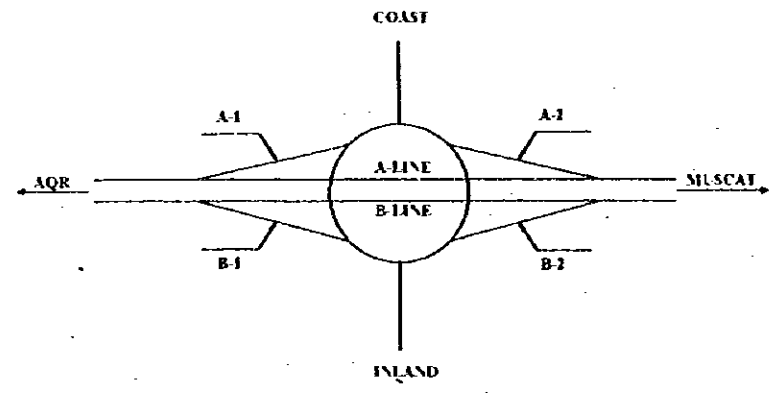
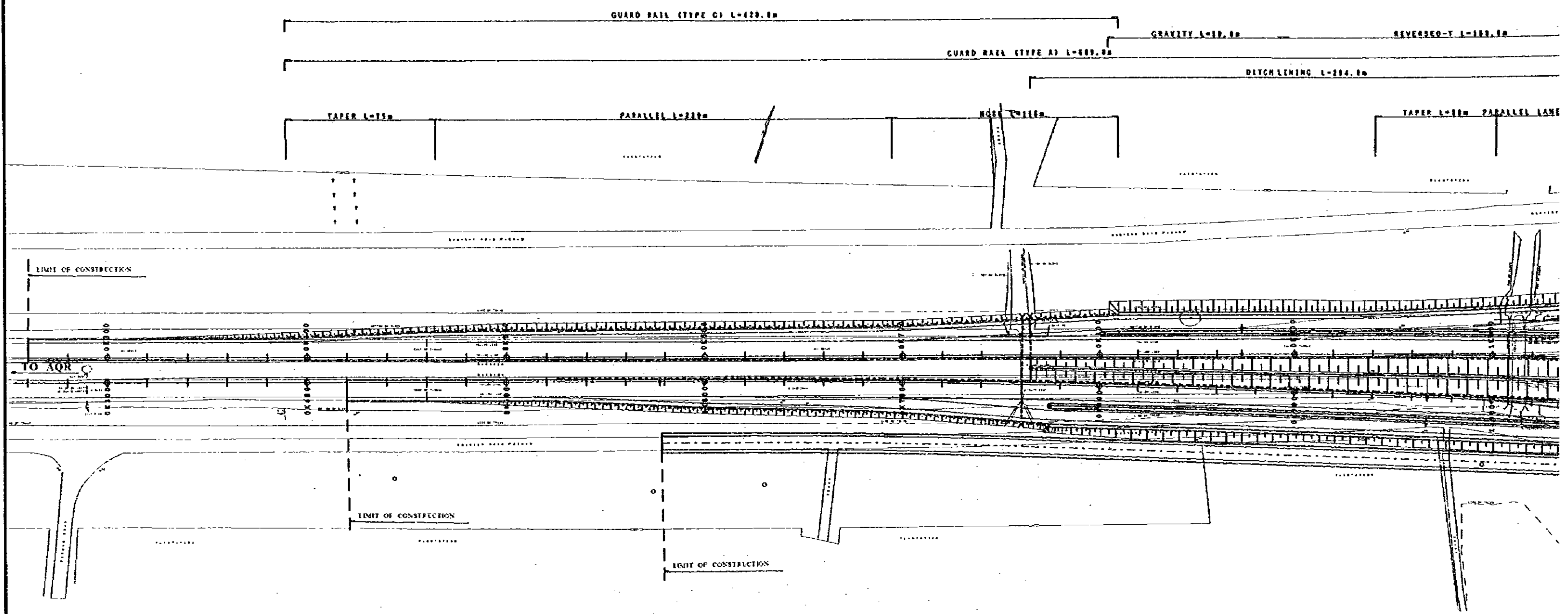


EASTING	NORTHING	POINT No.	EASTING	NORTHING
2620201.592	605635.952	B27	2620249.428	605811.121
2620317.760	606001.361	B28	2620272.981	605882.833
2620372.693	606243.463	B29	2620318.021	606048.628
2620265.864	605812.983	B30	2620327.388	606084.537
2620088.165	605380.569	B31	2620334.788	606110.820
2620110.064	605428.142	B32	2620344.848	606167.197
2620224.741	605735.872			
2620325.416	606064.577			
2620065.501	605361.929			
2620111.603	605447.232			

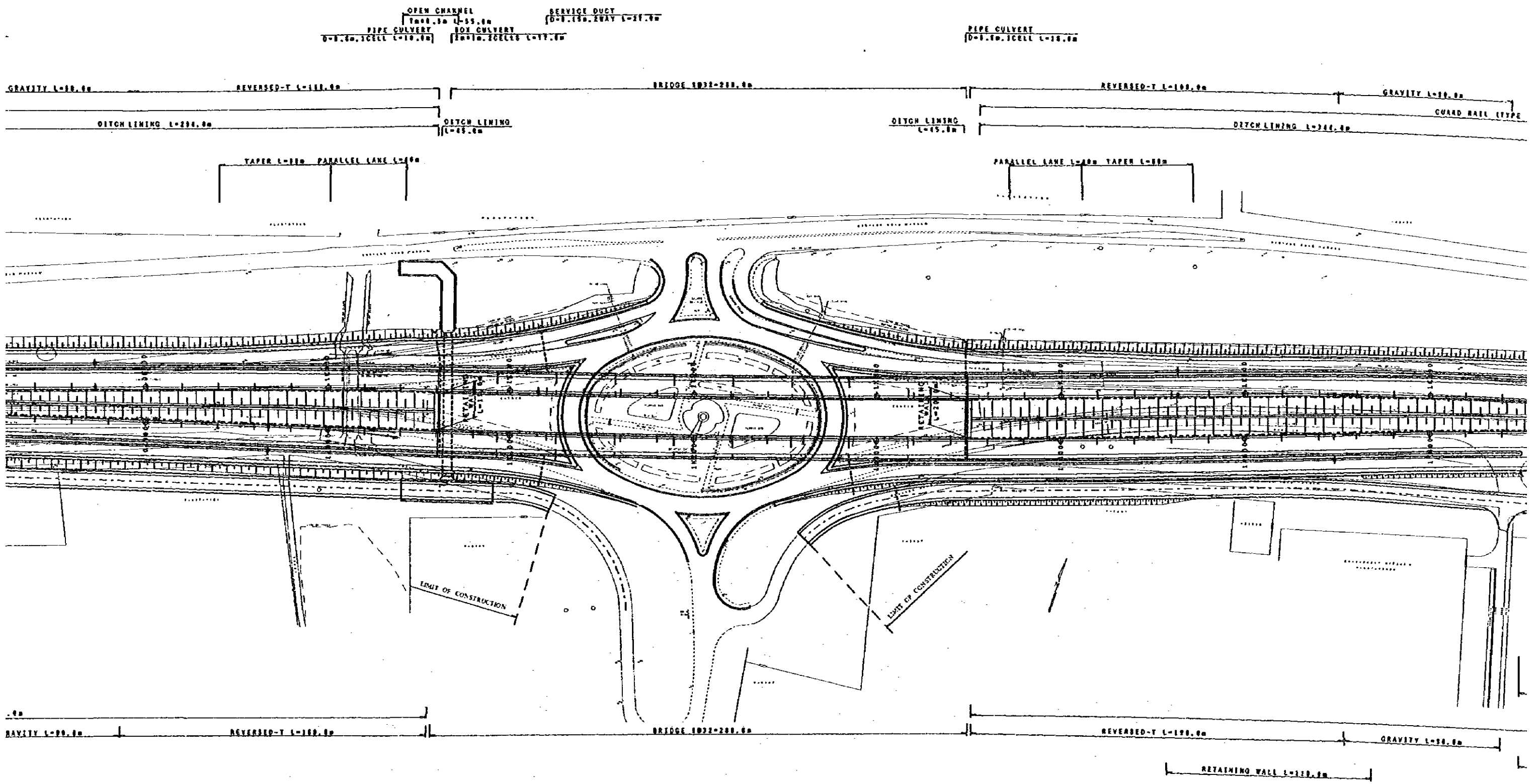
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FUKUYAMA CONSULTANTS INTERNATIONAL		CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS	
		PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY	
		TITLE: RA/1 A'NASEEM GARDEN SETTING OUT DETAILS	
		DATE:	DWGNO. R-2

