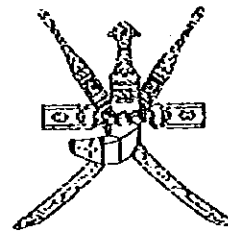


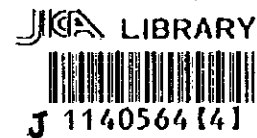
SULTANATE OF OMAN
MINISTRY OF COMMUNICATIONS
DIRECTORATE GENERAL OF ROADS



CONSTRUCTION OF FLYOVER
AT
SAHAM ROUNDABOUT
BATINAH HIGHWAY

TENDER DOCUMENT

DRAWINGS



PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

MARCH, 1997

SSF
CR(5)
97-015

DRAWING SCHEDULE (FO5-R/A10 SAHAM)

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	Framing 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	Framing 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-Highway	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 Tendons (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) and Service Ducts	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	Road Marking and Traffic Sign	B-16	Structural Detail of Main Girder (B-Line)	W-16	Re-bar Arrangement (14)
R-14	Removal and Relocation of Utilities	B-17	Detail of Tendons (B-Line)	W-17	Re-bar Arrangement (15)
		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	General View (2)-1
		B-21	Railing and Cantilever Slab (B-Line)	W-21	General View (2)-2
		B-22	Detail of Shoe and Anchor Bar (B-Line)	W-22	Re-bar Arrangement (1)
		B-23	Expansion Joint	W-23	Re-bar Arrangement (2)
		B-24	Handrail	W-24	Re-bar Arrangement (3)
		B-25	Drainage Details	W-25	Re-bar Arrangement (4)
		B-26	Structural Detail of A1 Abutment (A-Line)	W-26	Re-bar Arrangement (5)
		B-27	Structural Detail of A1 Abutment (B-Line)	W-27	Re-bar Arrangement (6)
		B-28	Structural Detail of A2 Abutment (A-Line)	W-28	Re-bar Arrangement (7)
		B-29	Structural Detail of A2 Abutment (B-Line)	W-29	Re-bar Arrangement (8)
		B-30	Structural Details of P1~P10 (A,B-Line) (1/2)	W-30	Re-bar Arrangement (9)
		B-31	Structural Details of P1~P10 (A,B-Line) (2/2)	W-31	Re-bar Arrangement (10)
		B-32	Re-bar Arrangement of A1 (A-Line) (1/3)	W-32	Re-bar Arrangement (11)
		B-33	Re-bar Arrangement of A1 (A-Line) (2/3)	W-33	Re-bar Arrangement (12)
		B-34	Re-bar Arrangement of A1 (A-Line) (3/3)	W-34	Re-bar Arrangement (13)
		B-35	Re-bar Arrangement of A1 (B-Line) (1/3)	W-35	Re-bar Arrangement (14)
		B-36	Re-bar Arrangement of A1 (B-Line) (2/3)	W-36	Re-bar Arrangement (15)
		B-37	Re-bar Arrangement of A1 (B-Line) (3/3)	W-37	Re-bar Arrangement (16)
		B-38	Re-bar Arrangement of A2 (A-Line) (1/2)	W-38	Re-bar Arrangement (17)
		B-39	Re-bar Arrangement of A2 (A-Line) (2/2)	W-39	Re-bar Arrangement (18)
		B-40	Re-bar Arrangement of A2 (B-Line) (1/2)		
		B-41	Re-bar Arrangement of A2 (B-Line) (2/2)	T	TEMPORARY WORKS
		B-42	Re-bar Arrangements of P1~P10 (A,B-Line) (1/2)	T-1	Construction Sequence
		B-43	Re-bar Arrangements of P1~P10 (A,B-Line) (2/2)	T-2	Detour Layout (1/2)
		B-44	Re-bar Arrangements of Pile Foundation (1/2)	T-3	Detour Layout (2/2)
		B-45	Re-bar Arrangements of Pile Foundation (2/2)		
		B-46	Re-bar Arrangement of Approach Slab		
		B-47	Bar Bending Diagram		

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 : DRAWING SCHEDULE

DATE : DWG NO. G - 1



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 - Massonnet's method based on orthotropic plate theory.

MATERIALS FOR STRUCTURES

1. CONCRETE

Design strength of concrete is specified as follows:

Class of concrete	Specified	Characteristic strength at 28 days				Application
	compressive strength	Cylinders		Cubes		
	(28days)					
	(kgf/cm ²)	(N/mm ²)	(kgf/cm ²)	(N/mm ²)	(kgf/cm 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, min (kgf/cm ²)	Yield strength, 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 AASHTO M203, 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)	Yield 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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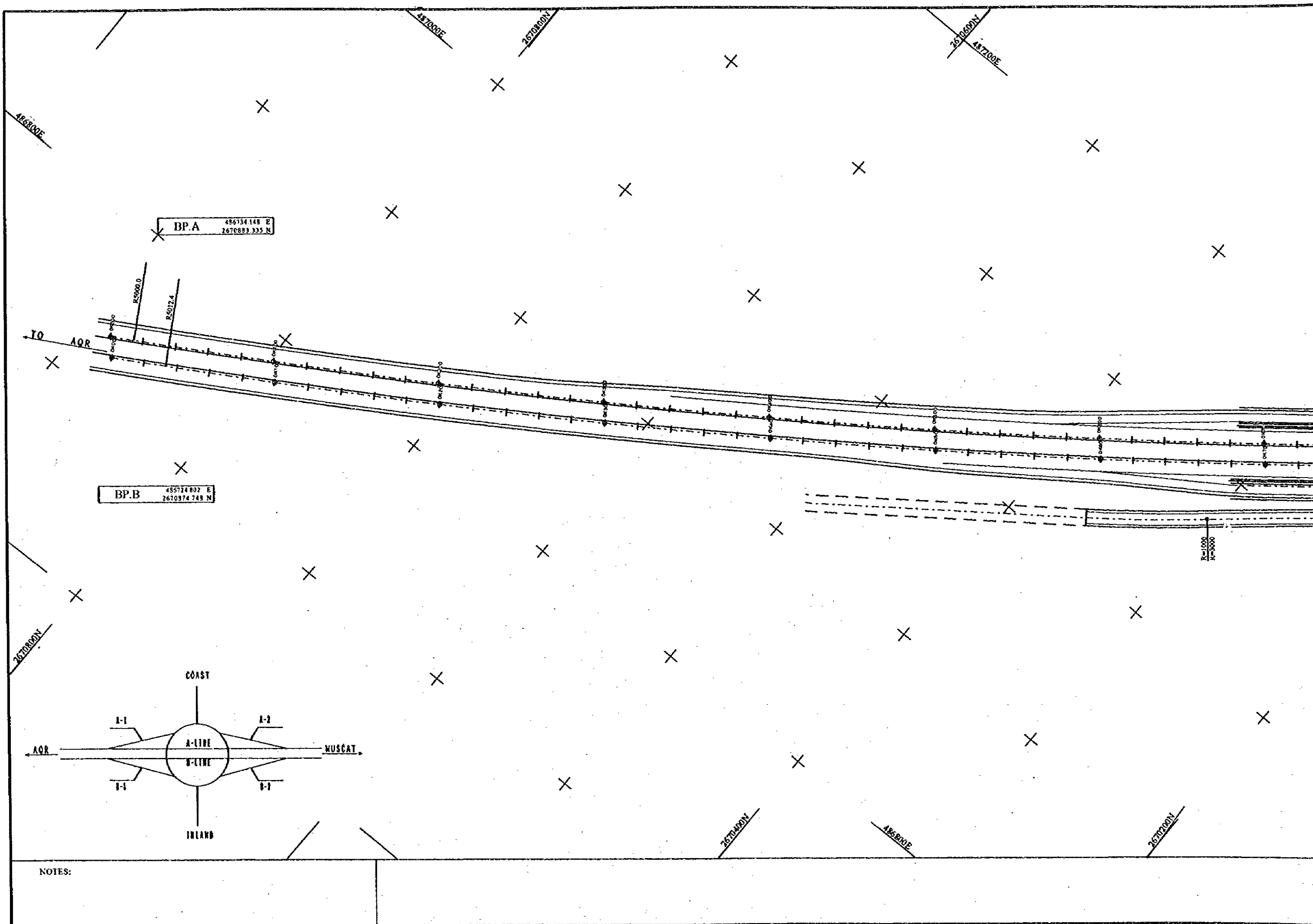
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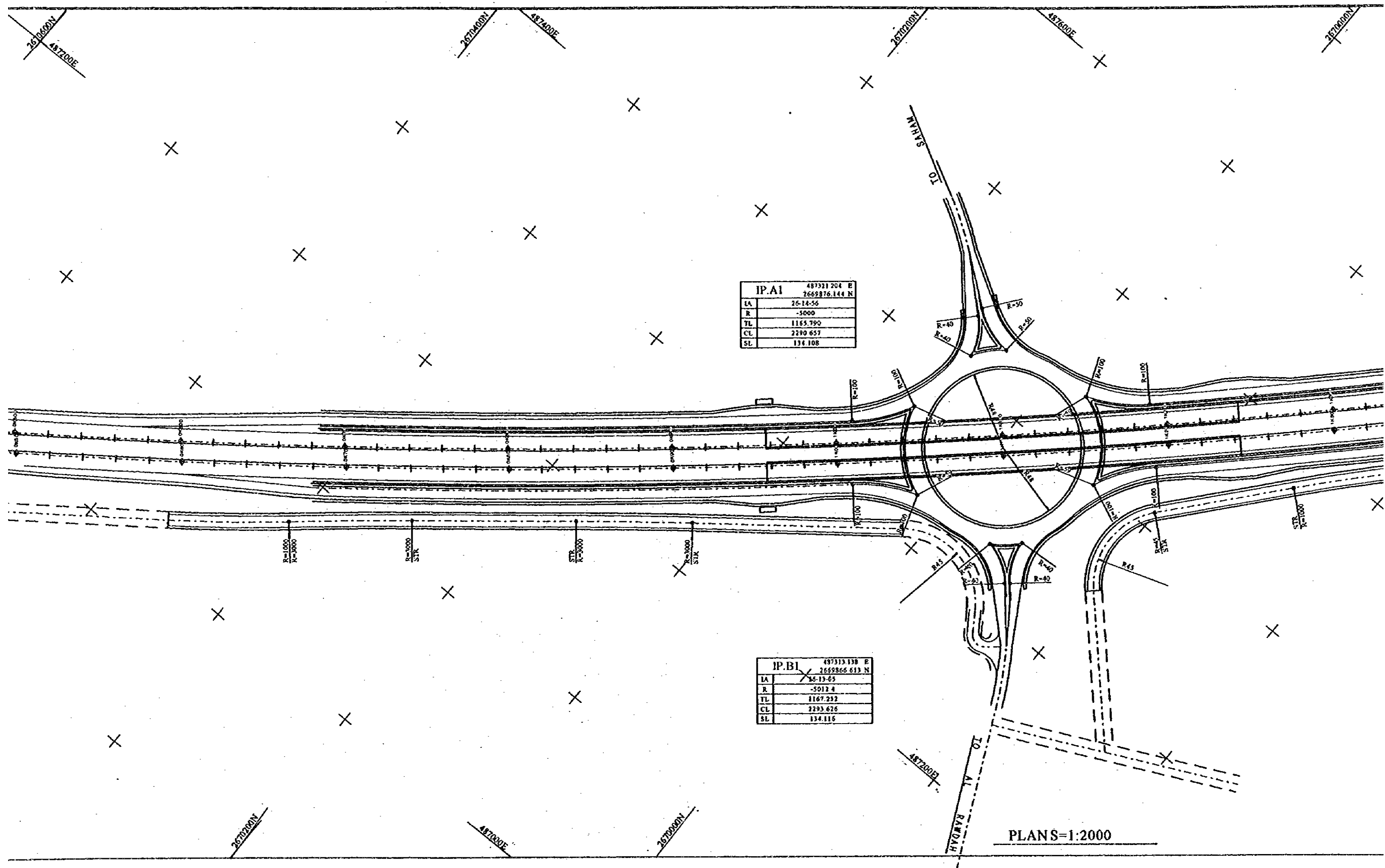
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PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON DATINAH HIGHWAY