PIPE CULVERT PIPE CULVERT
 0-0.75m. ICELL L-15.0m | 0-0.75m. ICELL L-17.1m

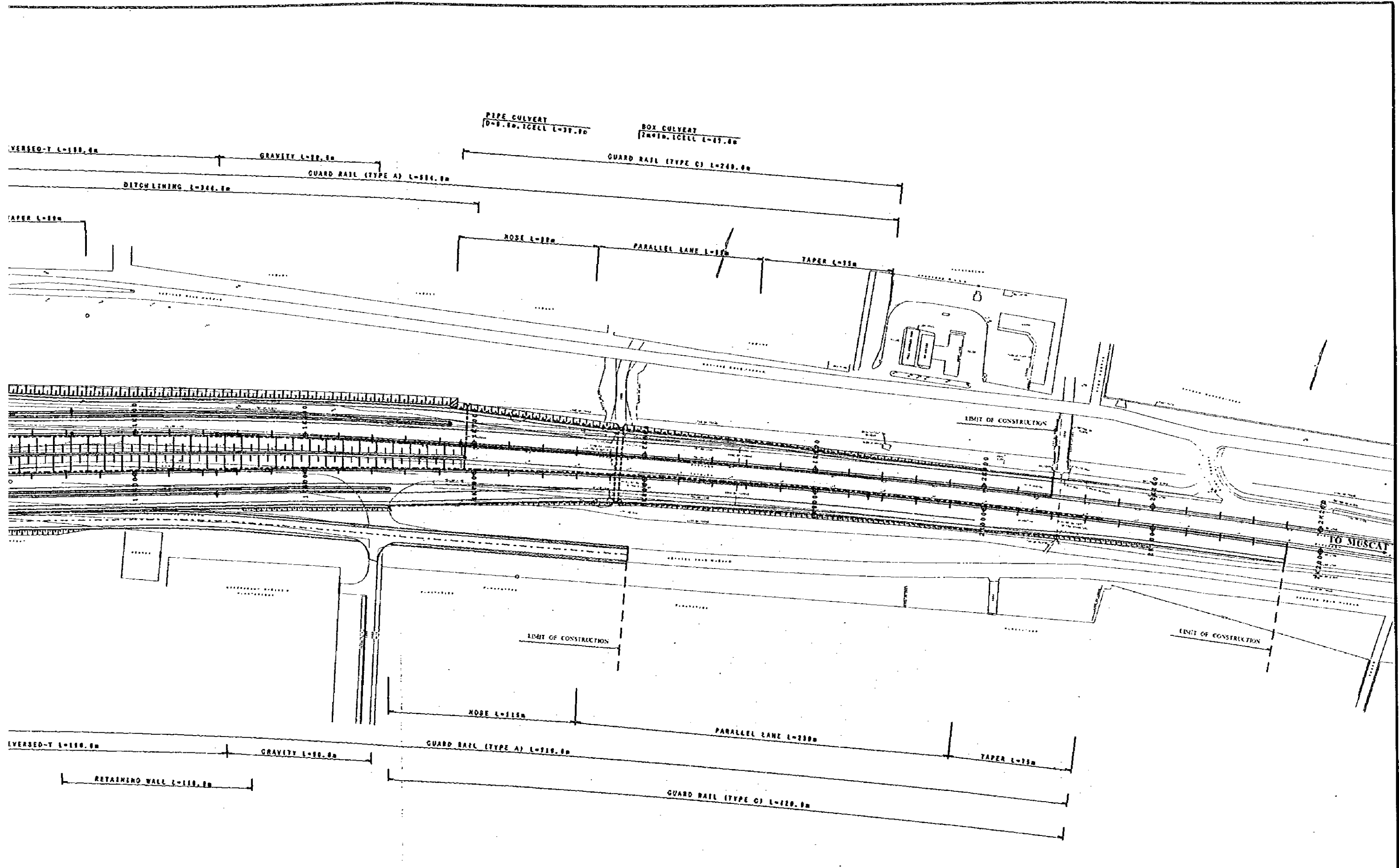
PEPI
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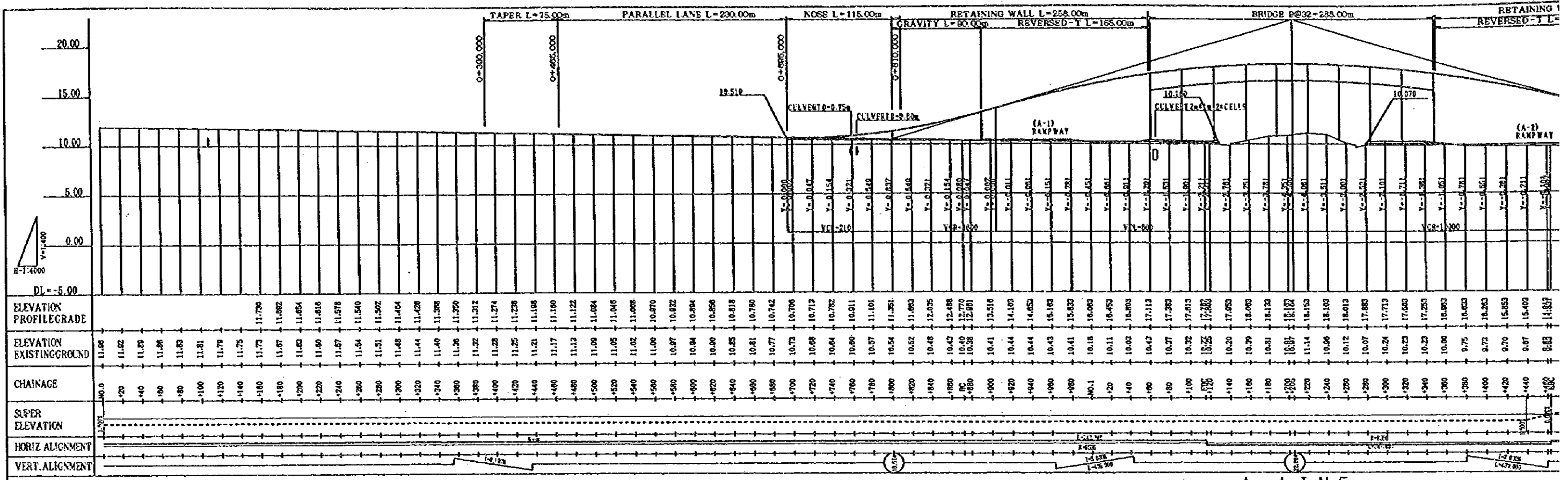
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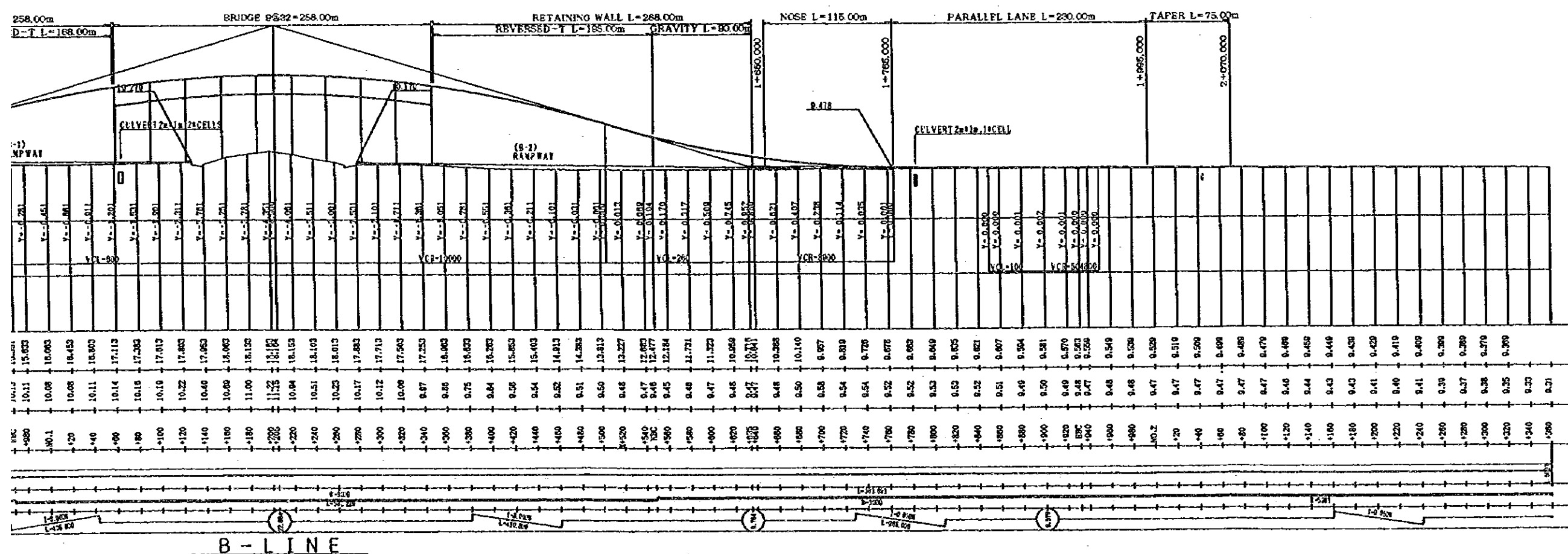
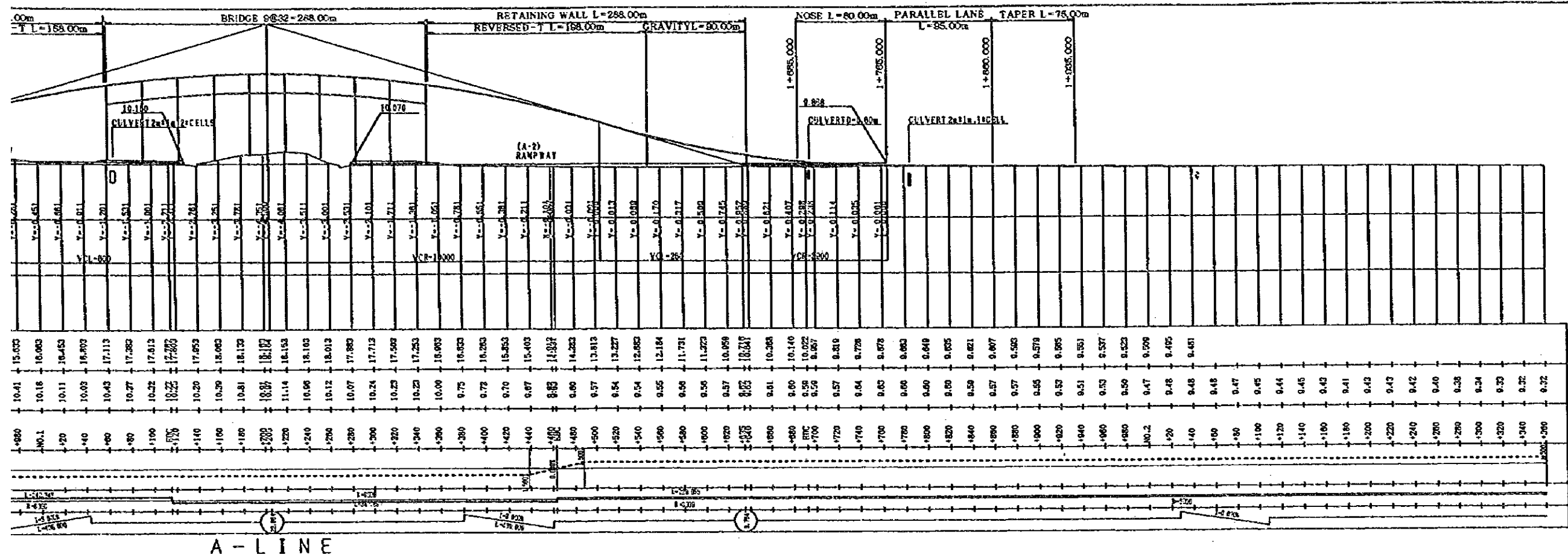


PLAN S1:2000

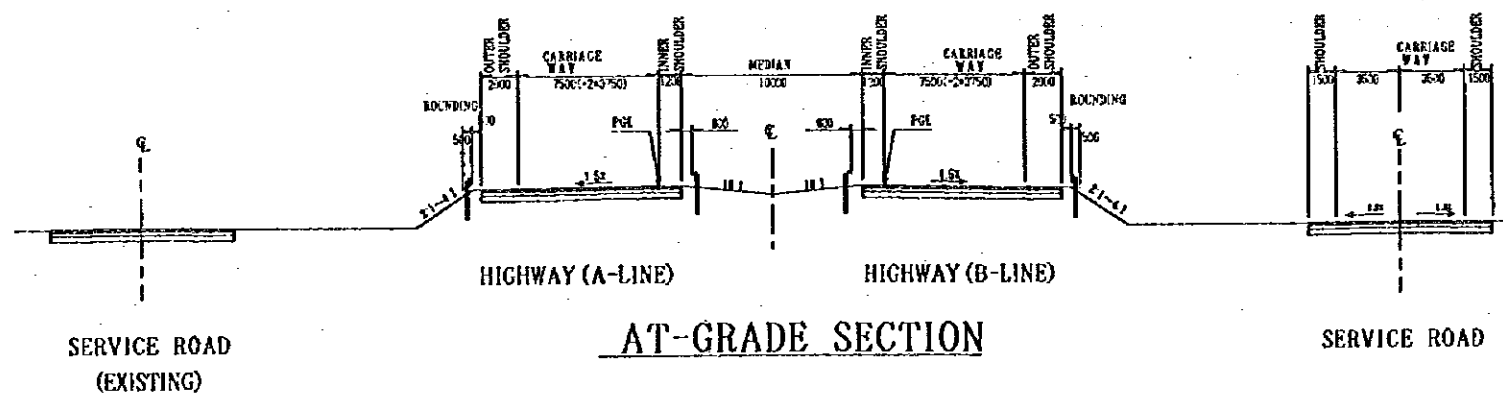
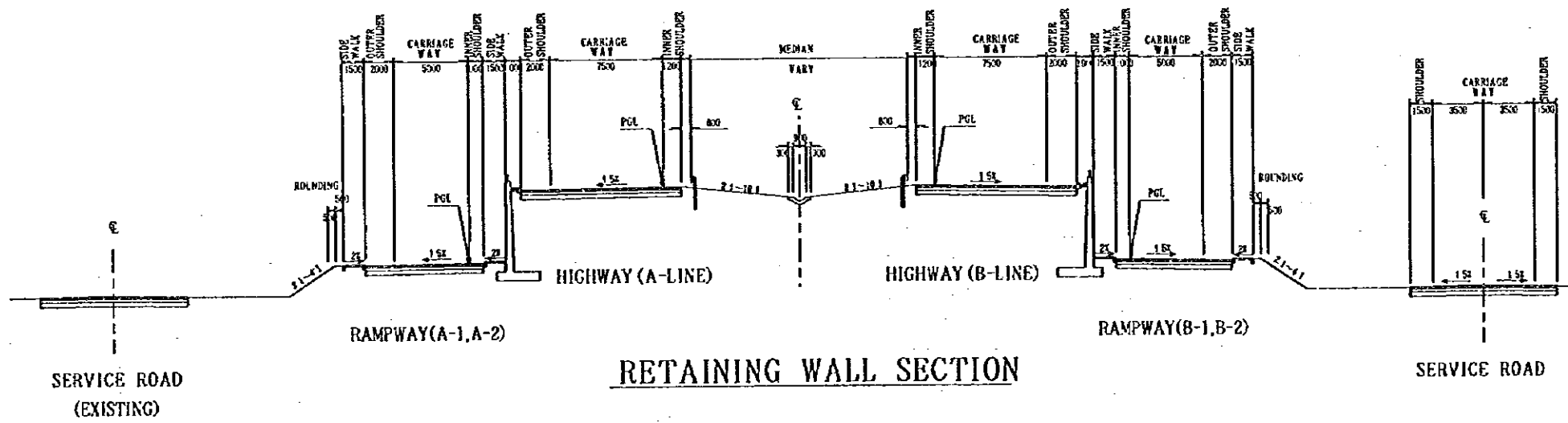
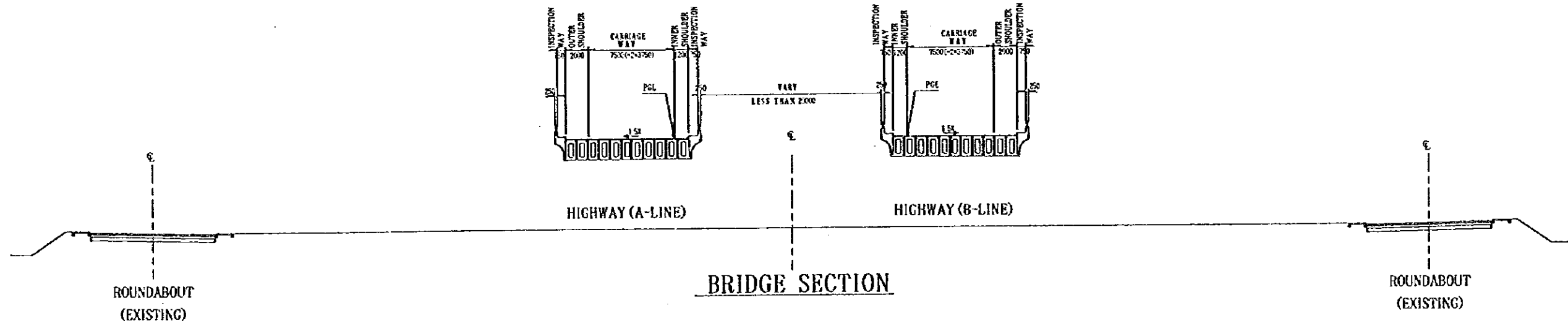