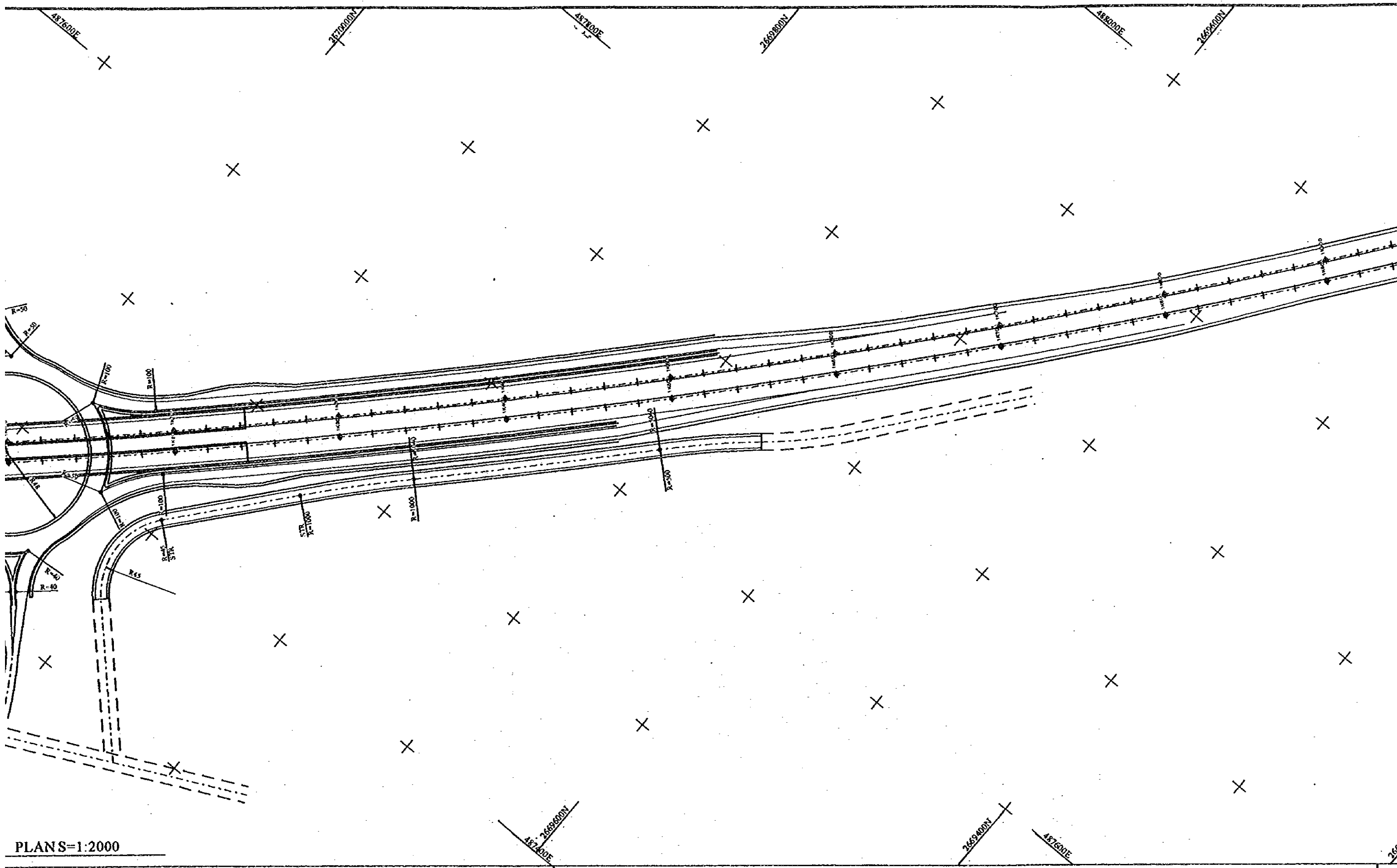
TITLE : GENERAL NOTES

DATE : DWG NO. G - 2

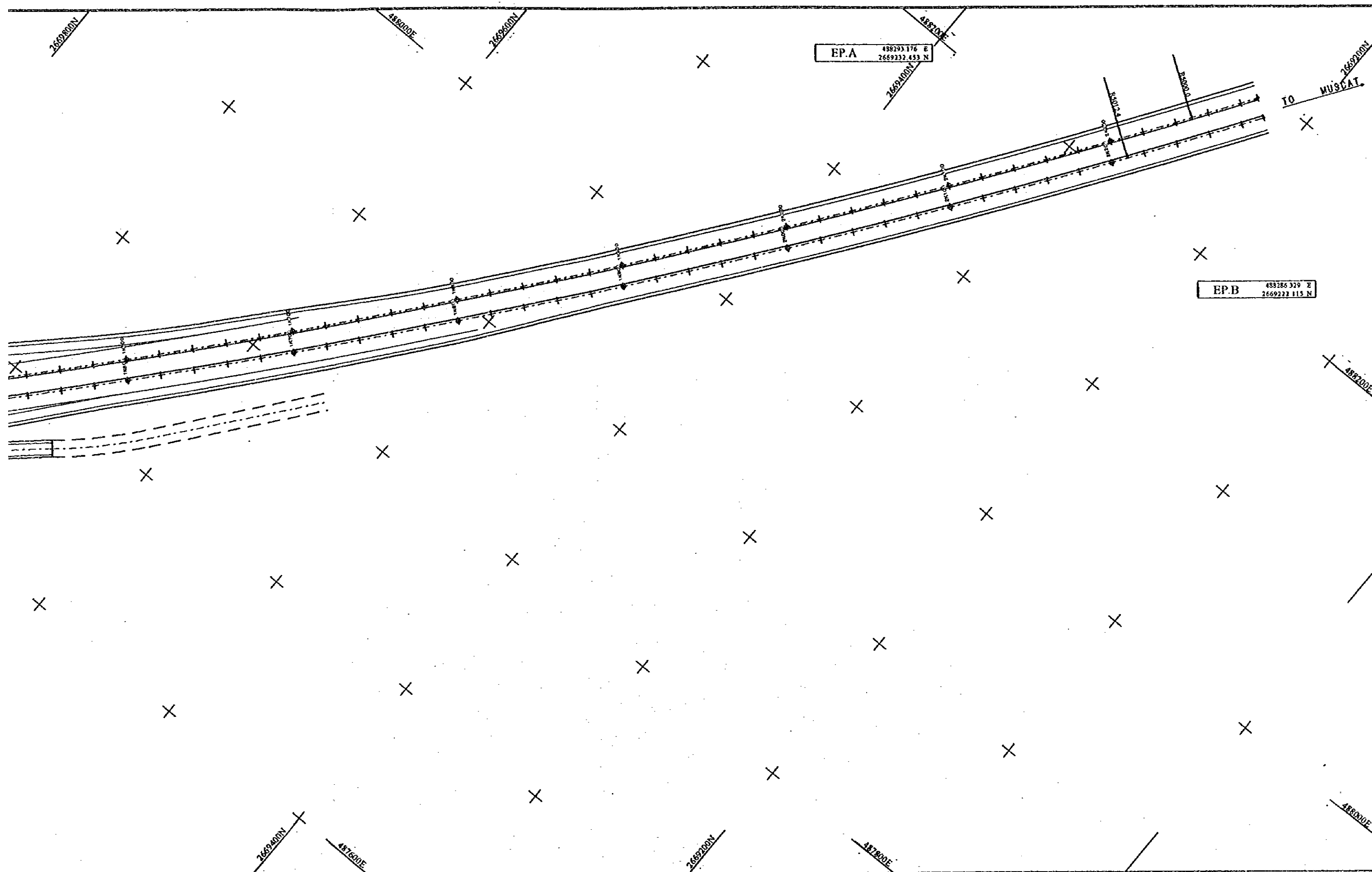
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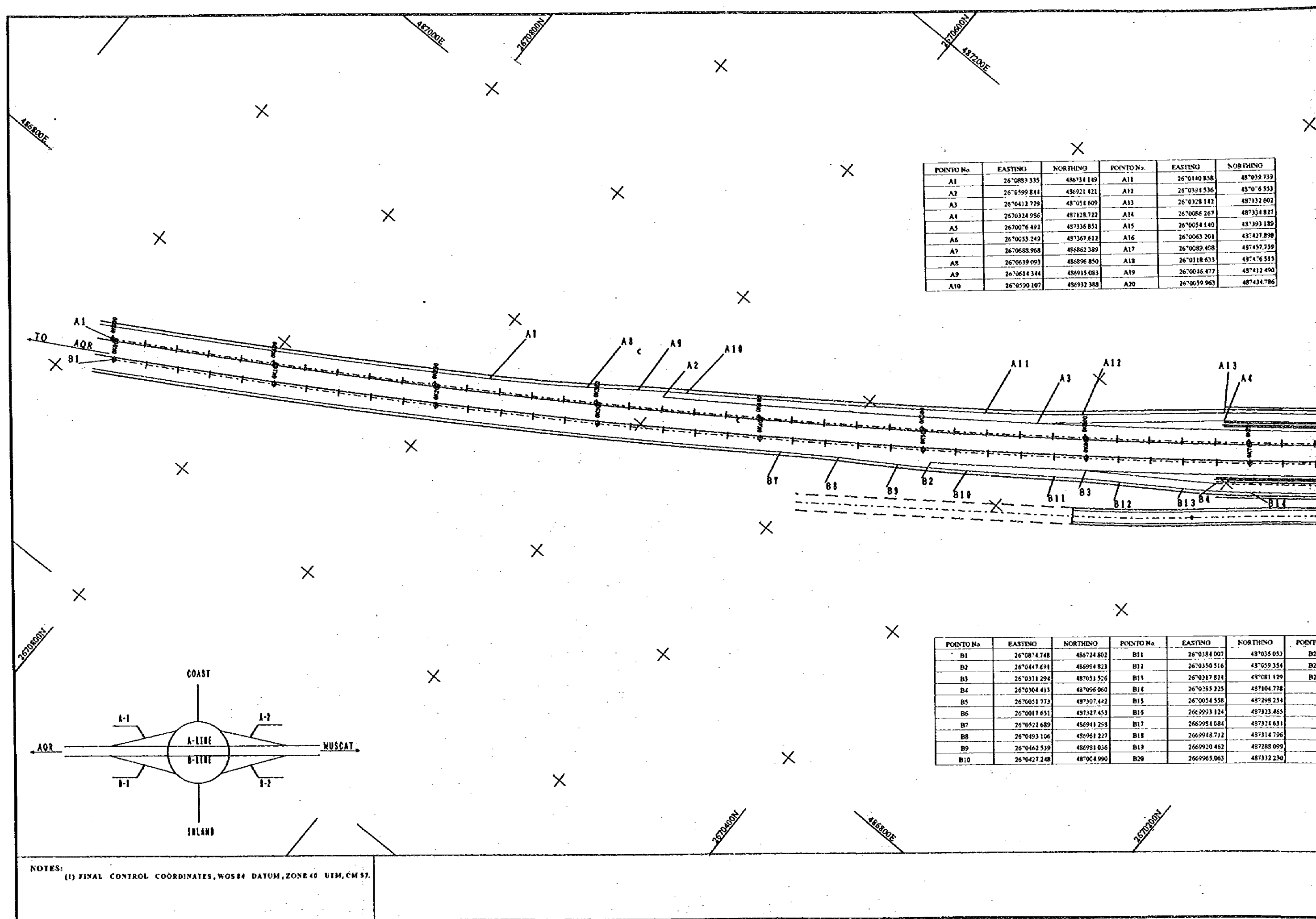




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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FUKUYAMA CONSULTANTS INTERNATIONAL	CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS		
	PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY		
	TITLE: RA/10 SAHAM ALIGNMENT LAYOUT		
	DATE :	DWONO.	R-1

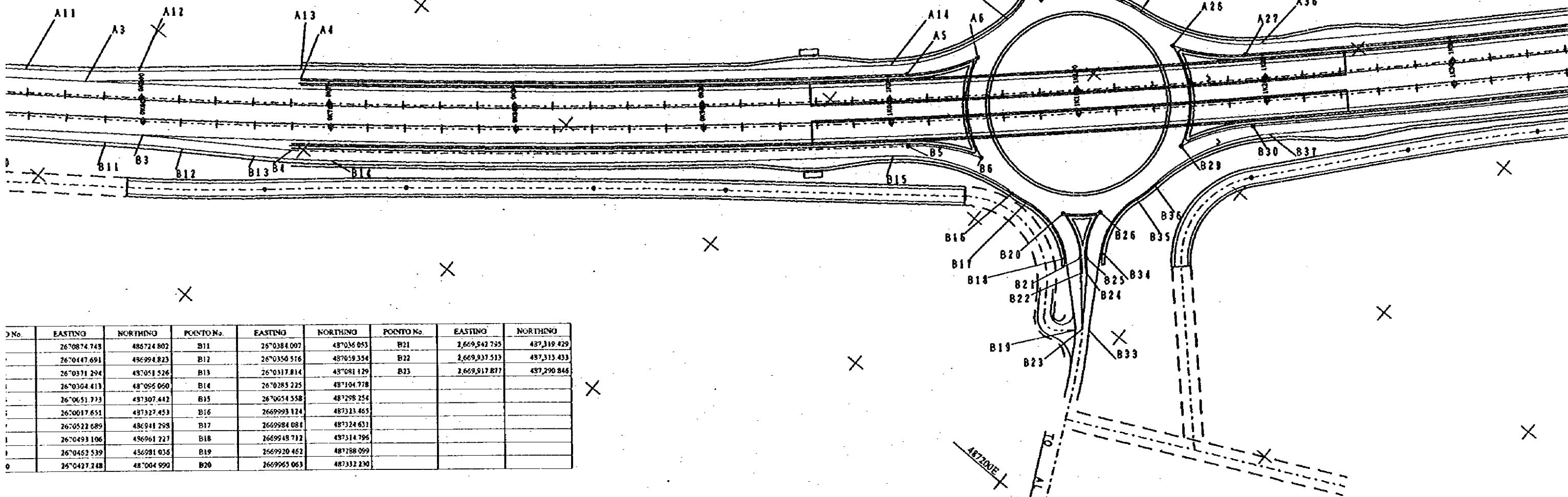


POINTO No.	EASTING	NORTHING	POINTO No.	EASTING	NORTHING
A1	2670881 335	486734 149	A11	2670440 858	487039 739
A2	2670599 844	486921 421	A12	2670394 536	48706 553
A3	2670412 779	487054 609	A13	2670328 142	487132 602
A4	2670324 986	487128 722	A14	2670086 267	487334 827
A5	2670076 492	487336 851	A15	2670054 140	487393 189
A6	2670033 249	487367 612	A16	2670063 201	487427 898
A7	2670683 968	486862 389	A17	2670089 408	487457 759
A8	2670639 093	486896 850	A18	2670118 633	487476 515
A9	2670614 344	486915 083	A19	2670046 477	487412 490
A10	2670590 107	486932 388	A20	2670059 963	487434 786

POINTO No.	EASTING	NORTHING	POINTO No.	EASTING	NORTHING	POINT
B1	2670874 748	486724 802	B11	2670384 007	487036 053	B2
B2	2670447 691	486954 823	B12	2670359 516	487059 354	B2
B3	2670371 294	487051 526	B13	2670317 874	487081 129	B2
B4	2670304 413	487096 060	B14	2670285 225	487104 778	
B5	2670051 772	487307 442	B15	2670054 558	487298 254	
B6	2670017 651	487327 453	B16	2669993 124	487323 465	
B7	2670521 689	486941 253	B17	2669954 084	487374 631	
B8	2670493 106	486961 227	B18	2669948 712	487314 796	
B9	2670462 539	486991 036	B19	2669920 462	487288 099	
B10	2670427 248	487004 990	B20	2669965 063	487312 230	

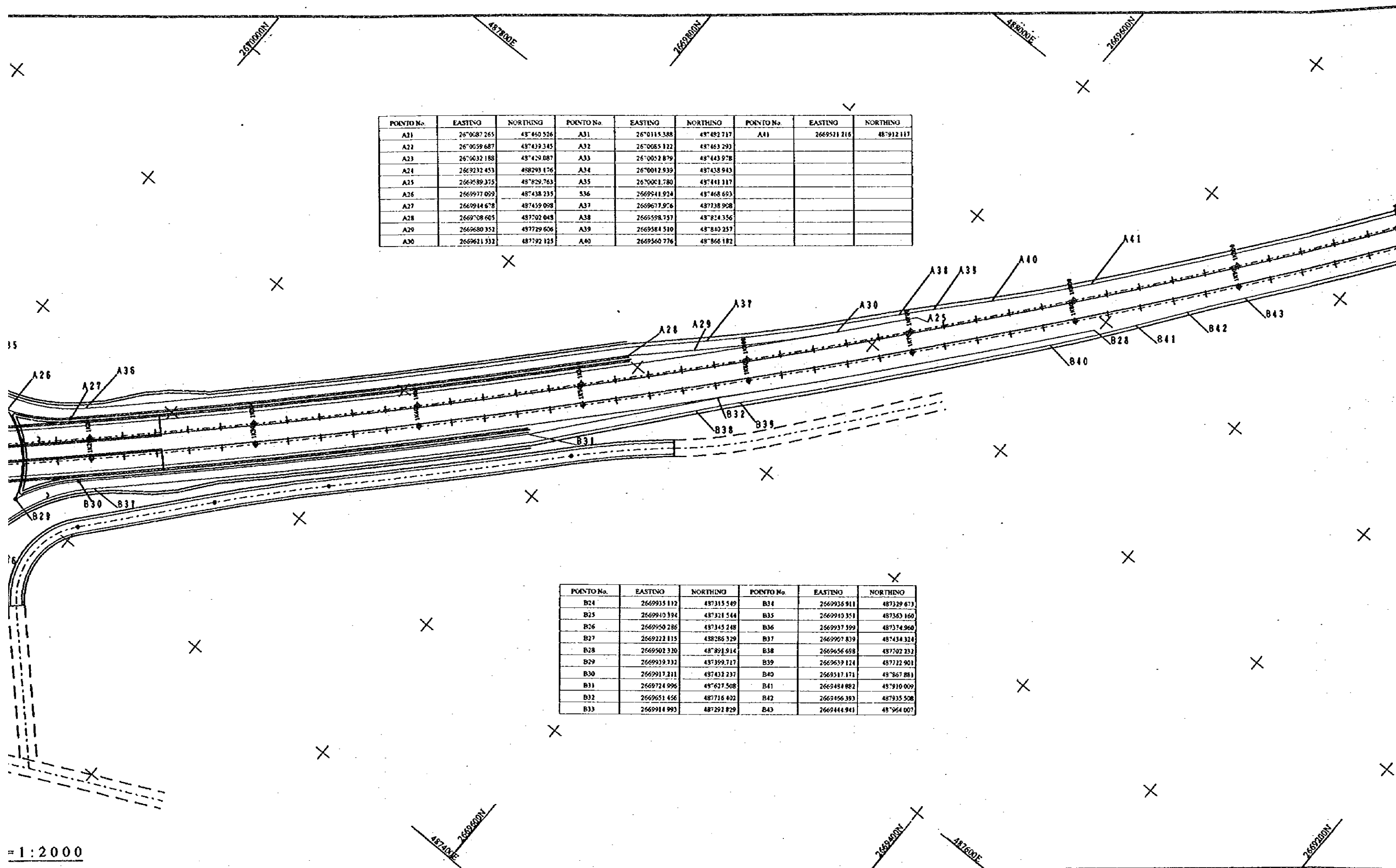
NOTES:
(1) FINAL CONTROL COORDINATES, WGS84 DATUM, ZONE 48 UTM, CM 52.

EASTING	NORTHING	POINTO No	EASTING	NORTHING
26°0833.335	486734.189	A11	26°0440.858	48°039.739
26°0529.844	486921.421	A12	26°0394.536	48°076.553
26°0412.779	48°054.609	A13	26°0328.142	48°132.602
26°0324.996	48°128.722	A14	26°0086.267	48°334.827
26°0076.492	48°335.851	A15	26°0634.140	48°393.189
26°0053.249	48°367.612	A16	26°0063.201	48°427.898
26°0688.968	486852.389	A17	26°0089.468	48°457.739
26°0639.093	486856.850	A18	26°0118.633	48°476.513
26°0614.344	486915.683	A19	26°0045.477	48°412.490
26°0590.107	486932.388	A20	26°0059.953	48°434.786

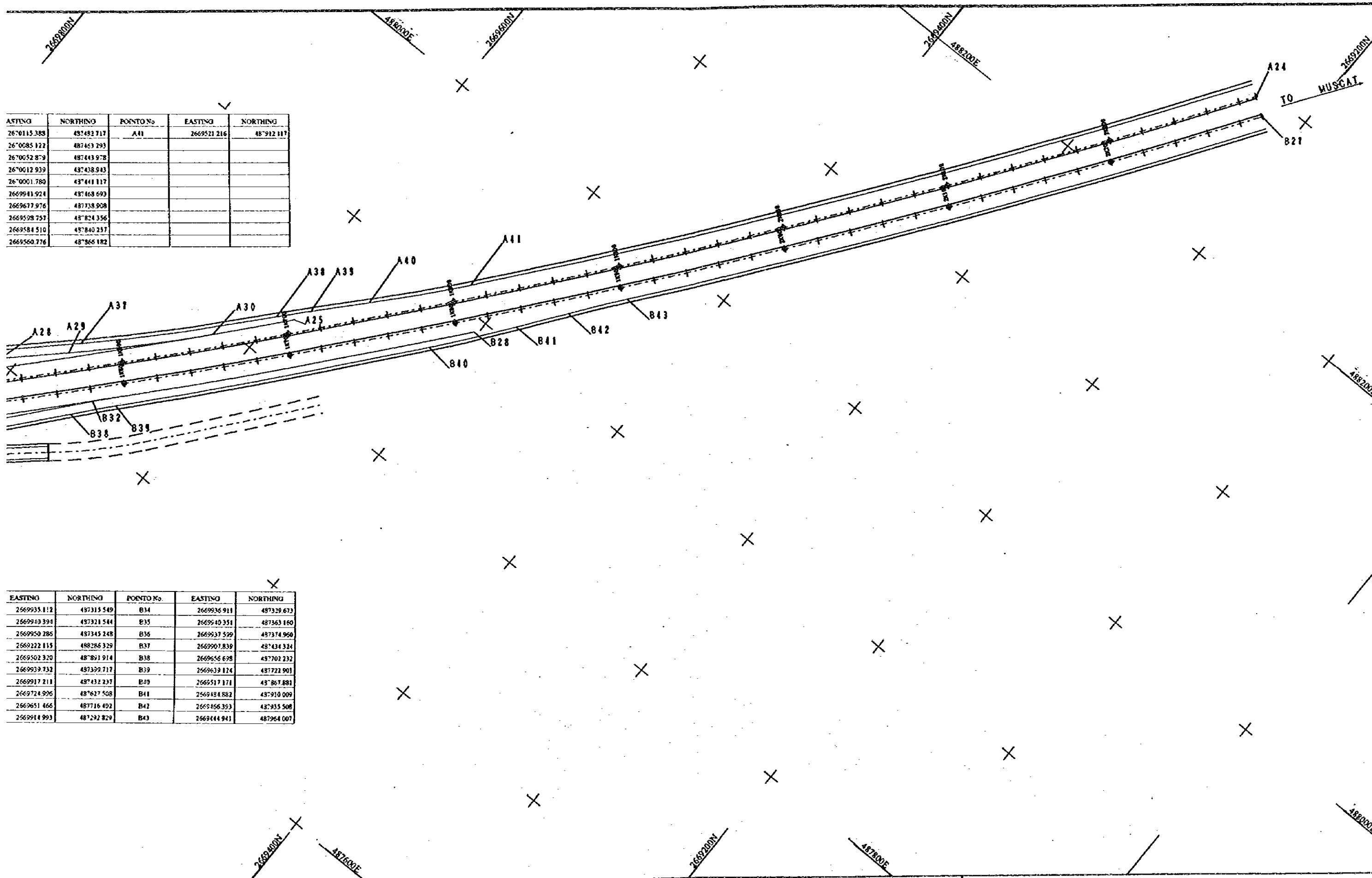


No.	EASTING	NORTHING	POINTO No.	EASTING	NORTHING	POINTO No.	EASTING	NORTHING
1	26°0874.743	486724.802	B11	26°0384.007	48°036.053	B21	2669542.755	487319.429
2	26°0447.691	486994.823	B12	26°0350.516	48°059.354	B22	2669337.513	487313.433
3	26°0371.294	48°051.526	B13	26°0317.814	48°081.129	B23	2669317.817	487290.846
4	26°0304.413	48°095.060	B14	26°0283.225	48°104.778			
5	26°0651.773	48°307.442	B15	26°0054.558	48°298.254			
6	26°0017.651	48°327.453	B16	2669993.124	48°323.465			
7	26°0522.689	486941.258	B17	2669984.084	48°324.631			
8	26°0493.106	486961.227	B18	2669948.712	48°314.796			
9	26°0462.539	486981.036	B19	2669920.462	48°288.099			
10	26°0427.248	48°004.990	B20	2669963.063	48°332.230			

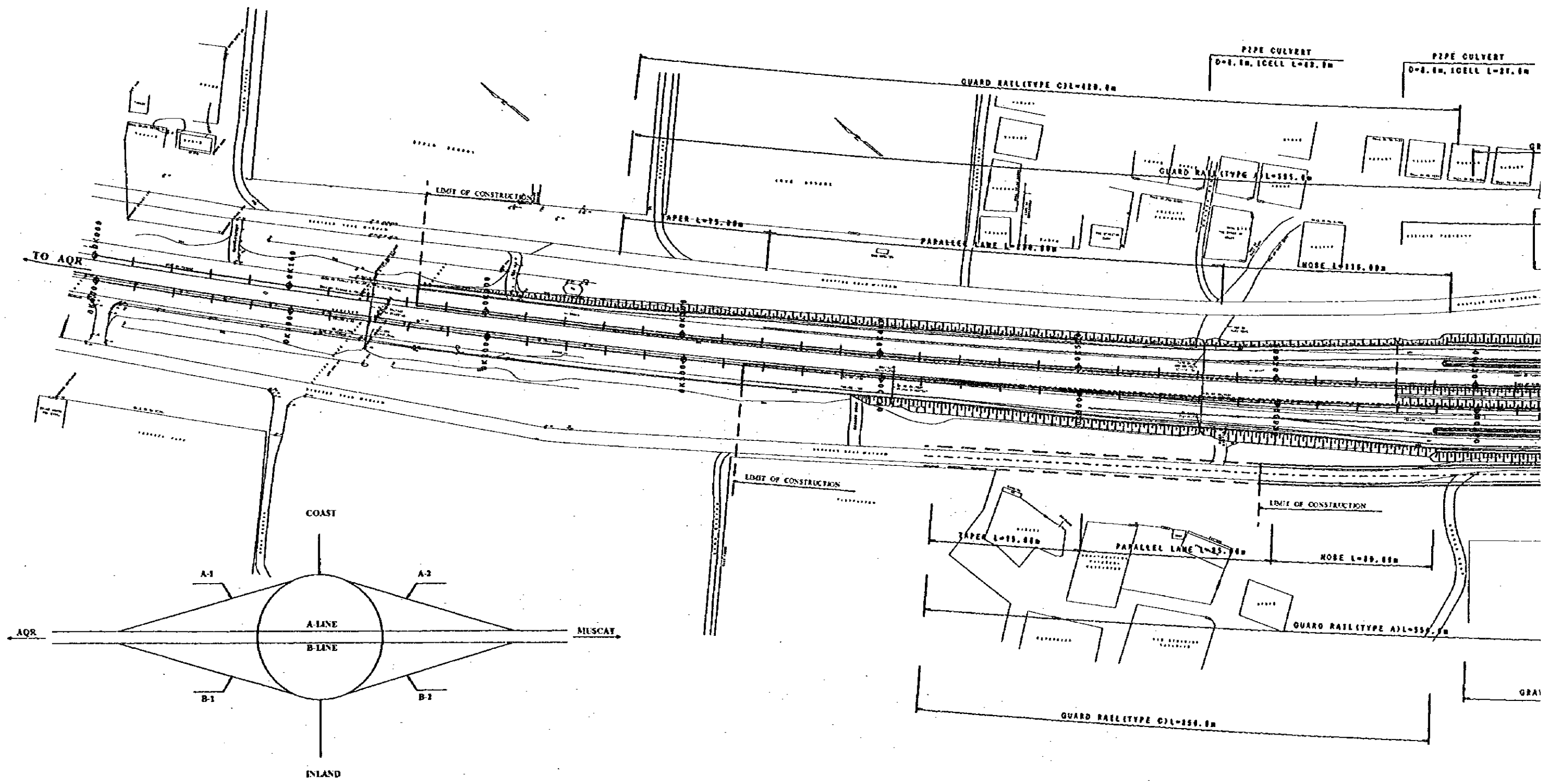
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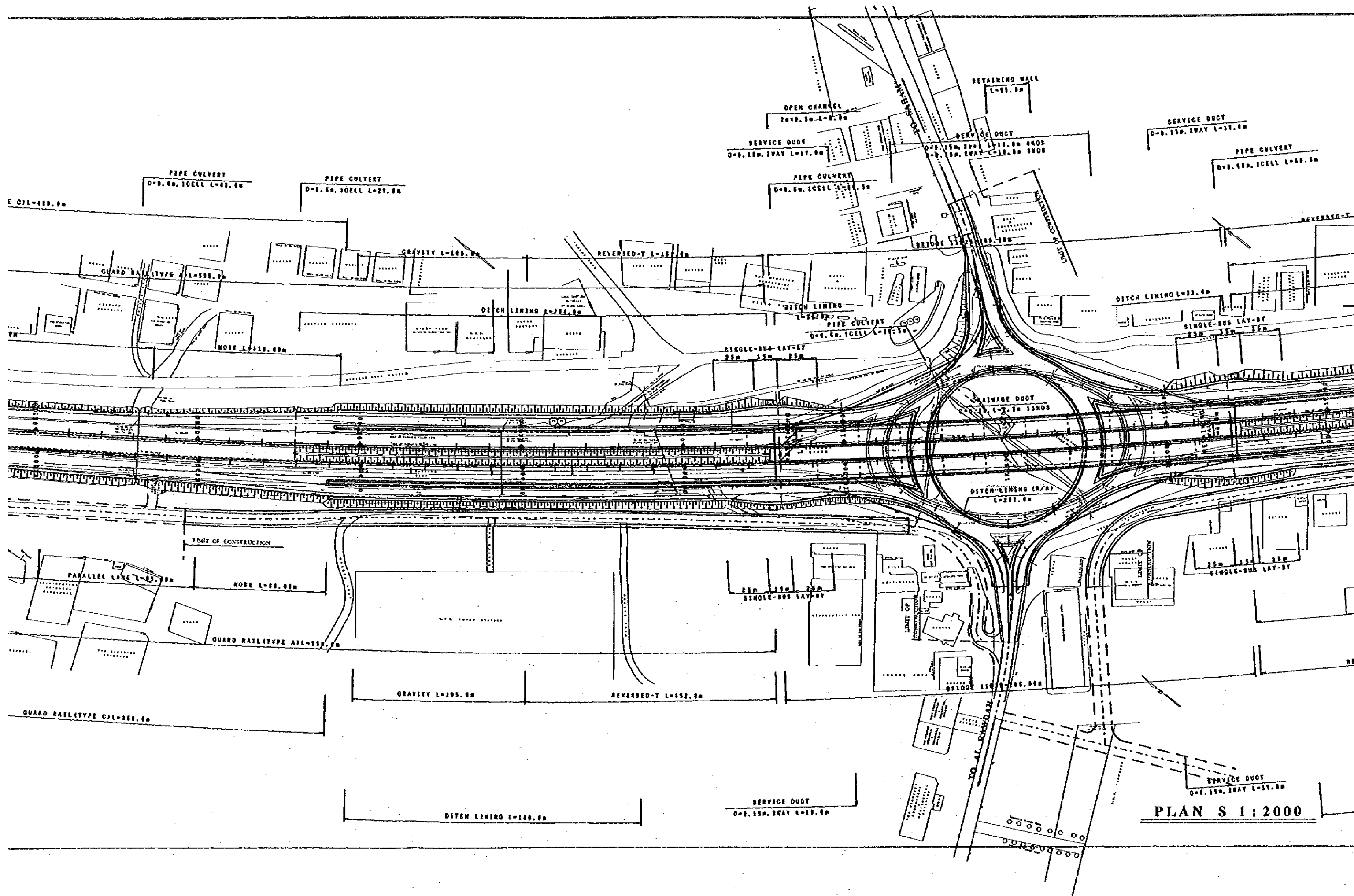
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2669940.394	487321.544	B15	2669940.351	487363.160
2669950.286	487345.248	B36	2669937.599	487374.950
2669922.115	488286.329	B37	2669907.839	487434.334
2669502.320	487891.914	B38	2669658.698	487702.232
2669959.132	487392.717	B39	2669639.124	487722.901
2669917.211	487432.233	B40	2665517.171	487867.881
2669724.906	487627.508	B41	2669434.882	487910.009
2669651.466	487716.402	B42	2669456.393	487935.508
2669594.993	487292.829	B43	2669444.941	487964.007