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FUKUYAMA CONSULTANTS INTERNATIONAL	CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS	
	PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY	
	TITLE	RAJ ANASEEM GARDEN PLAN
	DATE	DWGNO. R-3





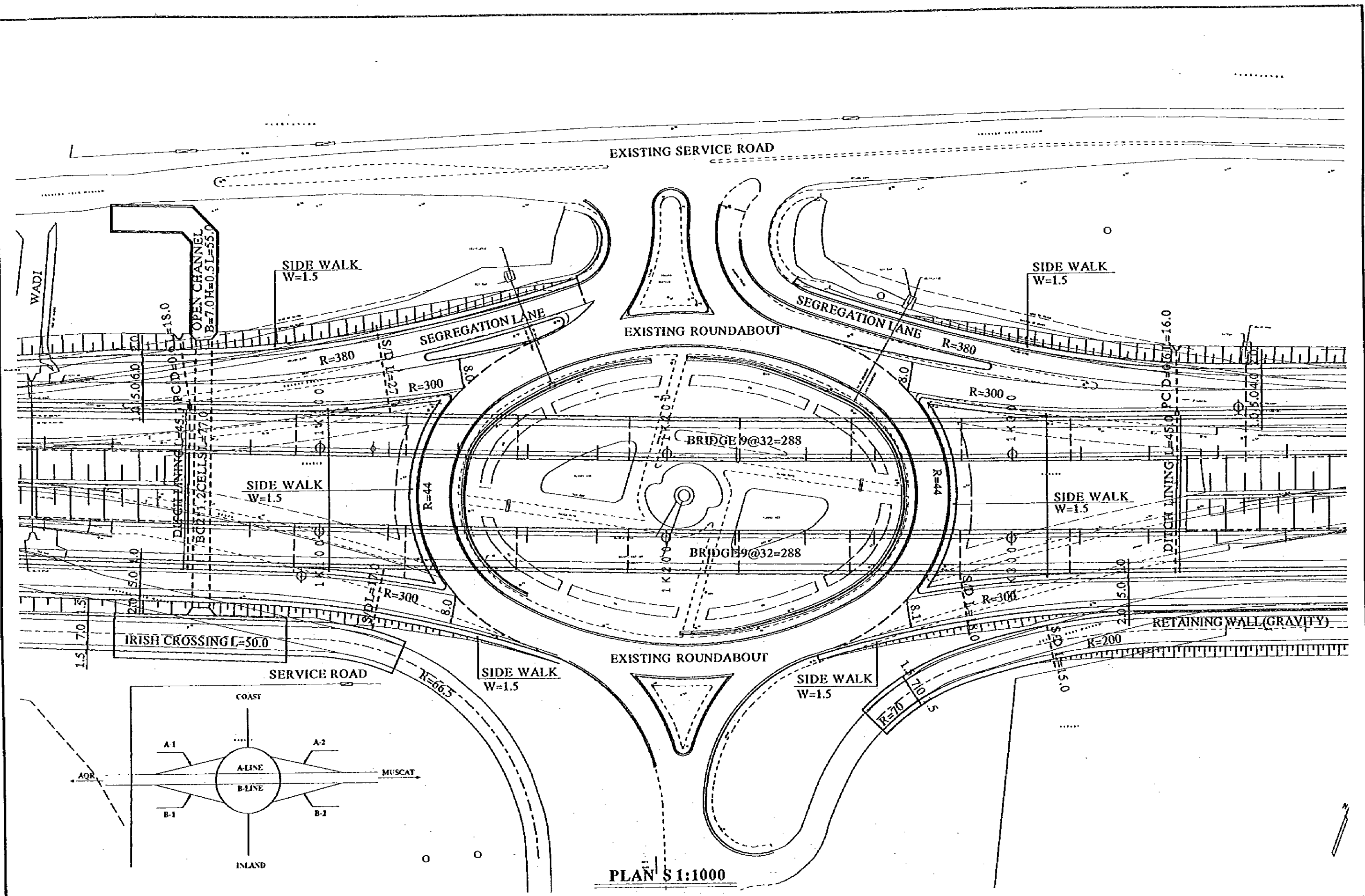
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FUKUYAMA CONSULTANTS INTERNATIONAL	CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
	PROJECT : D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
	TITLE : RA/1 A' NASEEM GARDEN PROFILE-HIGHWAY
	DATE : _____ DWGNO. : _____ R-4



NOTES:
 (1) SCALE 1:400
 (2) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.
 (3) THE TRANSITIONAL STRETCH FOR WIDTH AND CROSS FALL ADJUSTMENT SHOULD BE PROVIDED AT THE BEGINING AND THE END.

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 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: RA/2 NASEEM GARDEN TYPICAL CROSS SECTION
 DATE: _____ DWG NO.: R-5

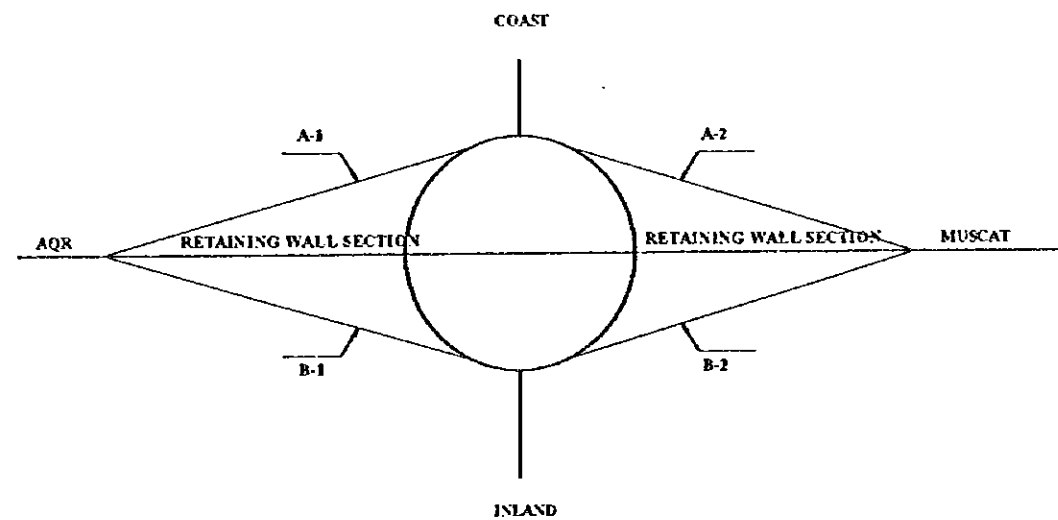
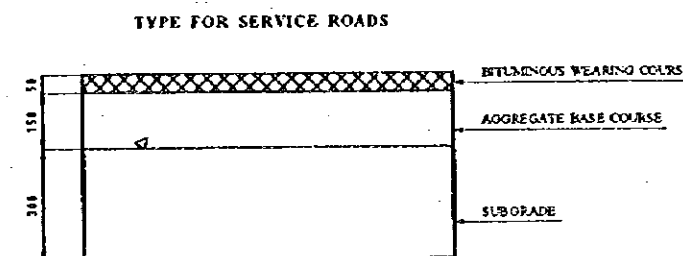
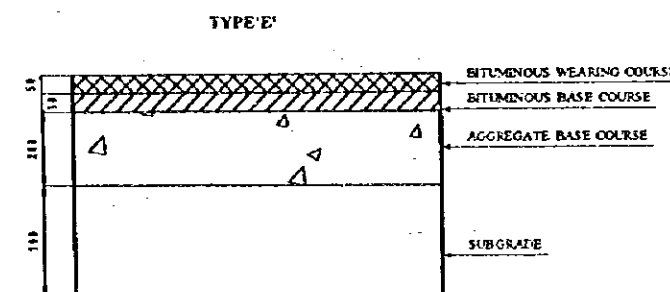
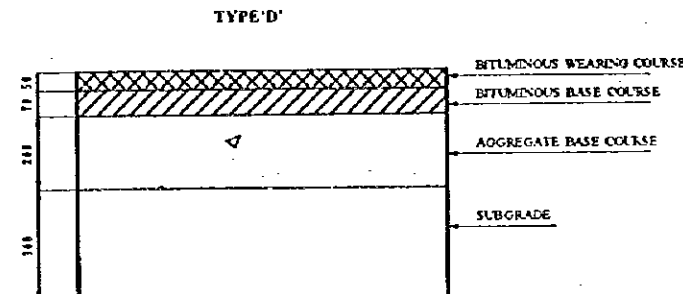
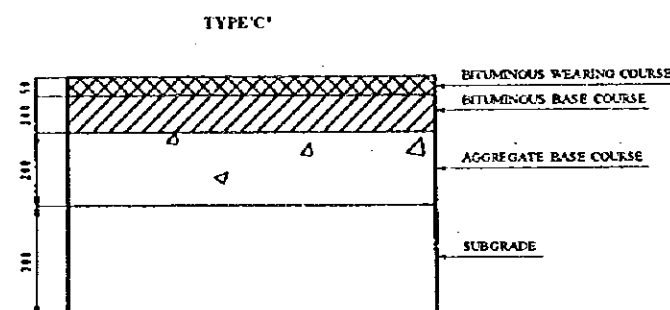
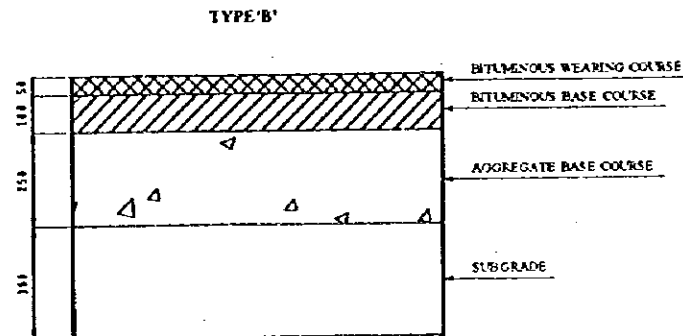
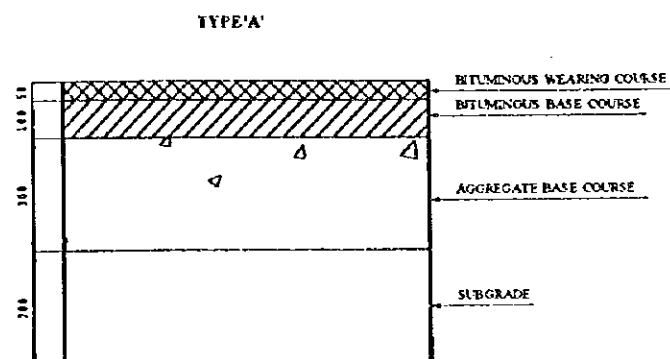


PLAN S 1:1000

- NOTES:
- (1) ALL DIMENSIONS ARE IN METER.
 - (2) S/D INDICATES SERVICE DUCT (D=0.15m, 2WAY)
 - (3) PC AND BC REPRESENTS PIPE CULVERT AND BOX CULVERT RESPECTIVELY.