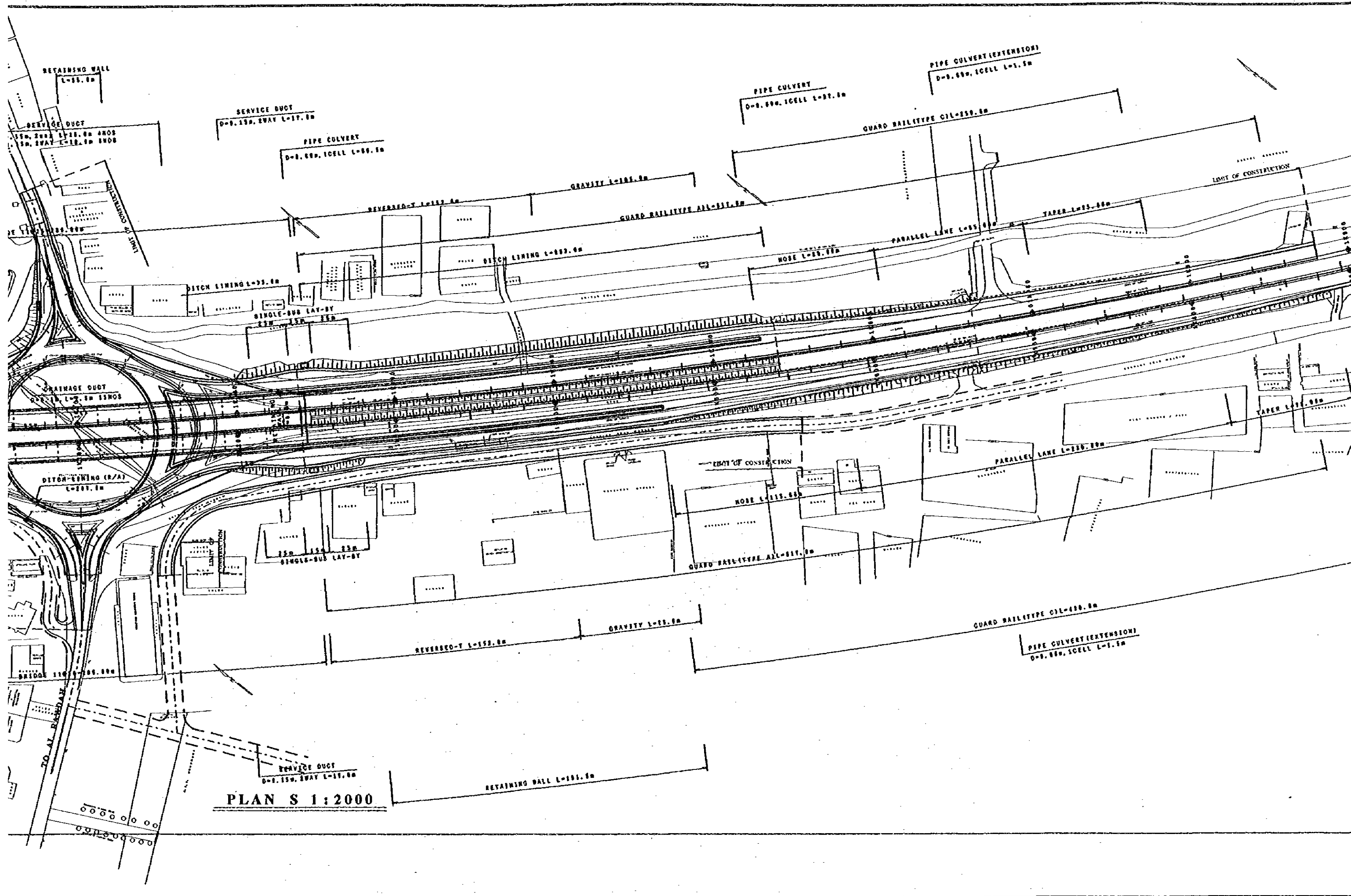
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PROJECT:	D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE:	RA/10 SAHAM SETTING OUT DETAILS
DATE:	DWGNO. R-1

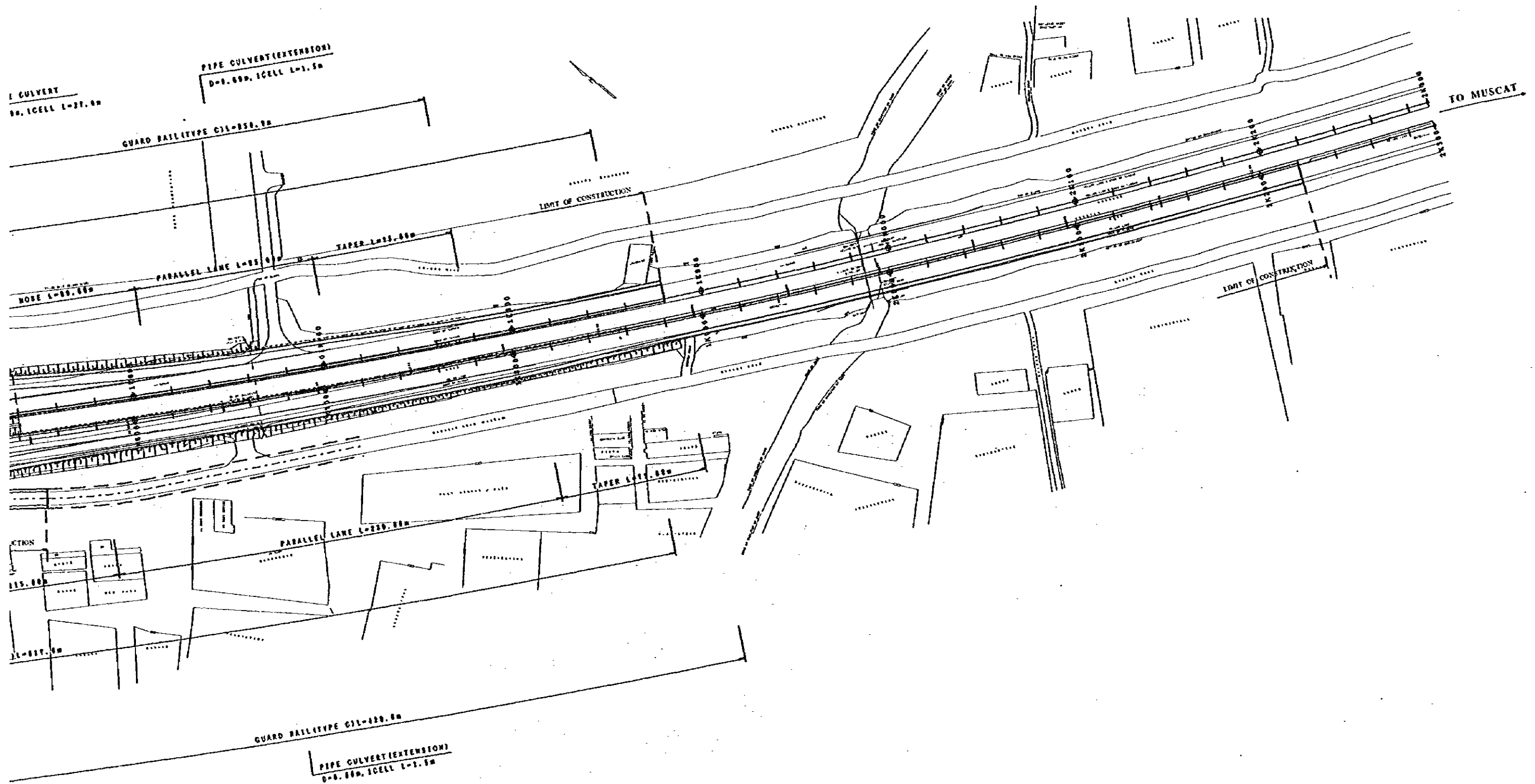


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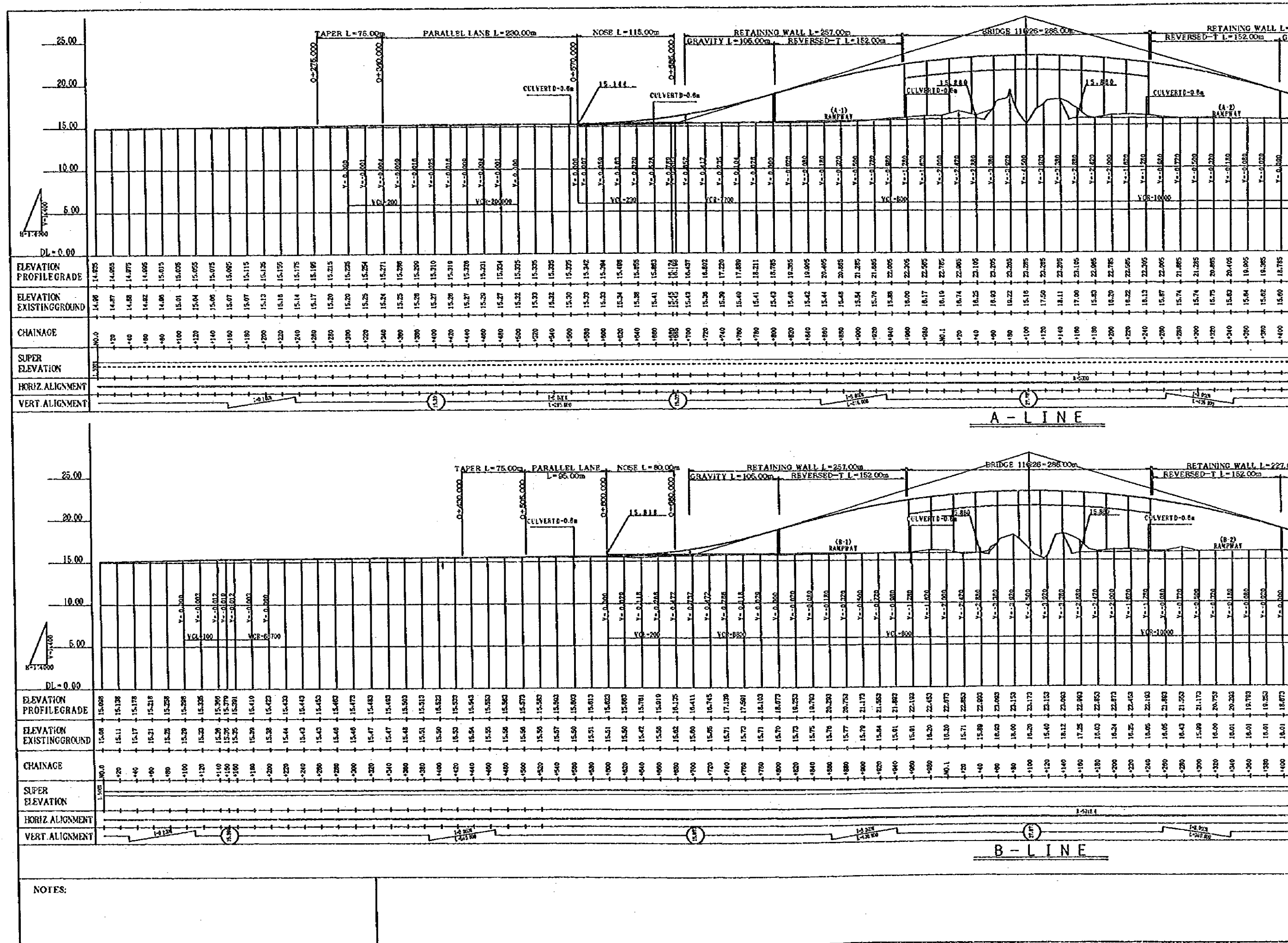


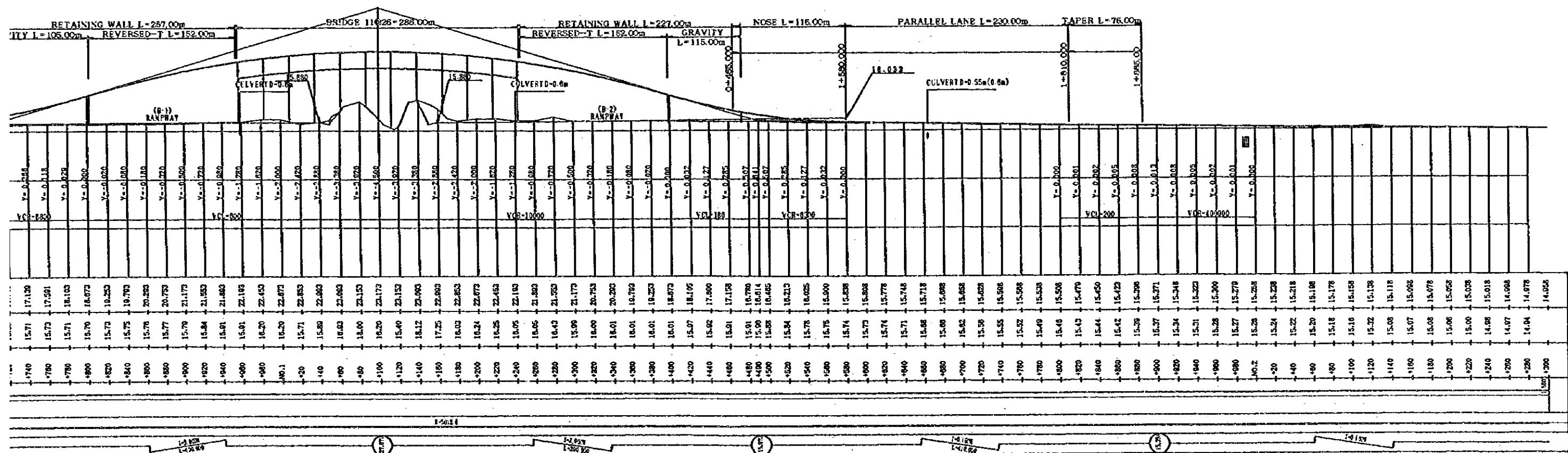
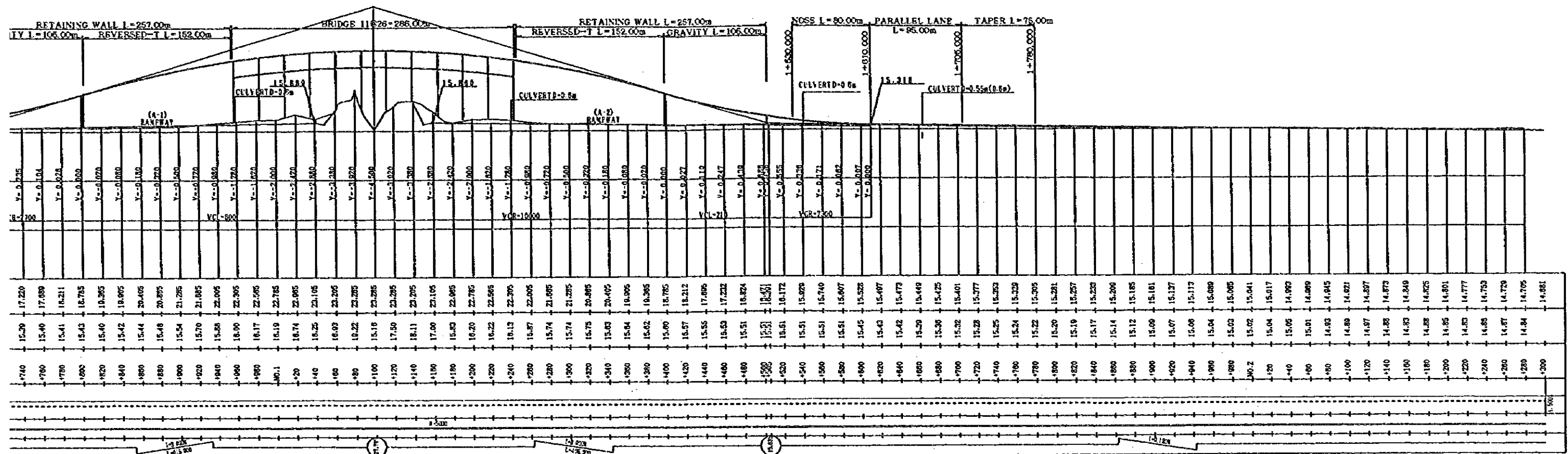
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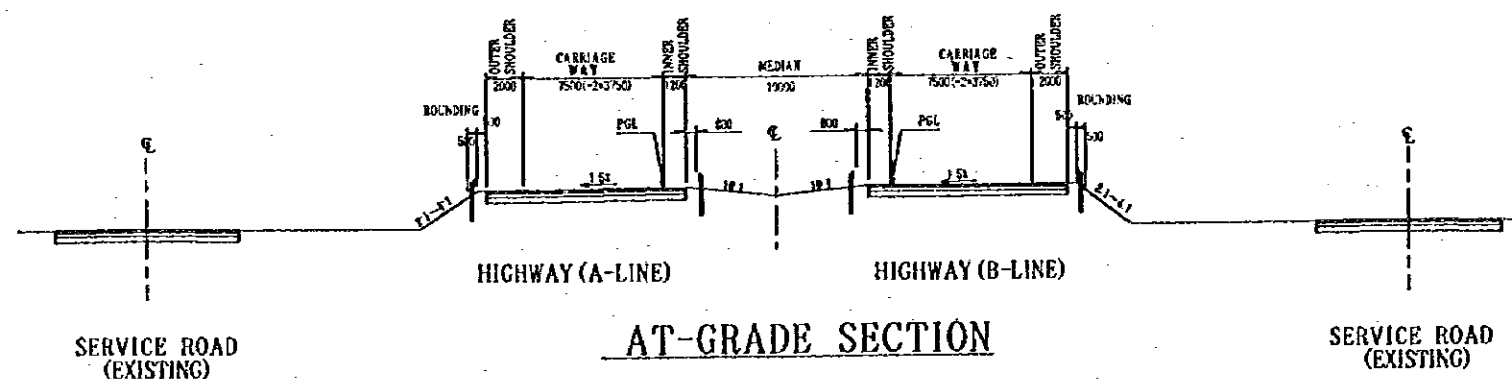
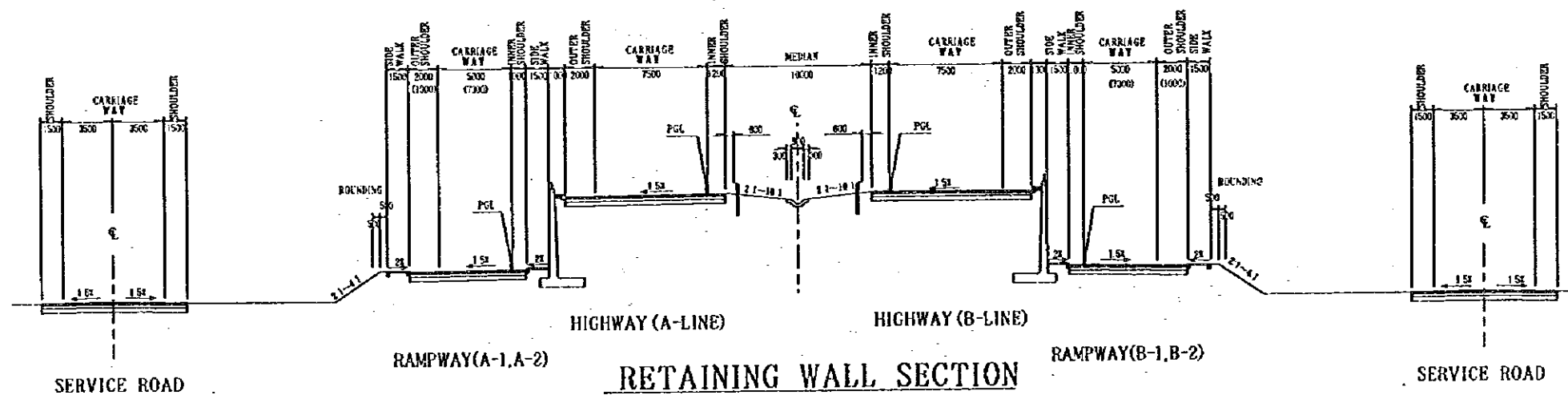
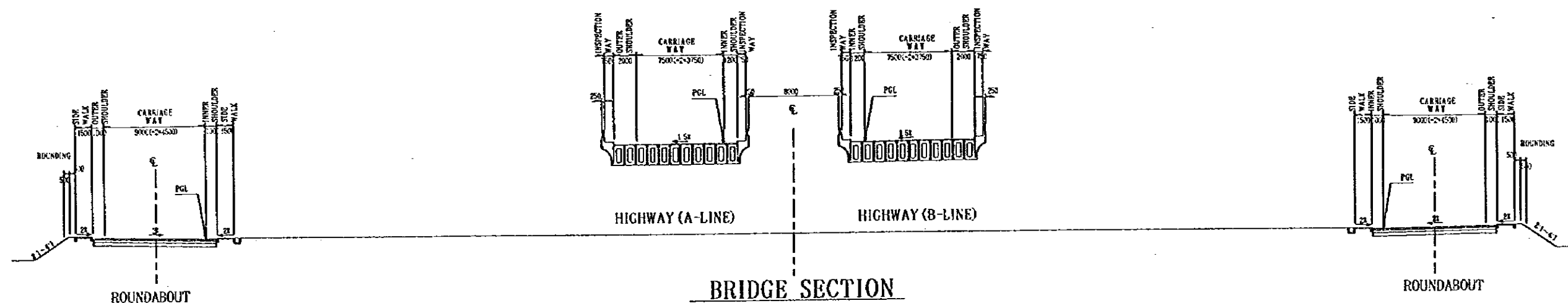


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS	
	PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY	
JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FUKUYAMA CONSULTANTS INTERNATIONAL	TITLE RA/10 SAHAM PLAN	
	DATE	DWGNO. R3





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/10 SAHAM PROFILE-HIGHWAY	
	DATE	DWONO. R-4

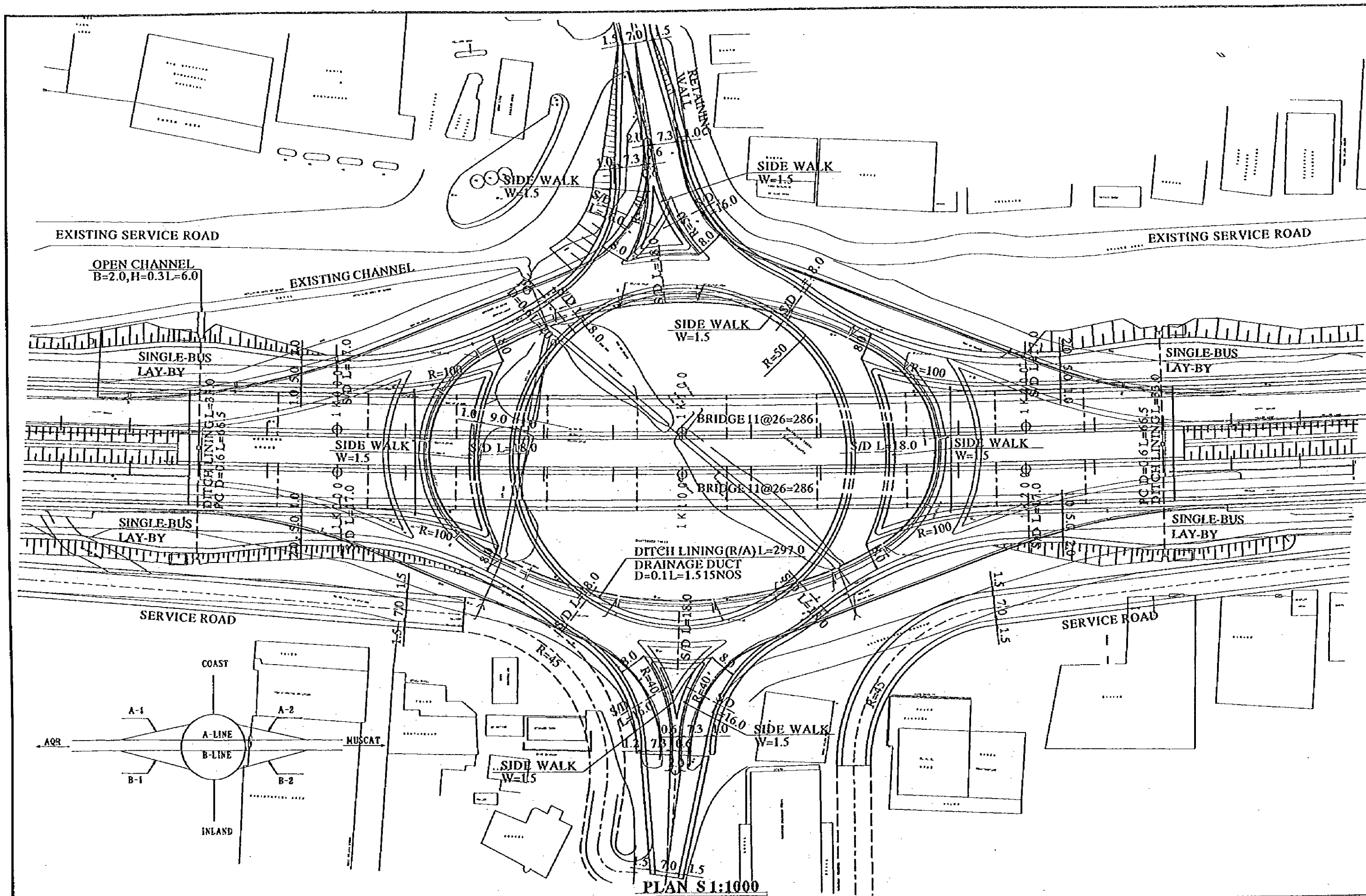


NOTES:

- (1) SCALE 1:400, DIMENSIONS IN MILLIMETER.
- (2) NUMBERS INSIDE BRACKETS ARE DIMENSIONS OF MUSCAT SIDE RAMPWAY.
- (3) THE TRANSITIONAL STRETCH FOR WIDTH AND CROSS FALL ADJUSTMENT SHOULD BE PROVIDED AT THE BEGINING AND THE END.

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/10 SAHAM TYPICAL CROSS SECTION
DATE: DWG NO.: R-5



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.

JAPAN INTERNATIONAL COOPERATION AGENCY

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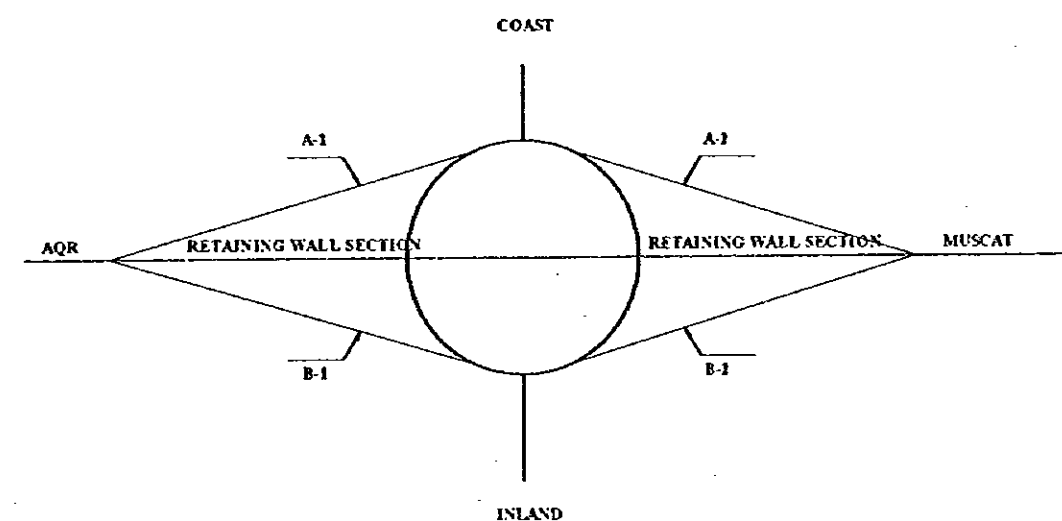
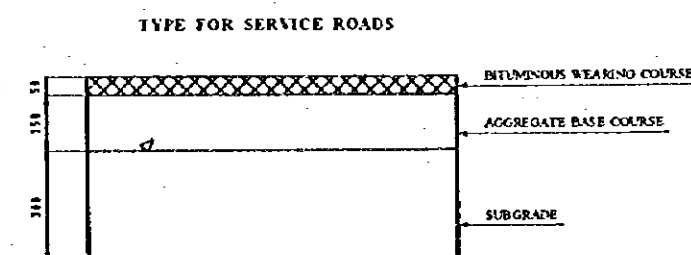
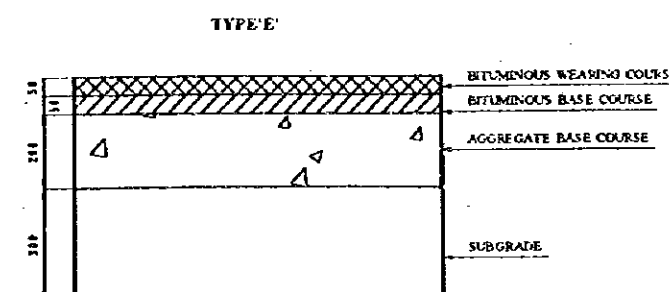
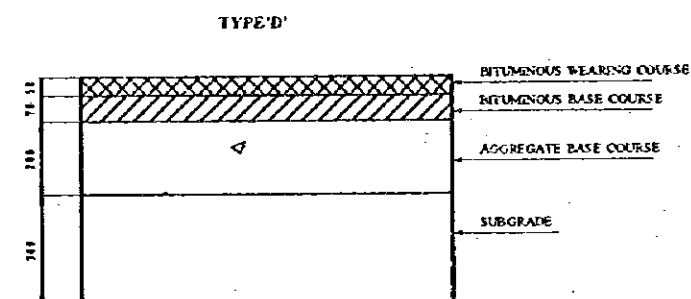
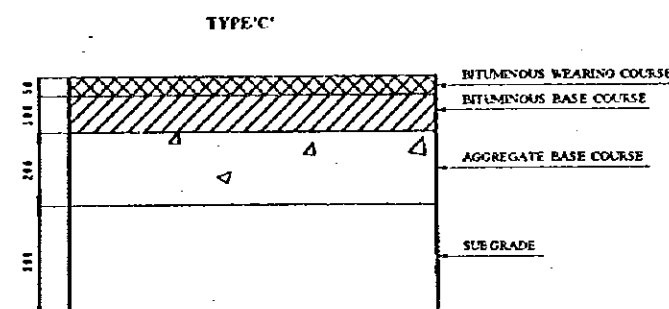
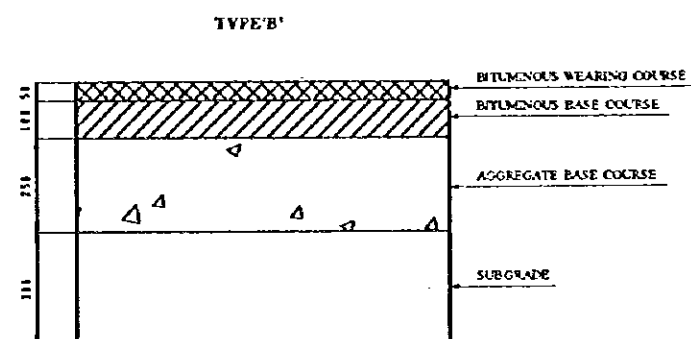
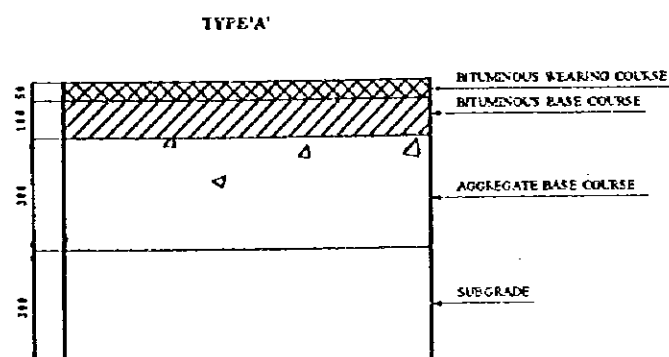
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