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CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE: RA/2 A NASEEM GARDEN DETAILED PLAN
DATE: _____ DWG NO.: R-6



CLASSIFICATION OF PAVEMENT STRUCTURE

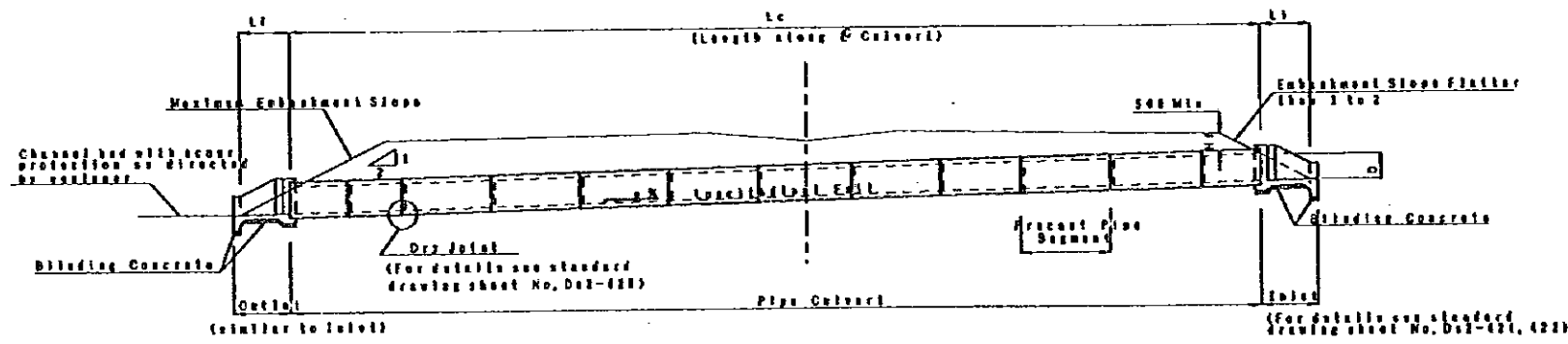
HIGHWAY				ROUNDABOUT	RAMPWAY				CROSSROAD	
AT-GRADE		RETAINING WALL			A-1	B-1	A-1	B-1	INLAND	COAST
AQR	MUSCAT									
C	C	C	--	E	E	E	E	--	--	

NOTES:

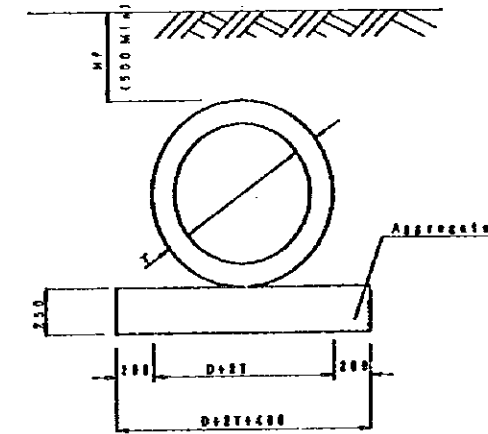
- (1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.
- (2) PRIME COATING PRECEDES BITUMINOUS WEARING COURSE AND TACK COATING PRECEDES BITUMINOUS BASE COURSE.

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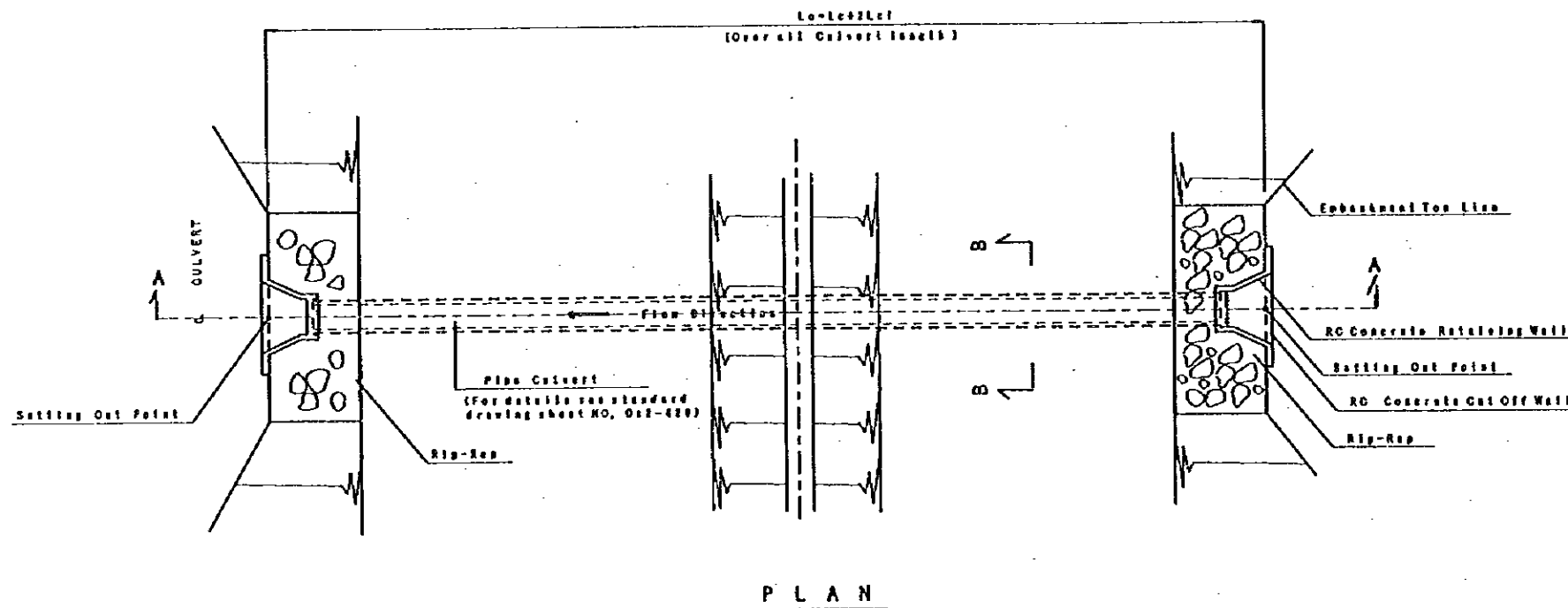
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE: RA/2 A'NASEEM GARDEN PAVEMENT DETAILS
DATE: DWG NO.: R-7



SECTION A - A



SECTION B - B



PLAN

LIST OF PIPE CULVERT

STA	A or B LINE	DIMENSION (m)	PIPE CLASS	LONGITUDINAL FALL %	LENGTH (m)	REMARK
OK760	A,B	φ 0.75 x 1 CELL	M	1.20%	65.0	New Construction

NOTES:

- (1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.
- (2) THE LONGITUDINAL FALL OF OPEN CHANNEL IS 35% AND IT'S WIDTH DEPENDS ON THE WIDTH OF THE ADJACENT BOX CULVERT.
- (3) THE DEPTH OF DITCH LINING BECOMES 400mm AT CATCH PIT.
- (4) THE UPVC OF 100mm IN DIAMETER IS INSTALLED AT AN INTERVAL OF ABOUT 20m.
- (5) THE DROPPED SIDEWALK IS INSTALLED ALONG RAMPWAYS, A LINE HIGHWAY AND THE BEGINNING SECTION OF B LINE AT AN INTERVAL OF 50m.

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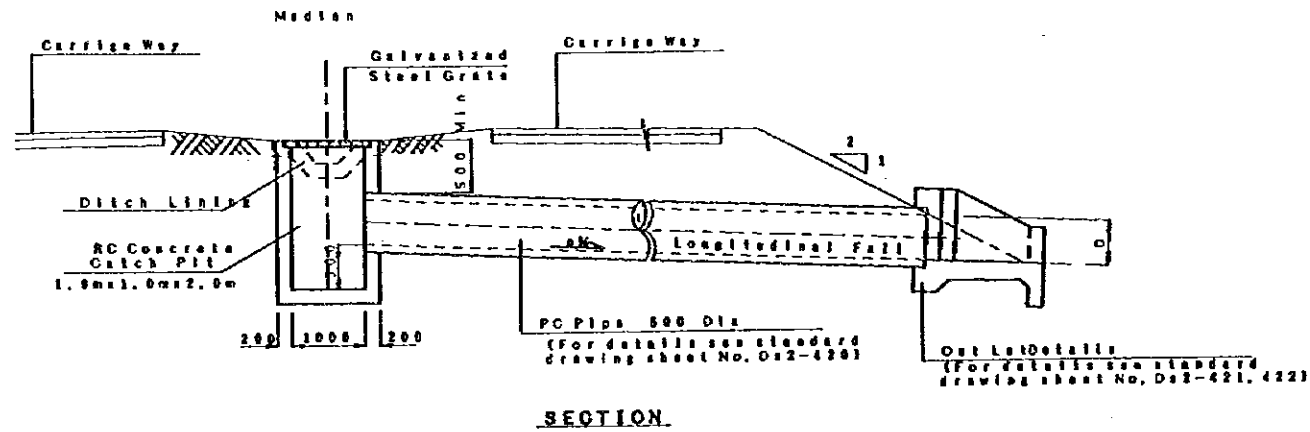
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

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

TITLE: RA/2 A' NASEEM GARDEN DRAINAGE STRUCTURE (1/3)

DATE:

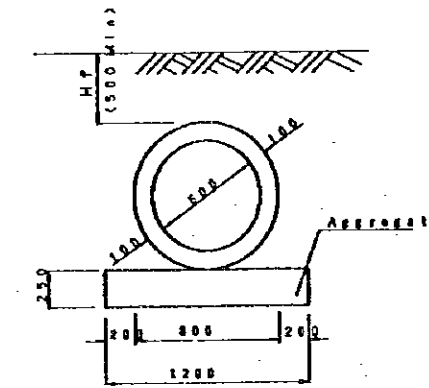
DWG NO.: R-8



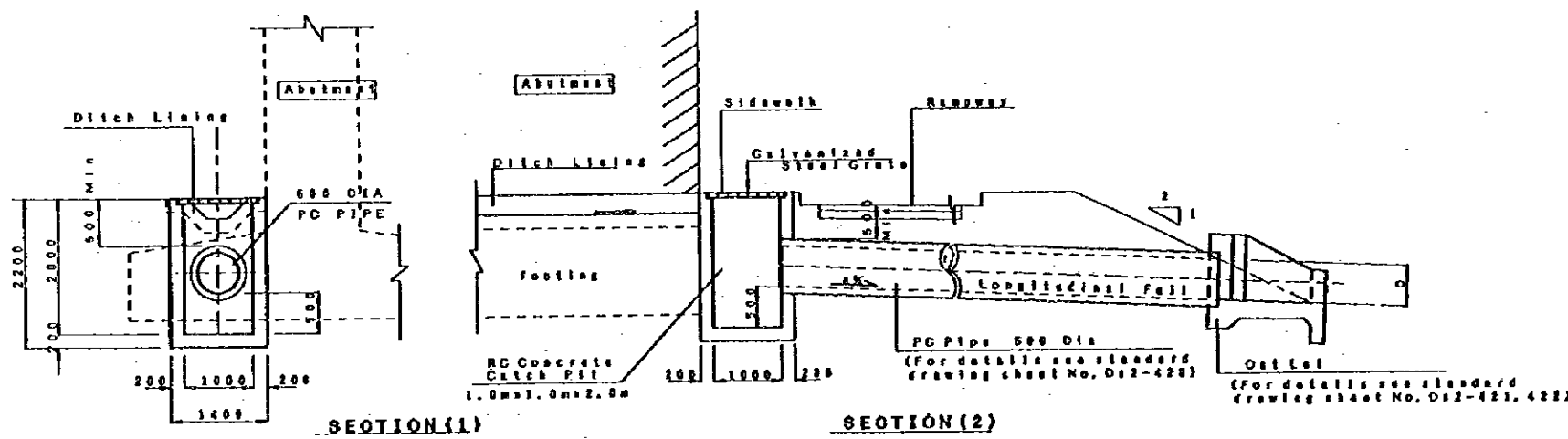
DRAIN SYSTEM OF MEDIAN

LIST OF DRAIN SYSTEM AT MEDIAN

STA	LINE	DIMENSION	PIPE CLASS	LONGITUDINAL FALL (%)	LENGTH (m)	REMARK
OK765	A	φ0.60x1CELL	M	0.3%	27.0	
IK695	A	φ0.60x1CELL	M	0.3%	39.0	