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

TITLE: RA10 SABAM DETAILED PLAN

DATE:

DWG NO.: R-6



CLASSIFICATION OF PAVEMENT STRUCTURE

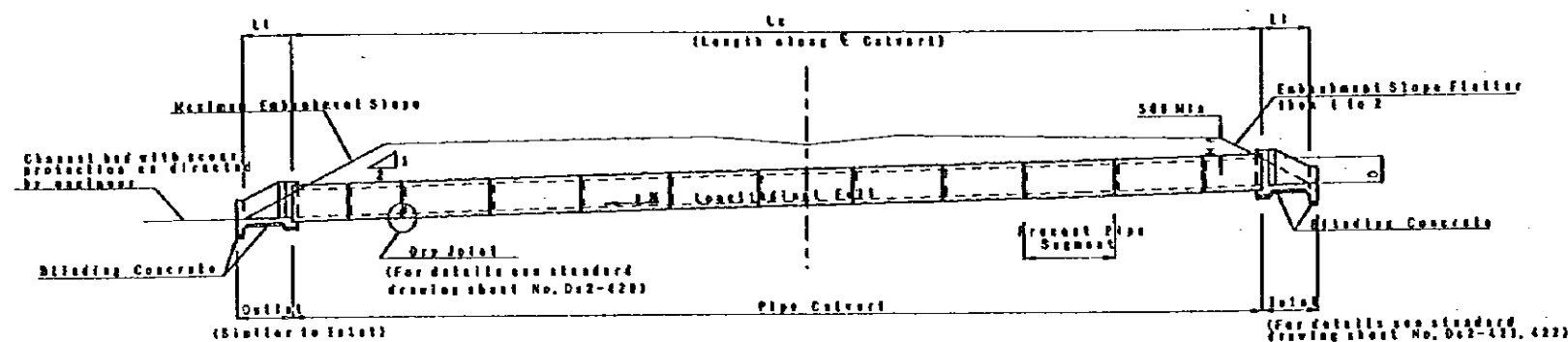
HIGHWAY			ROUNDABOUT	RAMPWAY				CROSSROAD	
AT-GRADE		RETAINING WALL		A-1	B-1	A-2	B-2	INLAND	COAST
AQR	MUSCAT								
B	B	C	B	C	C	C	C	B	B

NOTES:

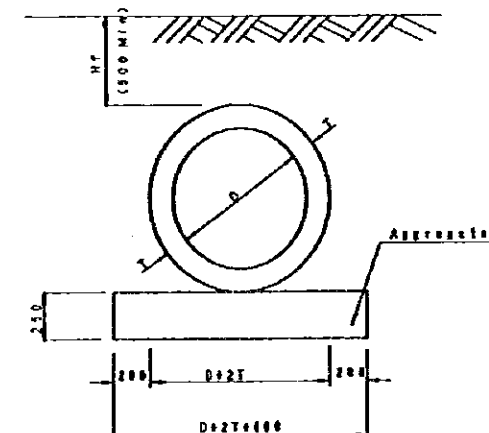
- (1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.
- (2) PRIME COATING PRECEDES BITUMINOUS WEARING COURSE AND TACK COATING PRECEDES BITUMINOUS BASE COURSE.

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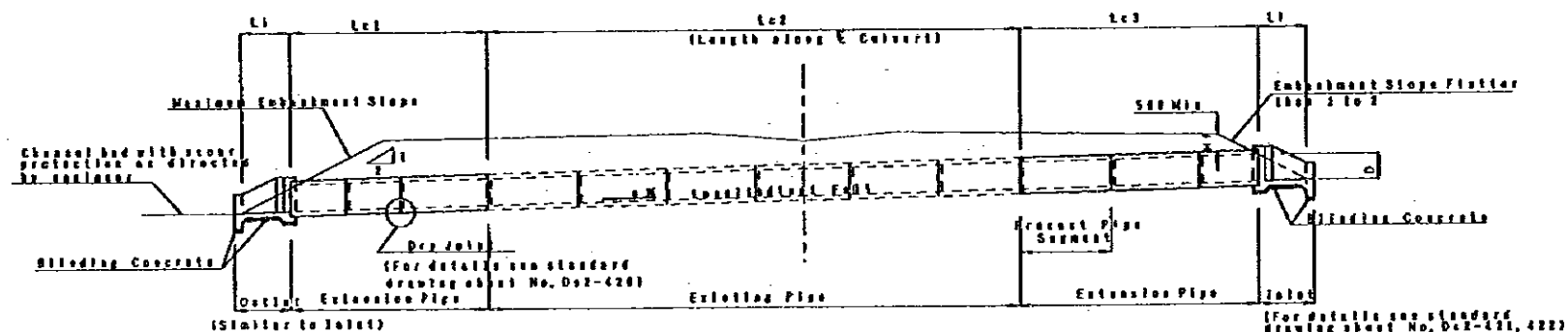
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE: RA/10 SAHAM PAVEMENT DETAILS
DATE: DWG NO.: R-7



SECTION A — A



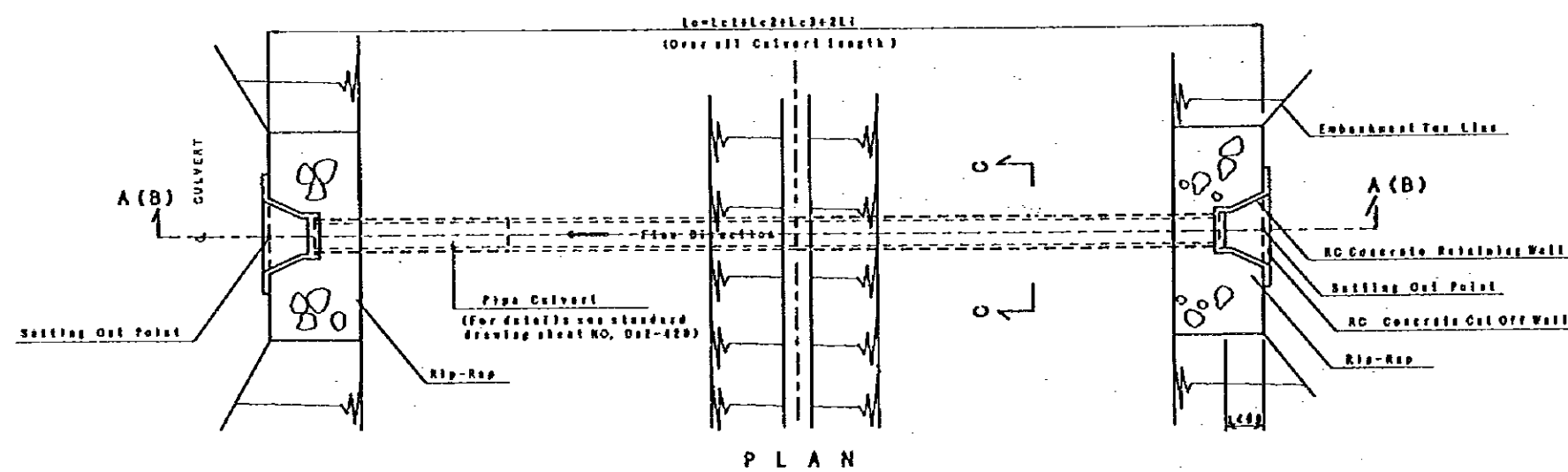
SECTION C --- C



SECTION B — 8

LIST OF PIPE CULVERT

STA	AorB LINE	DIMENSION(m)	PIPE CLASS	LONGITUDINAL FALL %	LENGTH (m)	REMARK
OK561	A.B	φ 0.60 x 1 CELL	M	0.30 %	43.0	New Construction
1K654	A.B	φ 0.60 x 1 CELL	M	0.49 %	(1.5+1.5) 3.0	Extension



NOTES:

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

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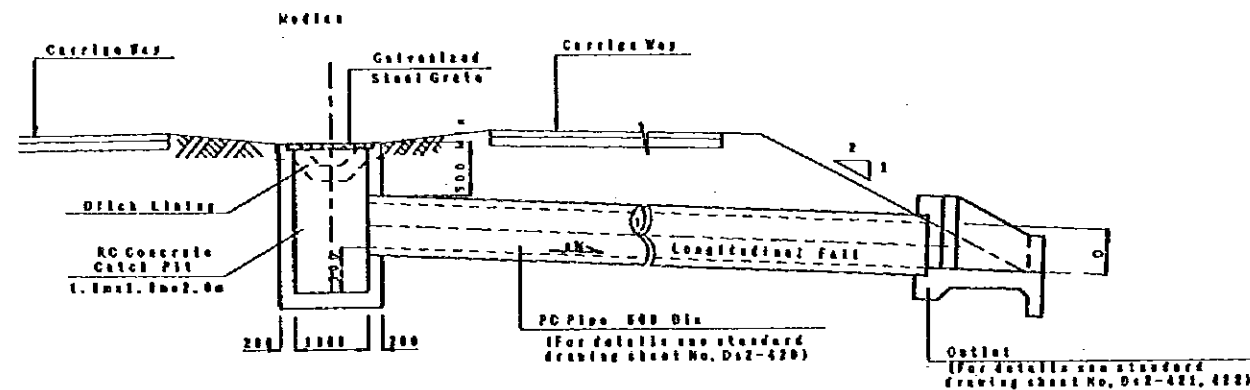
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FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

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

TITLE: RA/10 SAILAM DRAINAGE STRUCTURE (1/3)

DATE:	DWO NO.:	R-8
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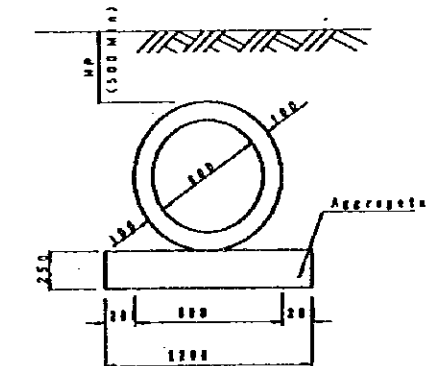


SECTION

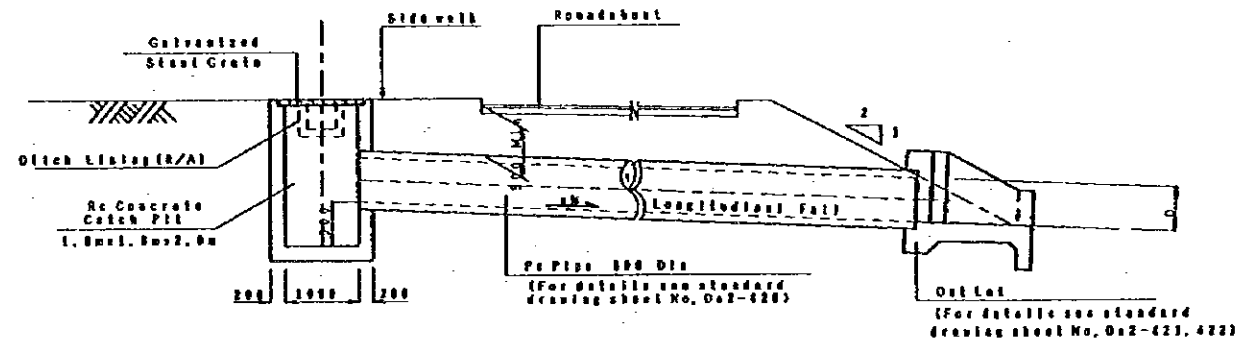
DRAIN SYSTEM OF MEDIAN

LIST OF DRAIN SYSTEM AT MEDIAN

STA	Ac/B LINE	DIMENSION(m)	PIPE CLASS	LONGITUDINAL FALL:‰	LENGTH (m)	REMARK
0K600	A	φ0.60x1CELL	M	0.3%	27.0	
1K540	A	φ0.60x1CELL	M	0.3%	27.0	



TYPICAL CROSS SECTION



SECTION

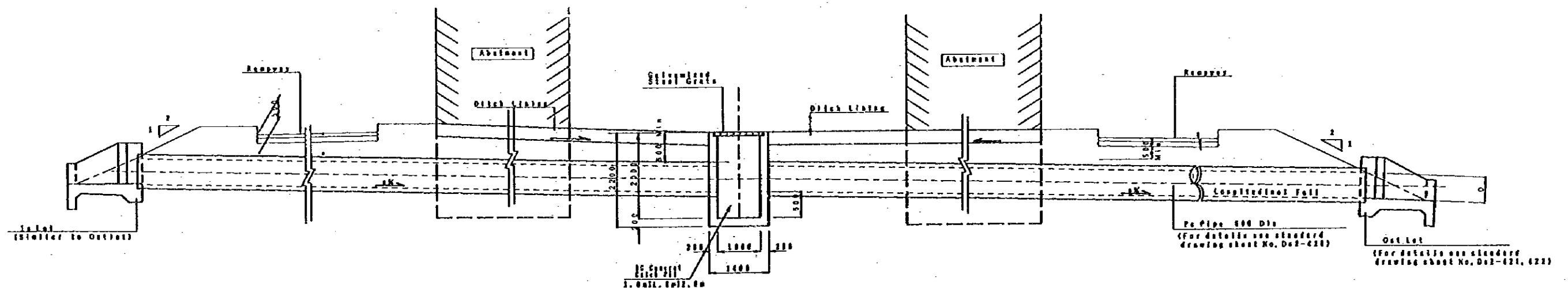
DRAIN SYSTEM OF ROUNDABOUT

LIST OF DRAIN SYSTEM AT ROUNDABOUT

STA	Ac/B LINE	DIMENSION(m)	PIPE CLASS	LONGITUDINAL FALL:‰	LENGTH (m)	REMARK
1K061	A	φ0.60x1CELL	M	0.3%	20.5	

LIST OF DRAIN SYSTEM IN FRONT OF ABUTMENT

STA	Ac/B LINE	DIMENSION(m)	PIPE CLASS	LONGITUDINAL FALL:‰	LENGTH (m)	REMARK
0K959	B	φ0.60x1CELL	M	0.4%	66.5	
1K241	B	φ0.60x1CELL	M	0.3%	66.5	



SECTION

DRAIN SYSTEM IN FRONT OF ABUTMENT

NOTES:

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

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CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

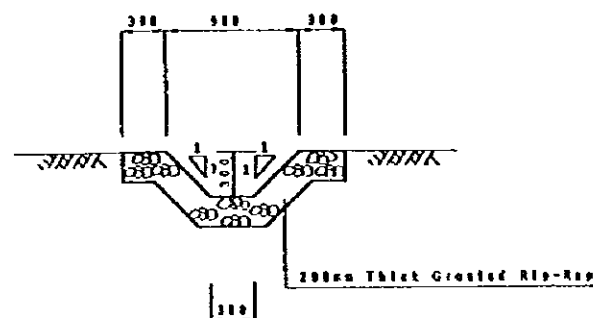
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY

TITLE: RA/10 SAHAM DRAINAGE STRUCTURE (2/3)

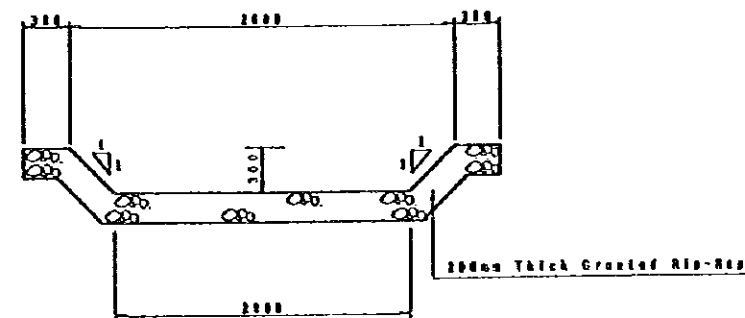
DATE:

DWG NO.:

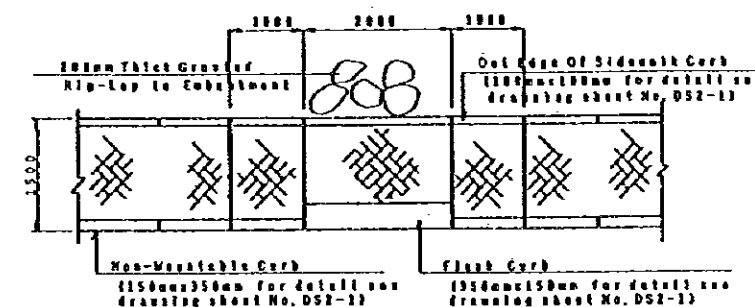
R-9



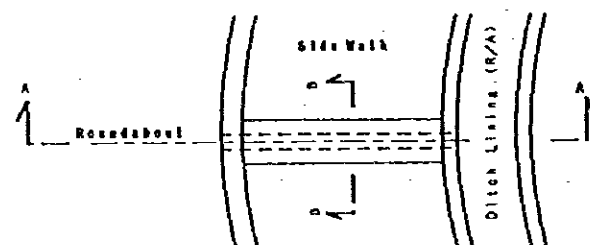
DITCH LINING



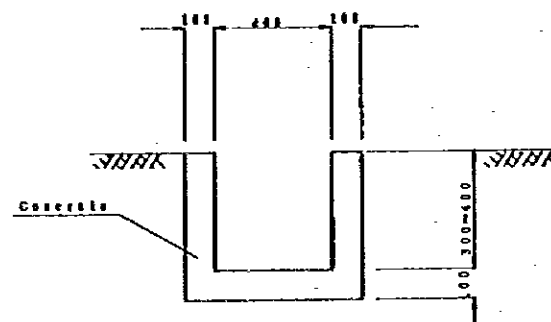
OPEN CHANNEL



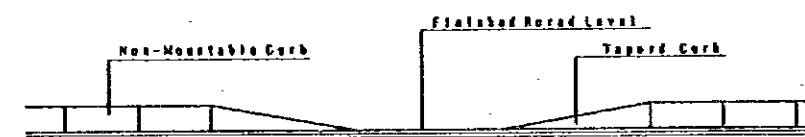
P L A N



P L A N

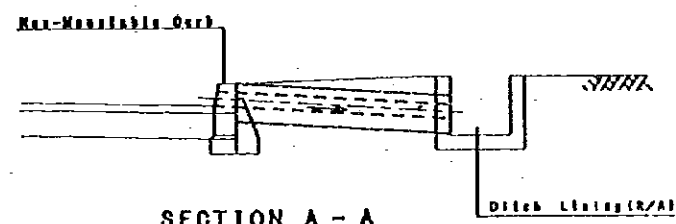


DITCH LINING (R/A)

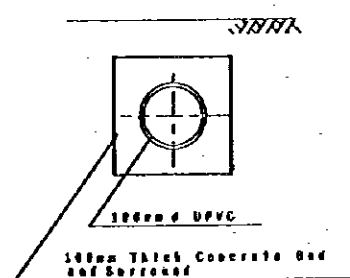


Elevation

DROPPED SIDEWALK

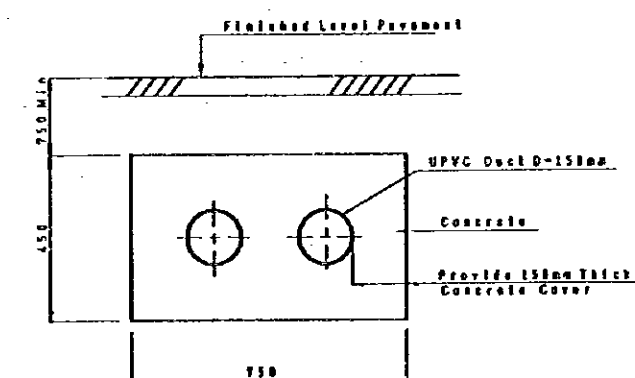


SECTION A - A



SECTION B - B

DRAIN SYSTEM AROUND ROUNDABOUT



SECTION

SERVICE DUCTS

NOTES:

- (1) DIMENSIONS IN MILLIMETER UNLESS OTHERWISE INDICATED.
- (2) THE LONGITUDINAL FALL OF OPEN CHANNEL IS 0.4%.
- (3) THE UPVC OF 100mm IN DIAMETER IS INSTALLED AT AN INTERVAL OF ABOUT 20m.
- (4) THE DROPPED SIDEWALK IS INSTALLED ALONG RAMPS AT AN INTERVAL OF 50m.

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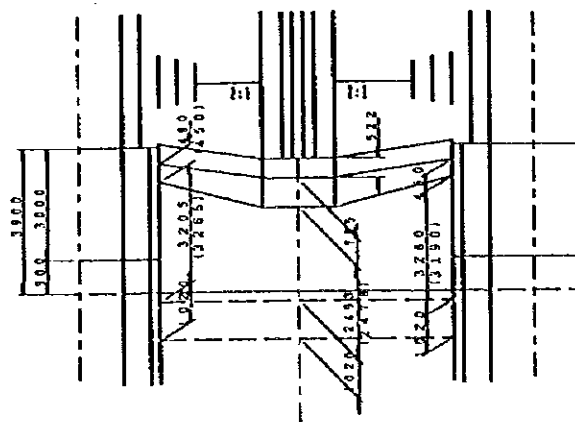
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

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

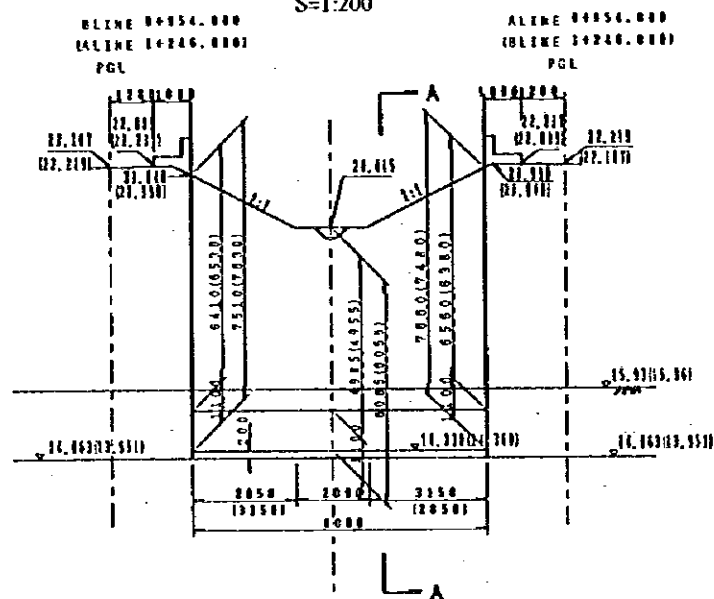
TITLE : RA/10 SAHAM DRAINAGE STRUCTURE (3/3) SERVICE AND DUCTS

DATE :

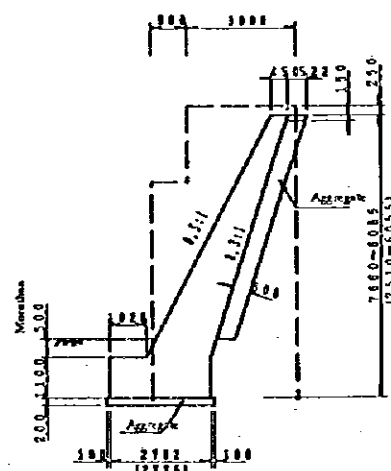
DWG NO. : R-10



PLAN
S=1:200

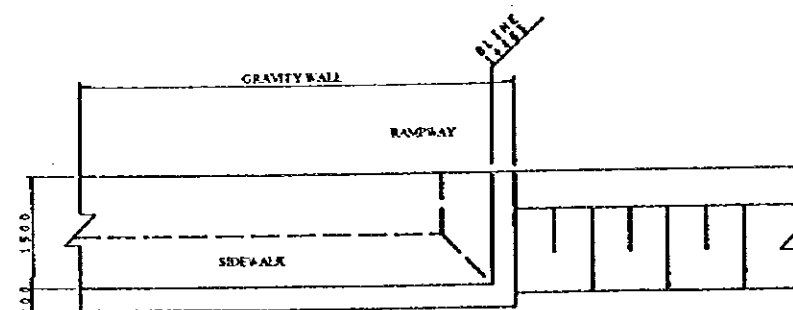


FRONT VIEW
S=1:200

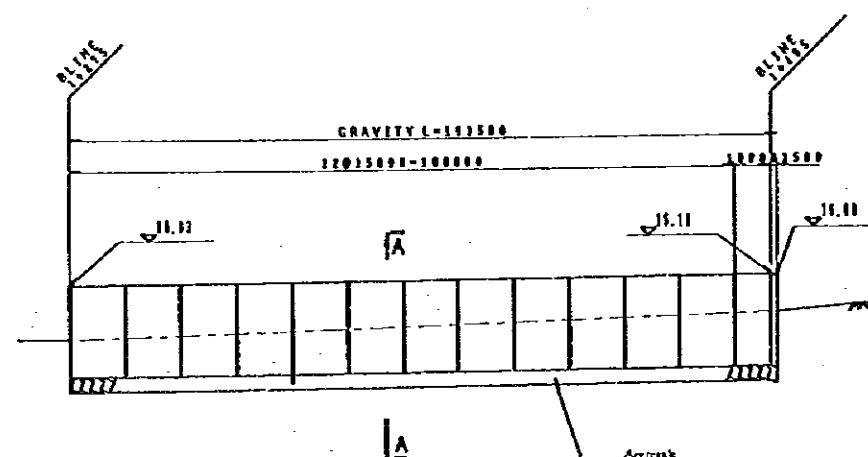


SECTION A-A
S=1:200

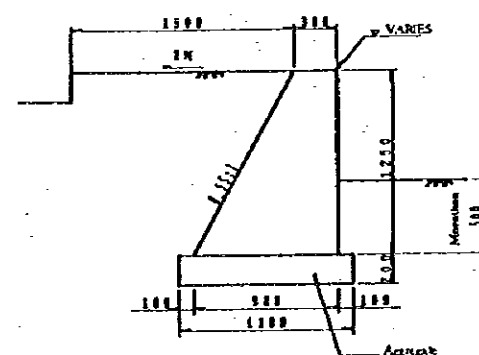
RETAINING WALL BETWEEN ABUTMENTS



PLAN
S=1:100

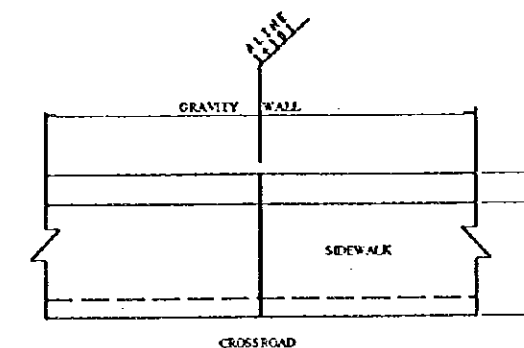


FRONT VIEW
H=1:2000
V=1:100

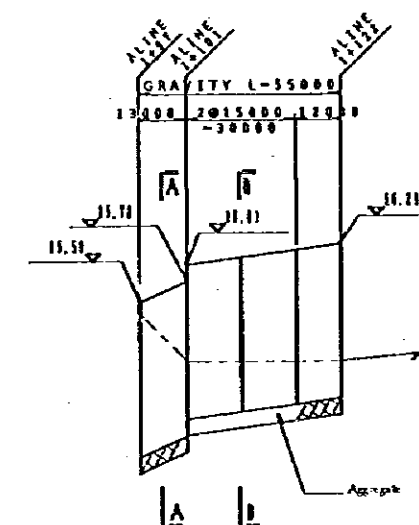


SECTION A-A
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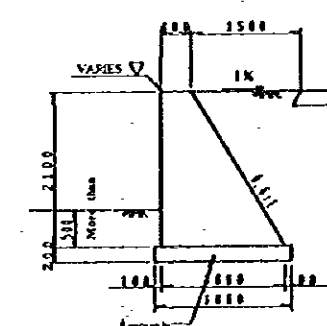
RETAINING WALL ALONG RAMPWAY (B-2)