TYPICAL CROSS SECTION



DRAIN SYSTEM IN FRONT OF ABUTMENT

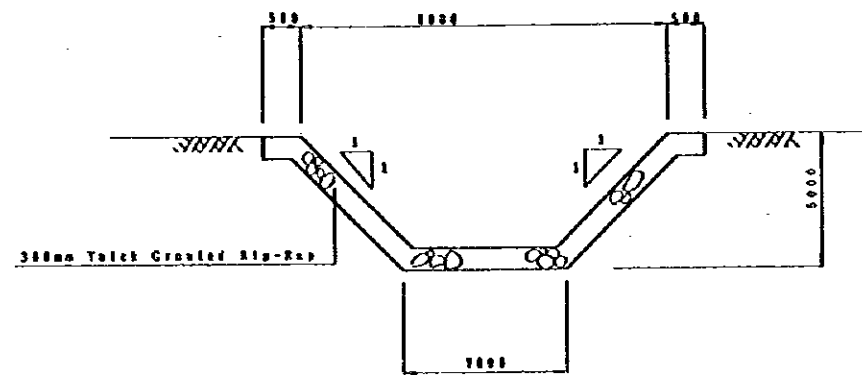
LIST OF DRAIN SYSTEM IN FRONT OF ABUTMENT

STA	LINE	DIMENSION (m)	PIPE CLASS	LONGITUDINAL FALL (%)	LENGTH (m)	REMARK
IK062(A1)	A	φ0.60x1CELL	M	0.3%	18.0	
IK348(A2)	A	φ0.60x1CELL	M	0.3%	16.0	

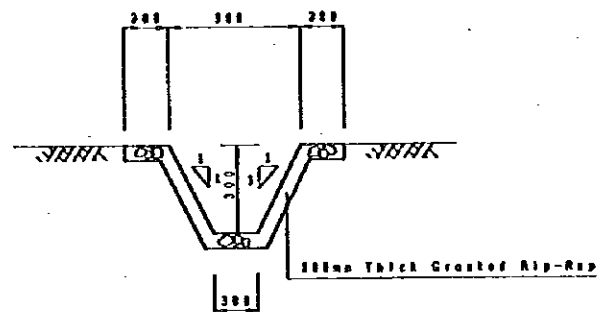
NOTES:
 (1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.
 (2) D: INTERNAL DIAMETER OF THE PIPE.
 (3) HT: HEIGHT OF FILL FROM ABOVE THE PIPE TO THE TOP OF PAVEMENT.

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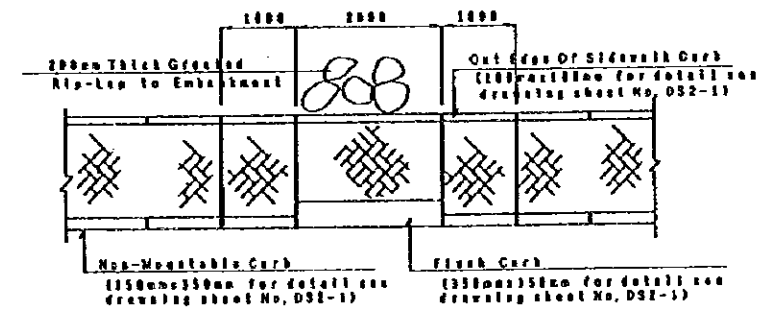
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
 PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
 TITLE: RA/2 A'NASEEM GARDEN DRAINAGE STRUCTURE (1/3)
 DATE: DWG NO.: R-9



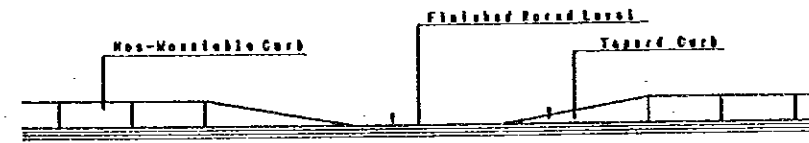
OPEN CHANNEL



DITCH LINING

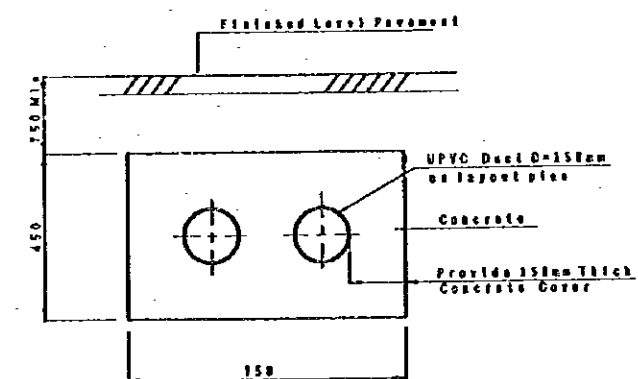


P L A N



Elevation

DROPPED SIDEWALK



SECTION
SERVICE DUCTS

NOTES:

- (1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.
- (2) THE LONGITUDINAL FALL OF OPEN CHANNEL IS 0.30%.
- (3) THE DROPPED SIDEWALK IS INSTALLED ALONG RAMPWAYS AT AN INTERVAL OF 50m.

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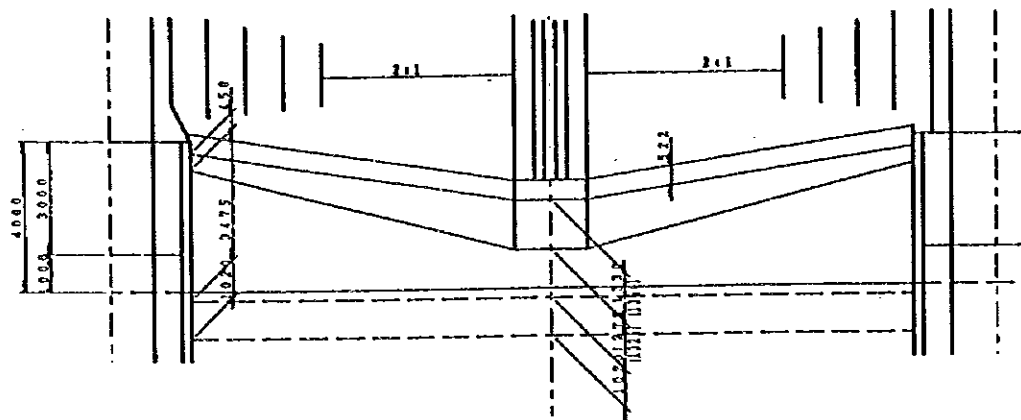
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

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

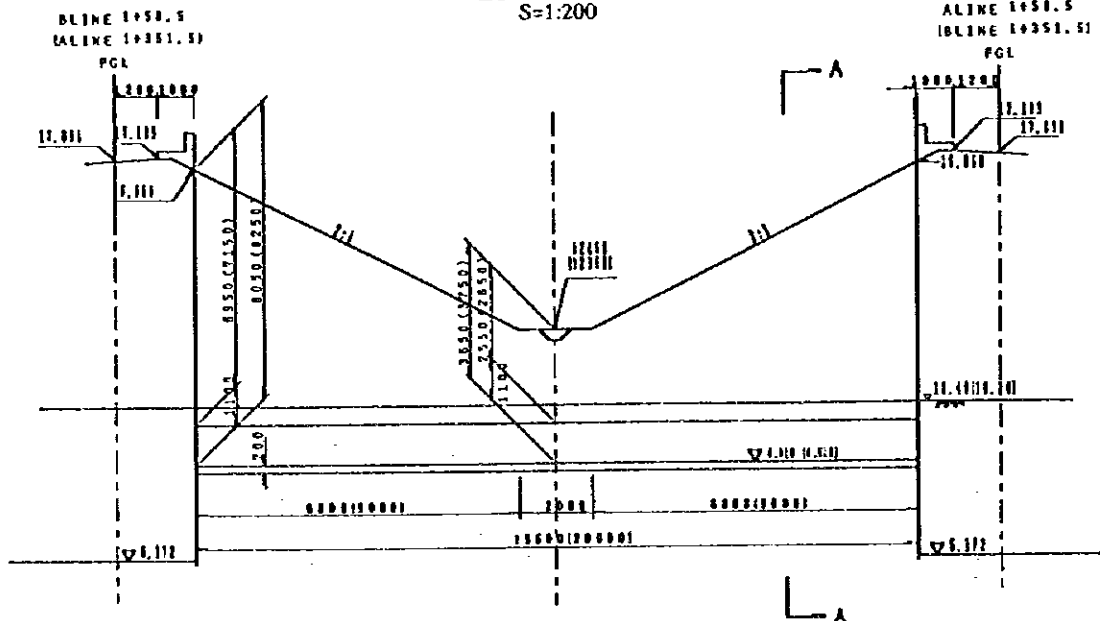
TITLE: RA/IA NASEEM GARDEN DRAINAGE STRUCTURE (J/3) AND SERVICE DUCTS

D A T E :

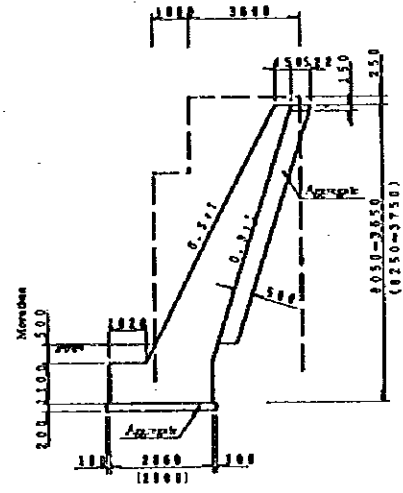
DWG NO. : R-10



PLAN
S=1:200

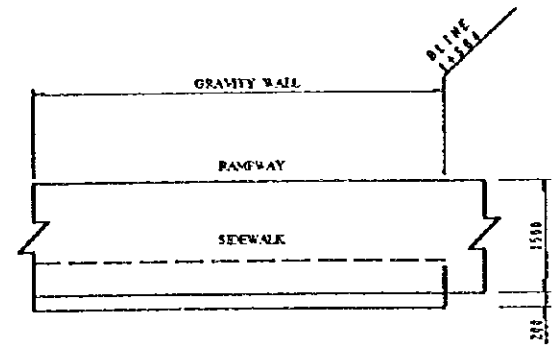


FRONT VIEW
S=1:200

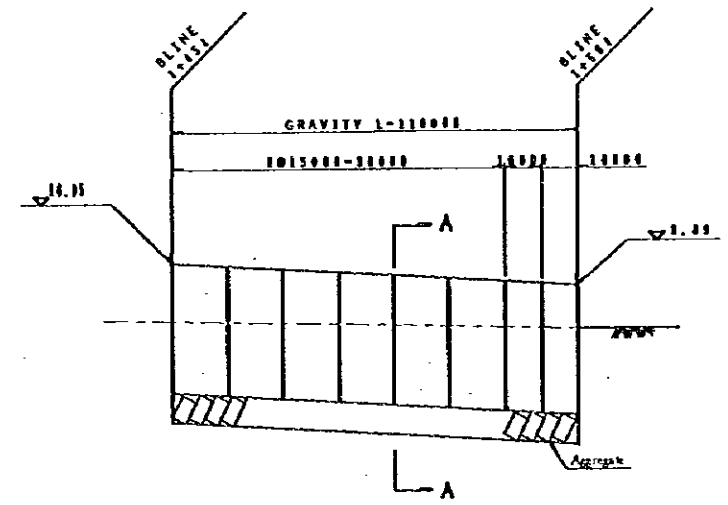


SECTION A-A
S=1:200

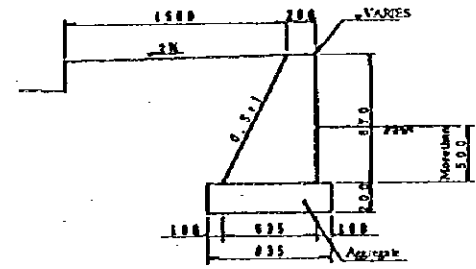
RETAINING WALL BETWEEN ABUTMENTS



PLAN
S=1:100



FRONTVIEW
H=1:2000
V=1:50



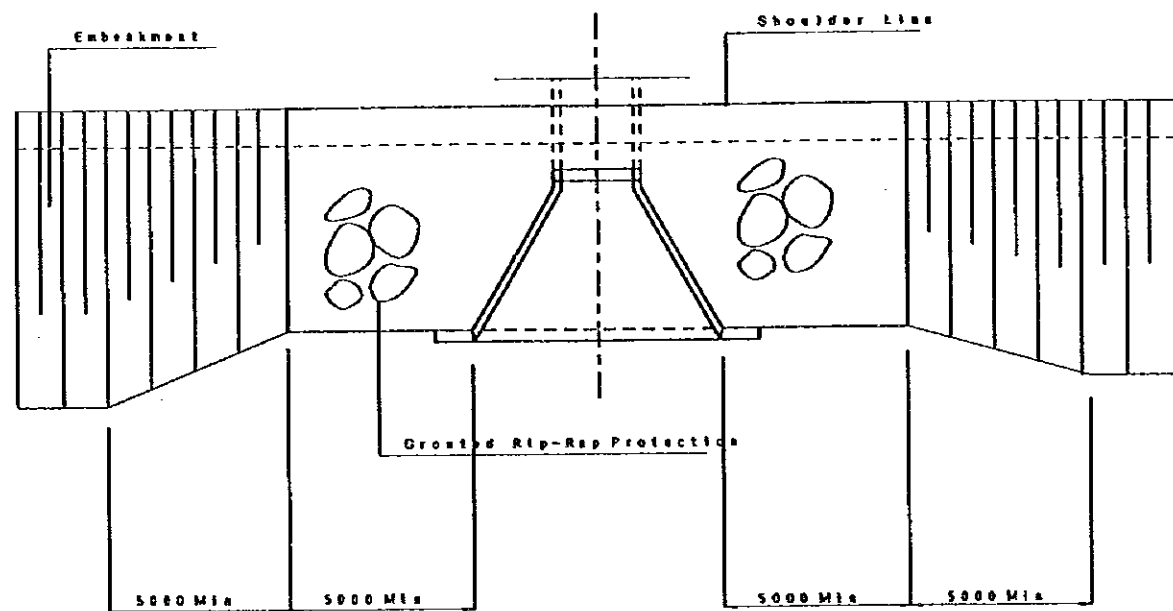
SECTION A-A
S=1:50

RETAINING WALL ALONG RAMPWAY (B-2)

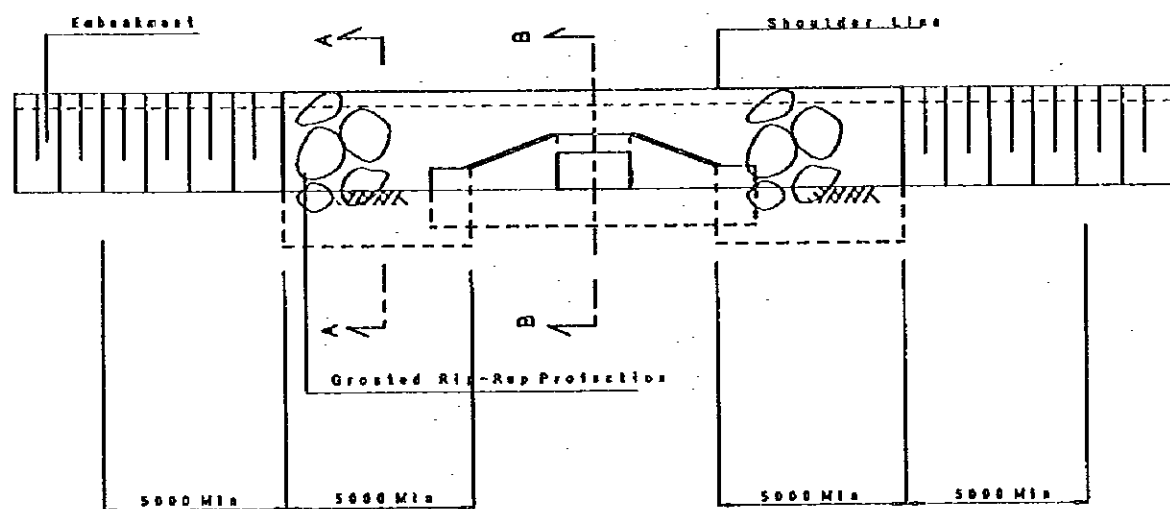
- NOTES:
- (1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.
 - (2) NUMBERS IN BRACKETS INDICATE DIMENSION OF RETAINING WALL AT MUSCAT SIDE.
 - (3) JOINTS SHOULD BE PROVIDED AT AN INTERVALS OF 15m.

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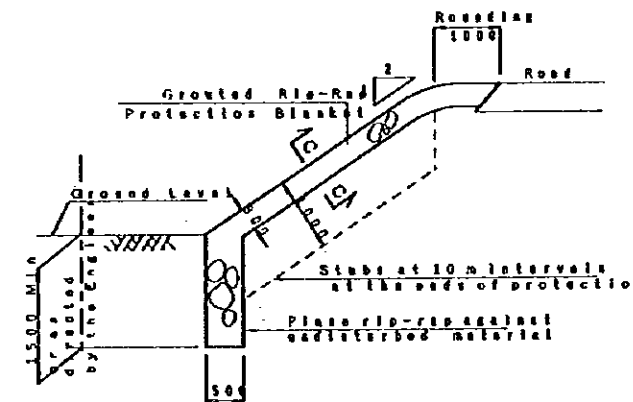
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE: RA/2 A'NASEEM GARDEN RETAINING WALL
DATE: _____ DWG NO.: R-11



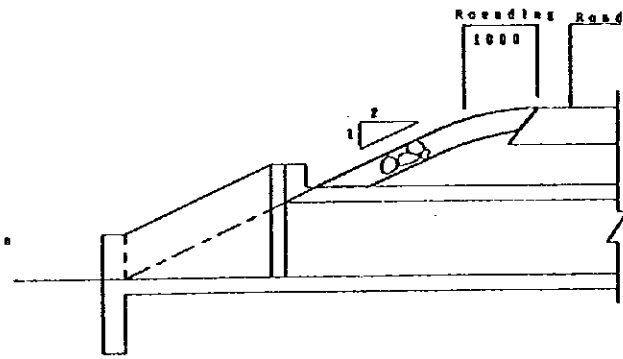
PLAN



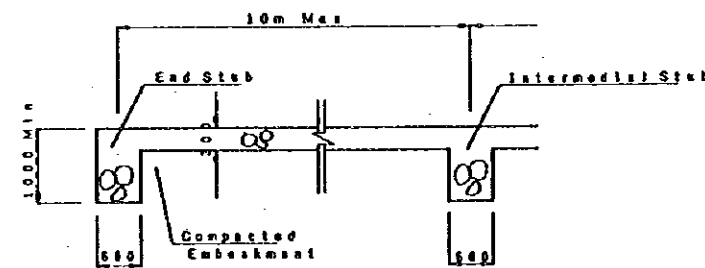
FRONT VIEW



SECTION A - A



SECTION B - B

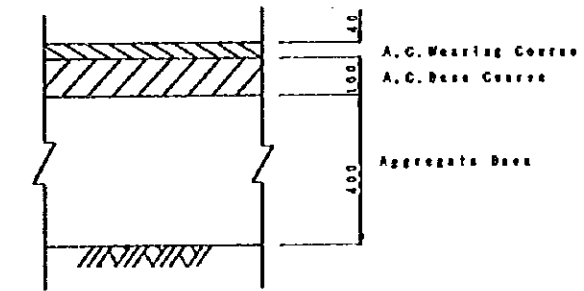
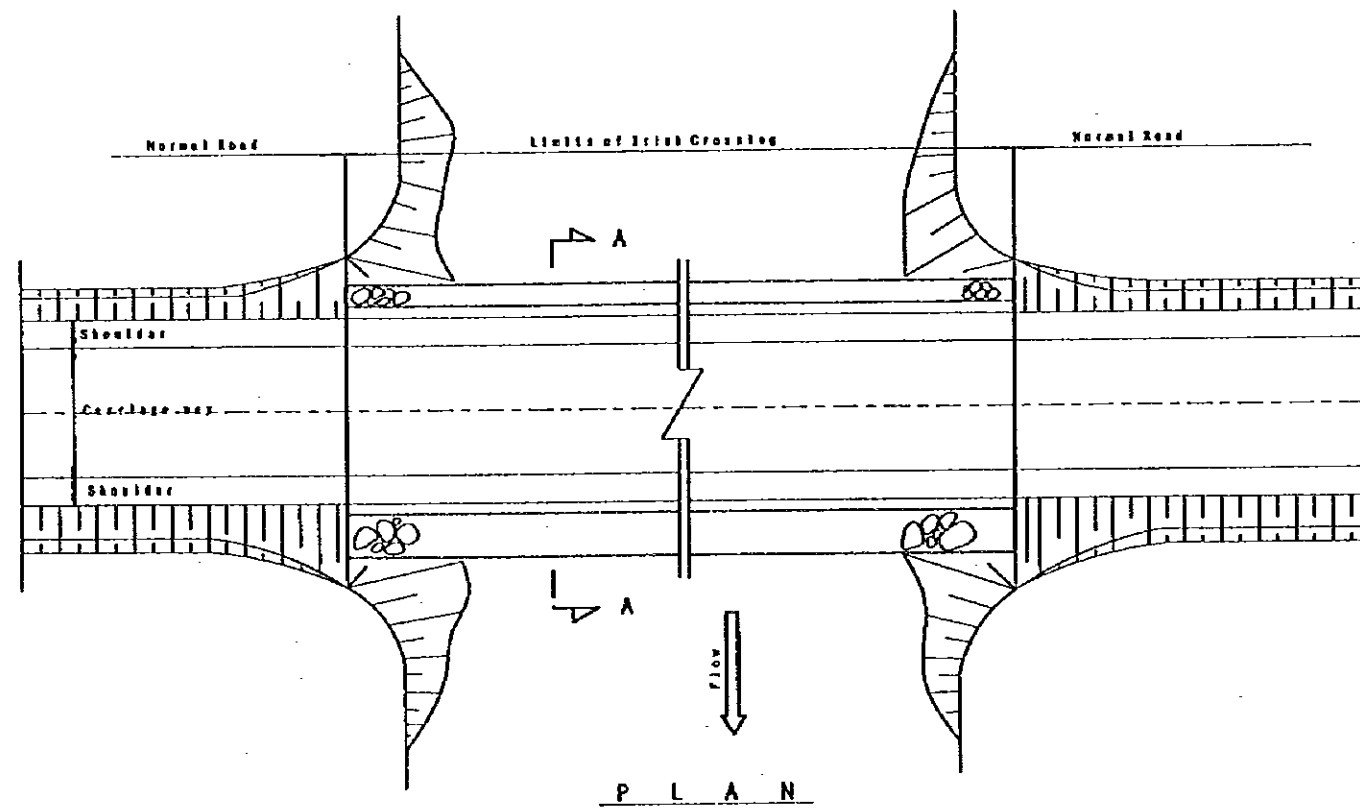


SECTION C - C

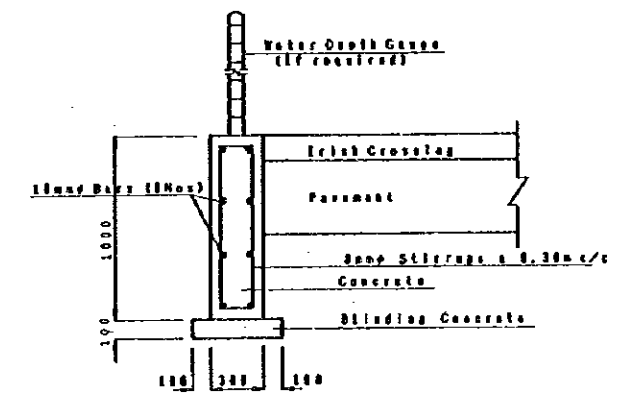
NOTES:
(1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.

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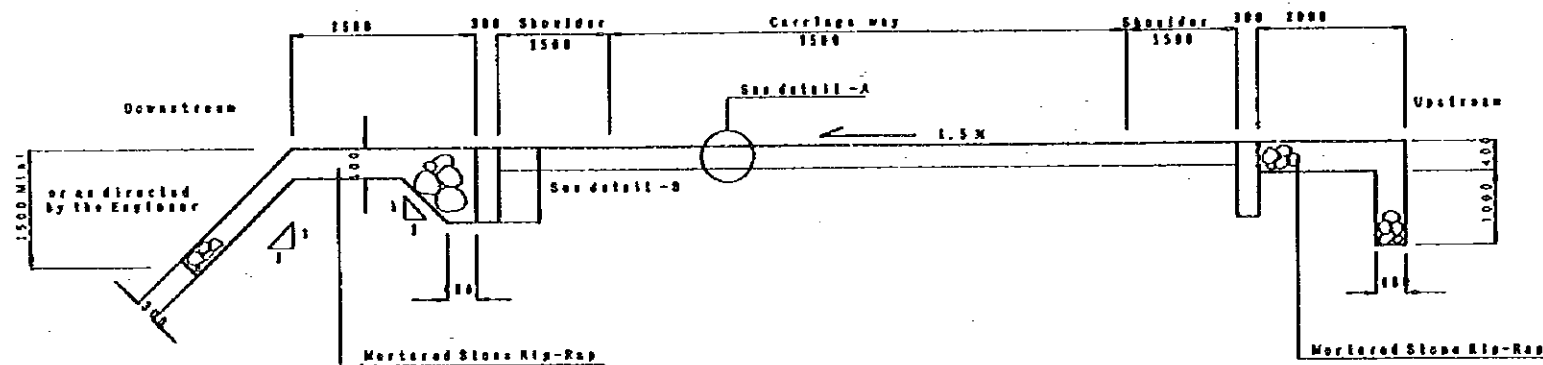
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE: RA/2 A'NASEEM GARDEN SLOPE PROTECTION
DATE: DWG NO.: R-12



PAVEMENT
(Detail-A)



DETAIL OF CUT OFF WALL
(Detail-B)

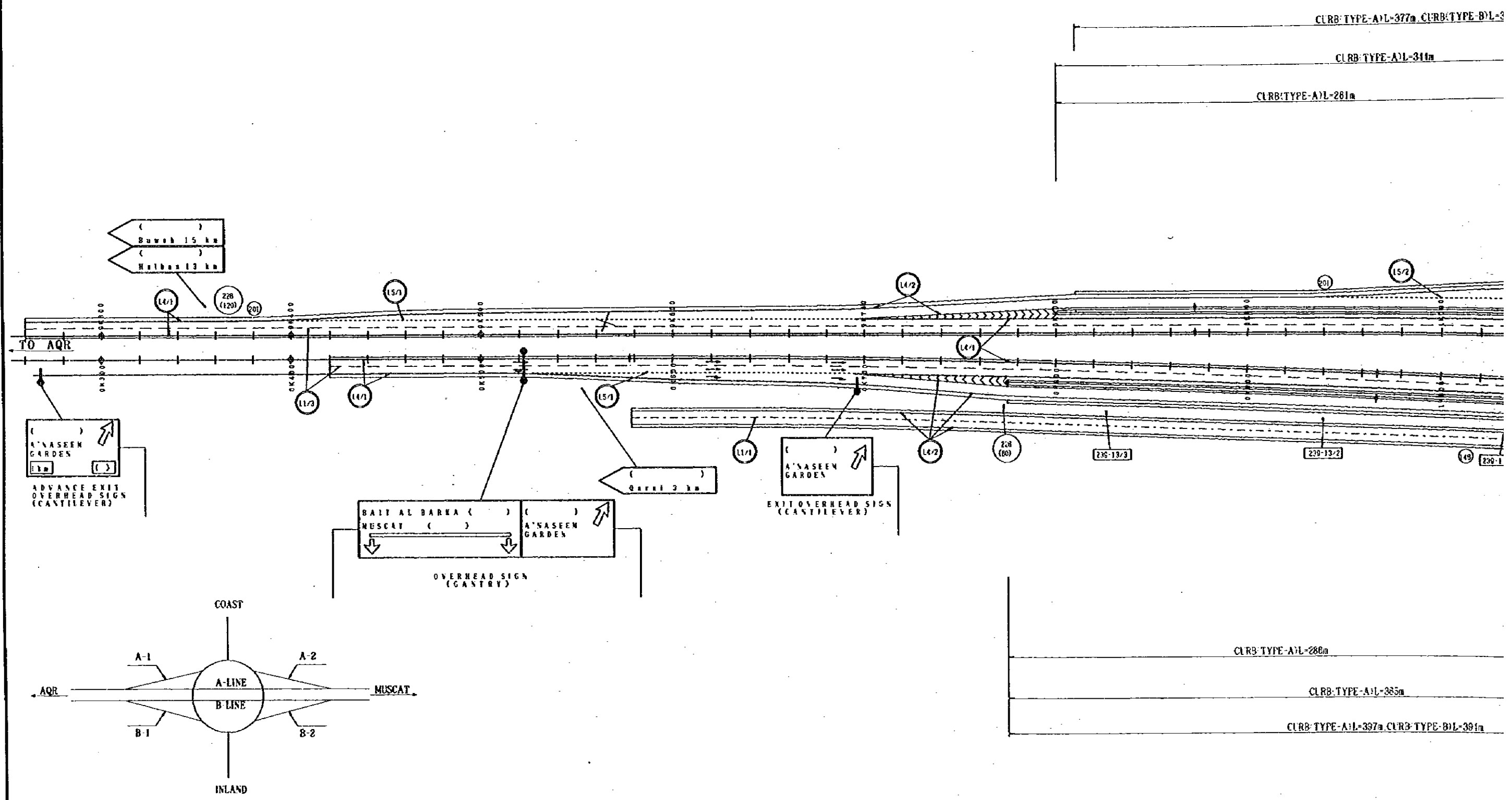


SECTION A - A

NOTES:
(1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.

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CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON RATINAH HIGHWAY
TITLE: RA/1 A'NASEEM GARDEN IRISH CROSSING
DATE: DWG NO.: R-13



NOTES:

(1) FOR DETAILS OF ROAD SIGNS, ROAD MARKINGS REFER TO THE HIGHWAY DESIGN MANUAL.

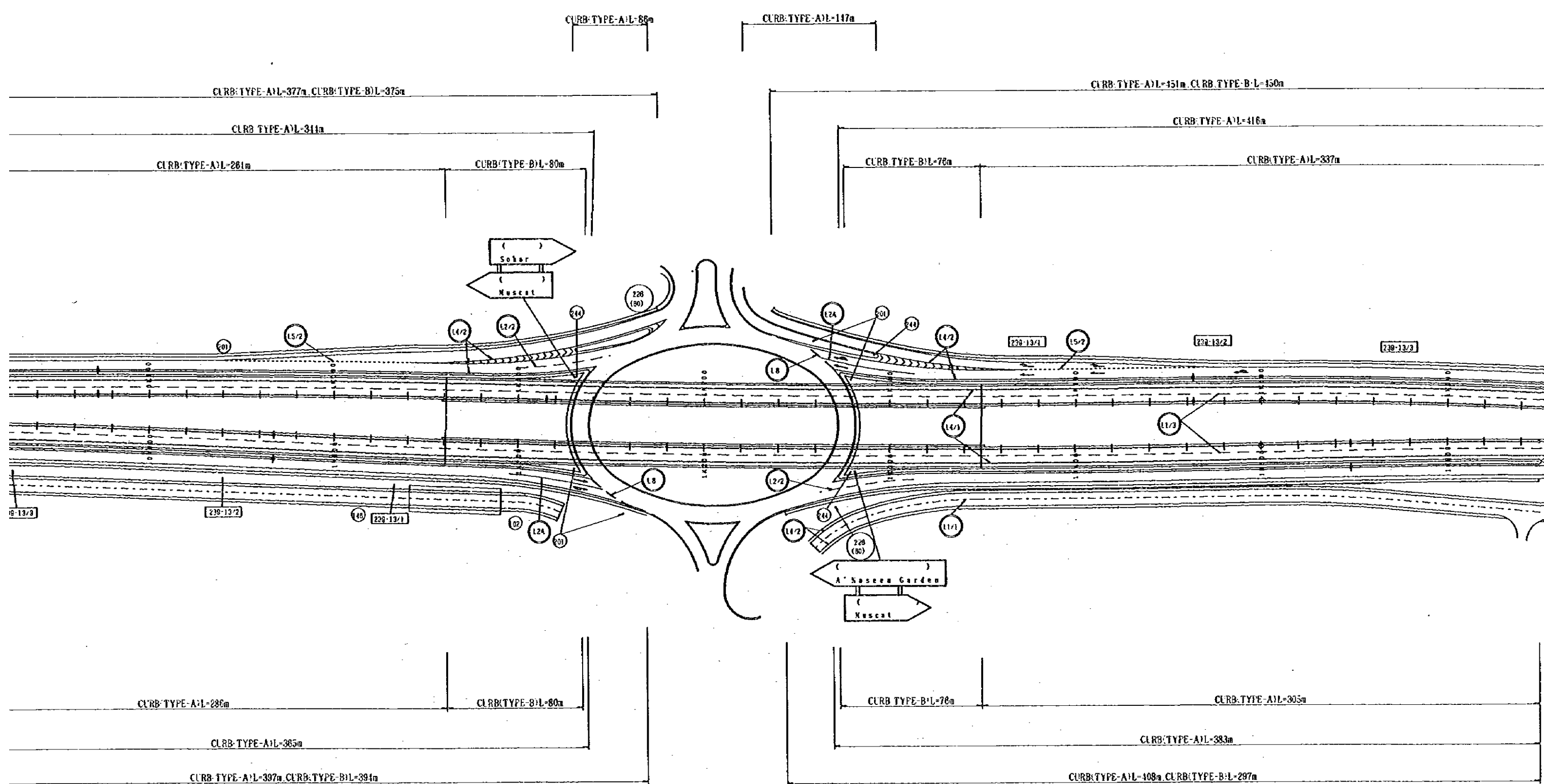
(2) DIMENSIONS OF CURB TYPE-A AND TYPE-B ARE 150mm x 350mm AND 100mm x 200mm RESPECTIVELY. FOR DETAILS REFER STANDARD DRAWING SHEET NO. SCD21

(3) PAINTING (YELLOW AND BLACK) IS APPLIED TO CURB TYPE-A.

(4) FOR DETAILS OF INFORMATION SIGNBOARDS CONFIRM WITH DGR OR THE RELEVANT AUTHORITIES.

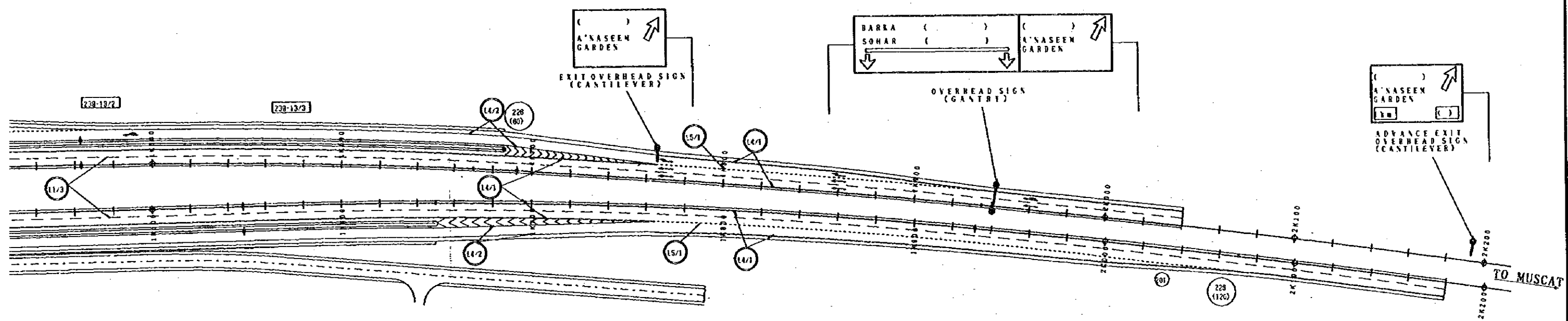
(5) FINAL LOCATION OF ROAD SIGNS AND ARABIC NAMES ARE TO BE FINALIZED DURING CONSTRUCTION

(6) ADVANCE EXIT OVERHEAD SIGN SHALL BE PROVIDED AT APPROPRIATE LOCATION 300-1000m AHEAD FROM OVERHEAD SIGN.



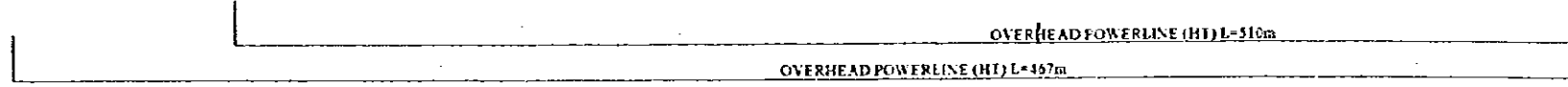
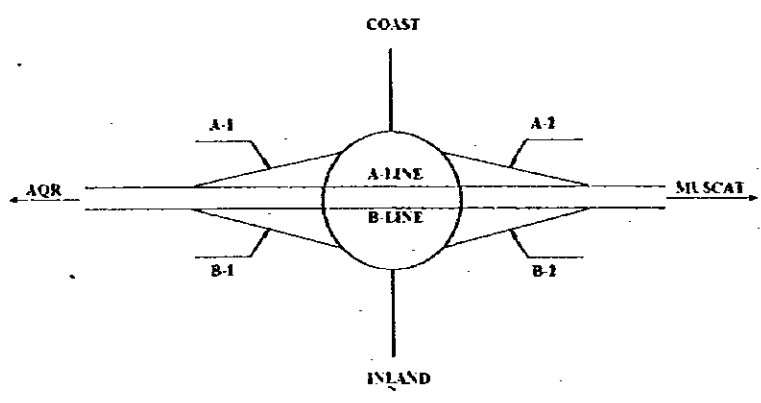
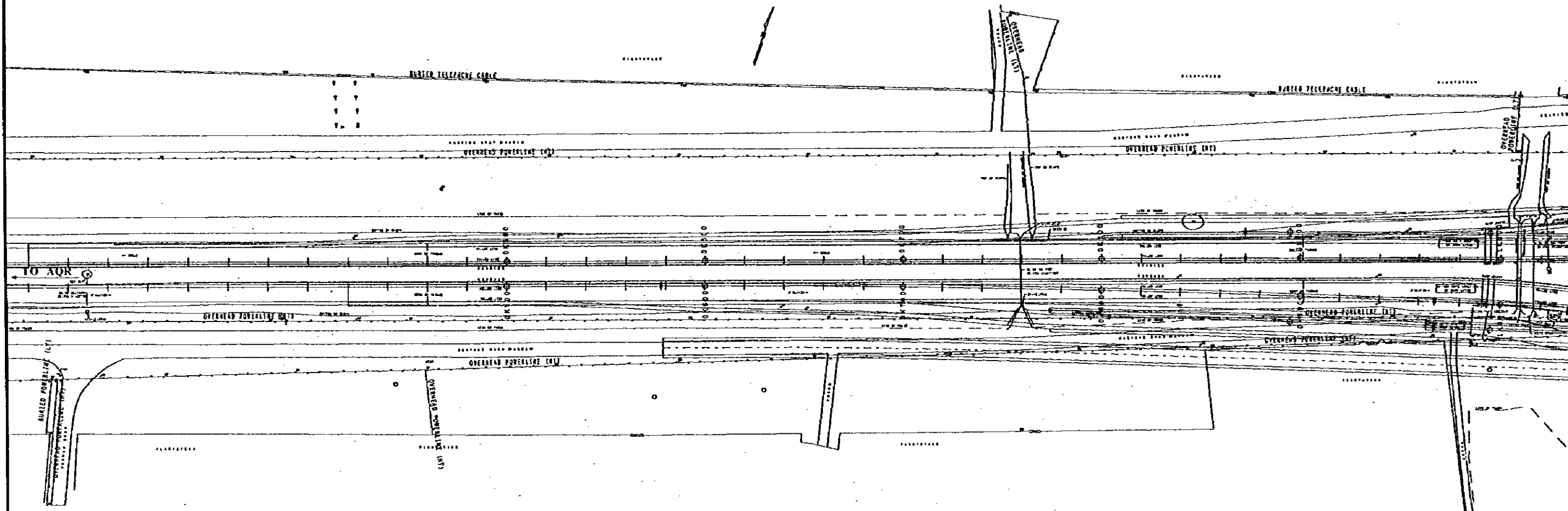
DURING CONSTRUCTION,
 10-1000m AHEAD FROM OVERHEAD SIGN

FE-A1L-151m, CURB:TYPE-B1L-150m
CURB:TYPE-A1L-416m
CURB:TYPE-A1L-337m

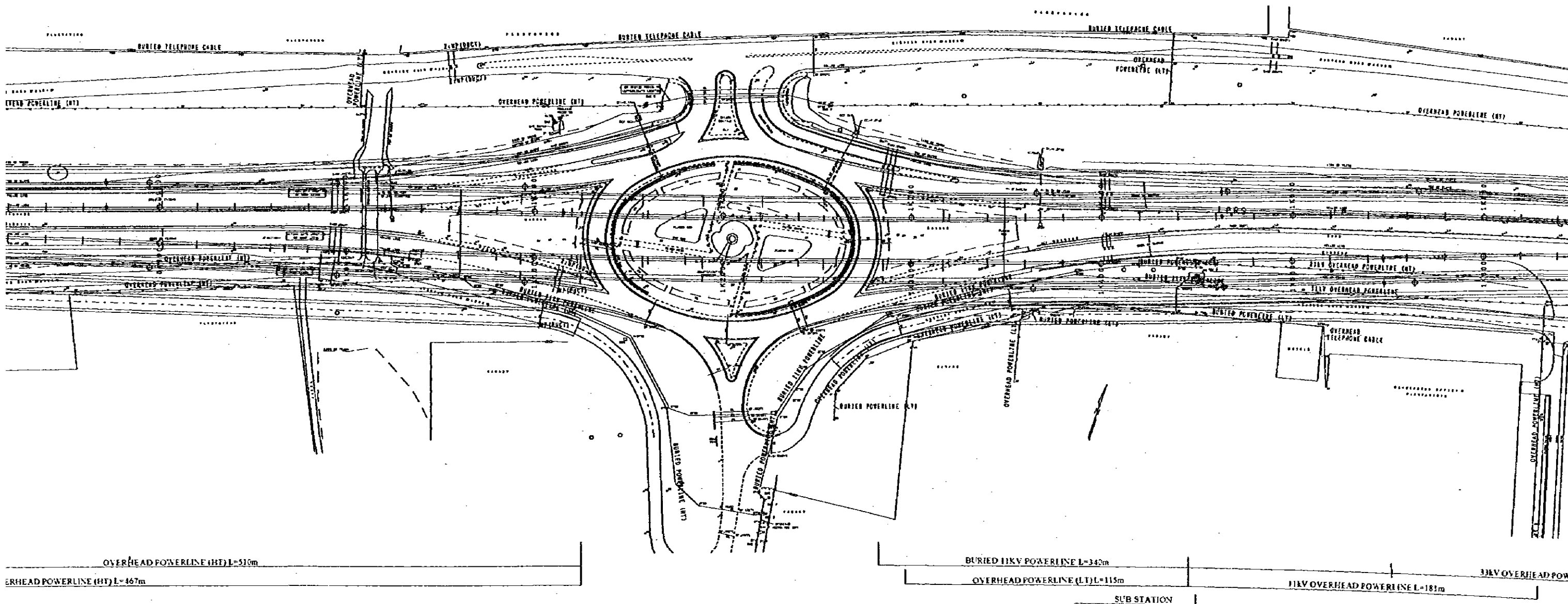


CURB:TYPE-A1L-305m
CURB:TYPE-A1L-383m
A1L-108m, CURB:TYPE-B1L-297m

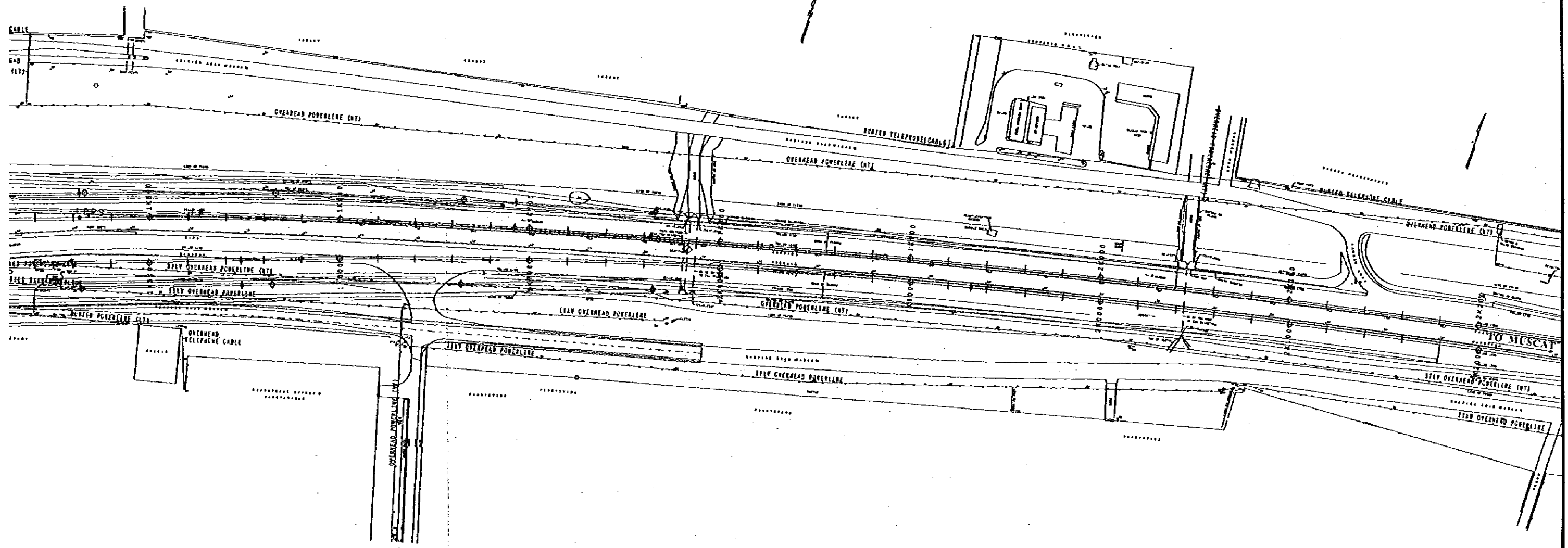
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FUKUYAMA CONSULTANTS INTERNATIONAL	CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY	
	TITLE: RA/2 A'NASEEM GARDEN ROAD MARKING & ROAD SIGN DATE:	DWGNO. R-14



NOTES:



PLAN S 1:2000



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 FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
 PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
 TITLE: RA/2 A'NASEEM GARDEN REMOVAL & RELOCATION OF UTILITIES
 DATE: _____ DWGNO. R-15