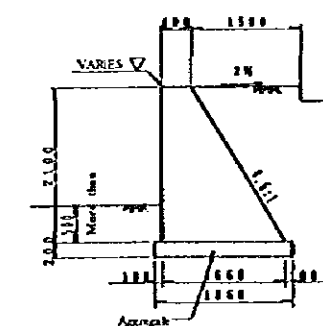
PLAN
S=1:100



FRONT VIEW
H=1:2000
V=1:100



SECTION A-A
S=1:100



SECTION B-B
S=1:100

RETAINING WALL ALONG COASTAL SIDE CROSS ROAD

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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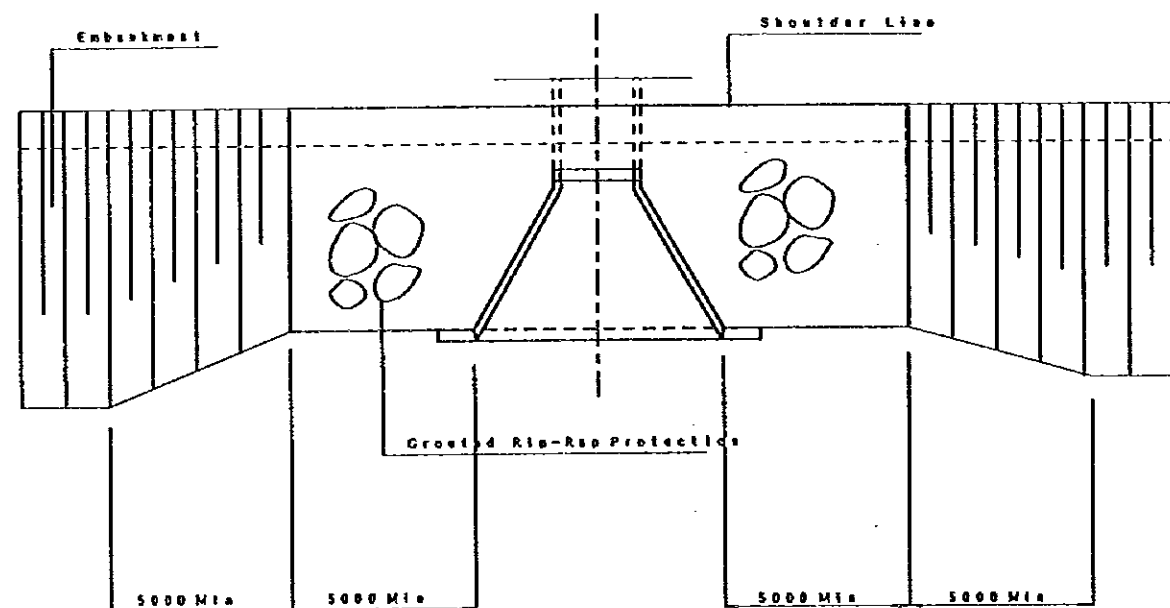
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

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

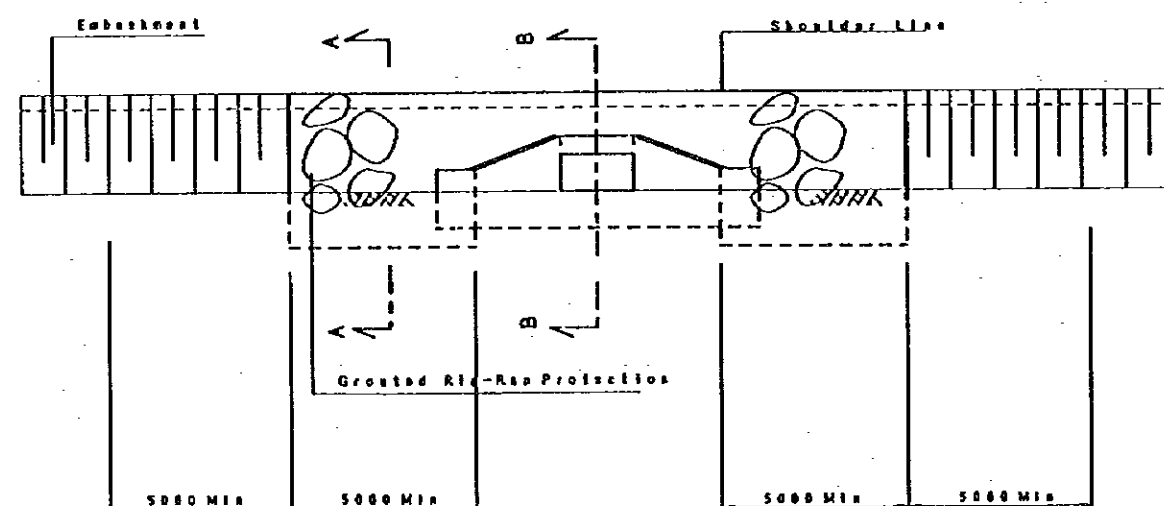
TITLE: RA/10 SAHAM RETAINING WALL

DATE:

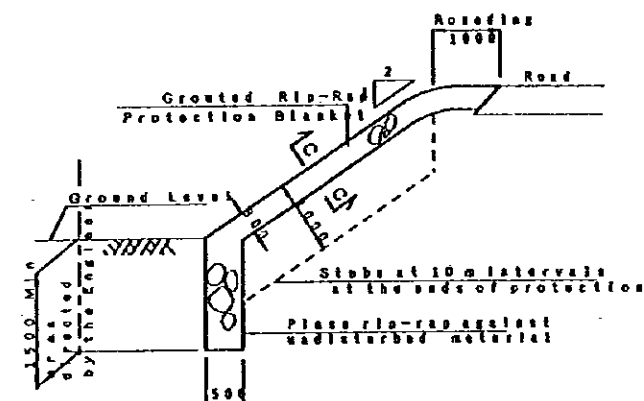
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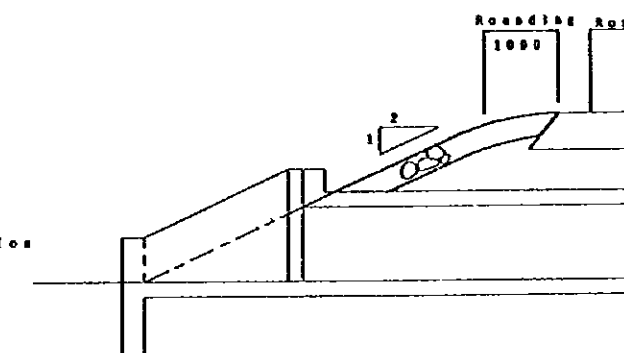
PLAN



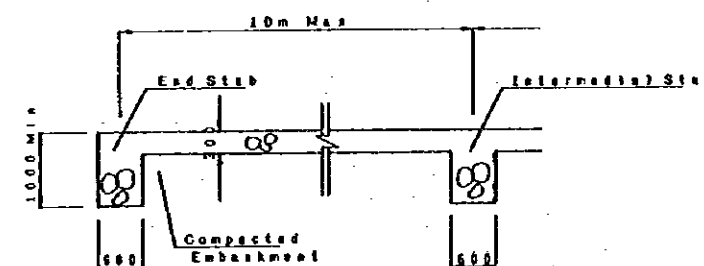
FRONT VIEW



SECTION A - A



SECTION B - B

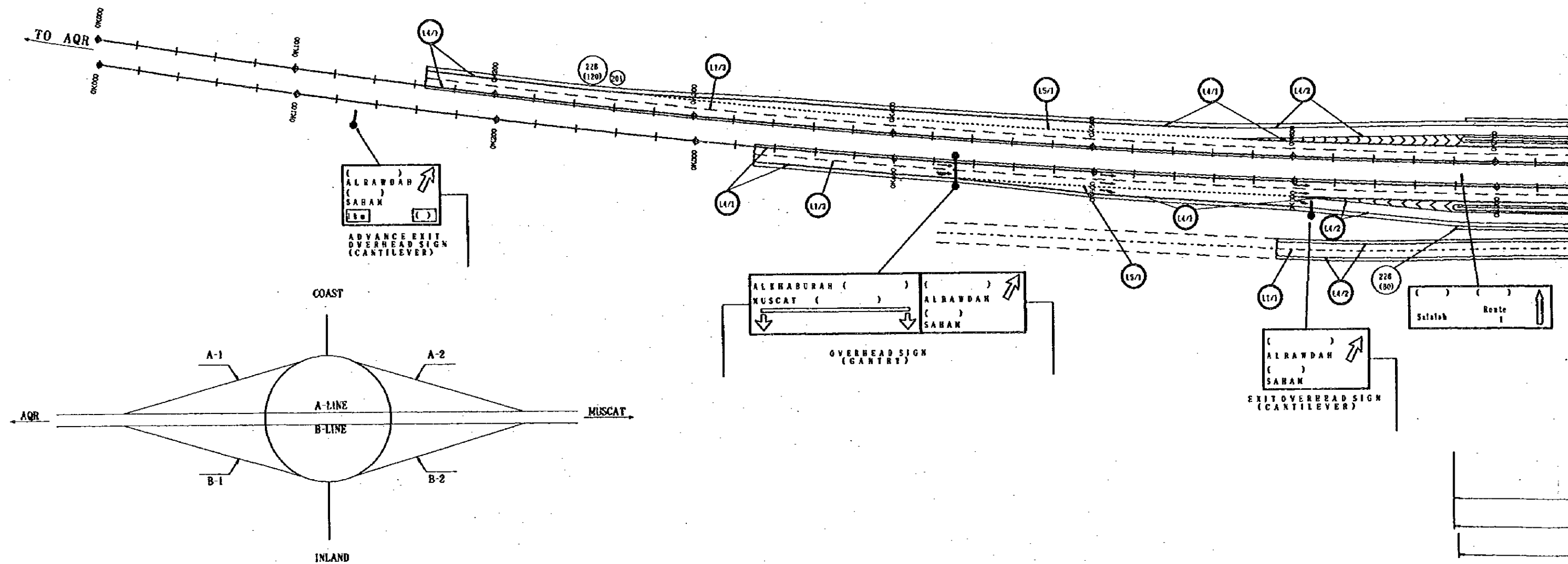


SECTION C - C

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

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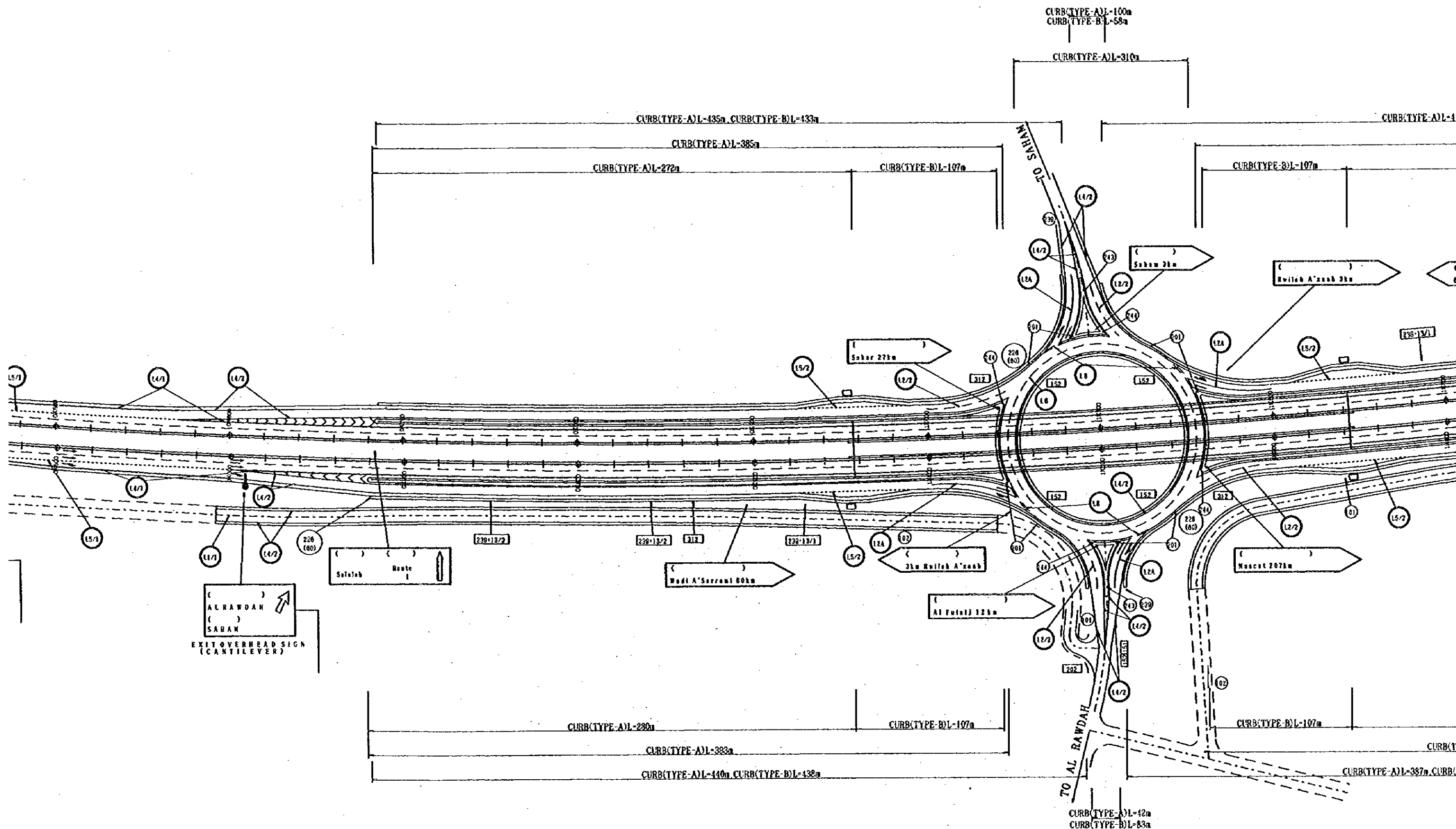
CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE: RA/10 SAHAM SLOPE PROTECTION
DATE: DWG NO.: R-12



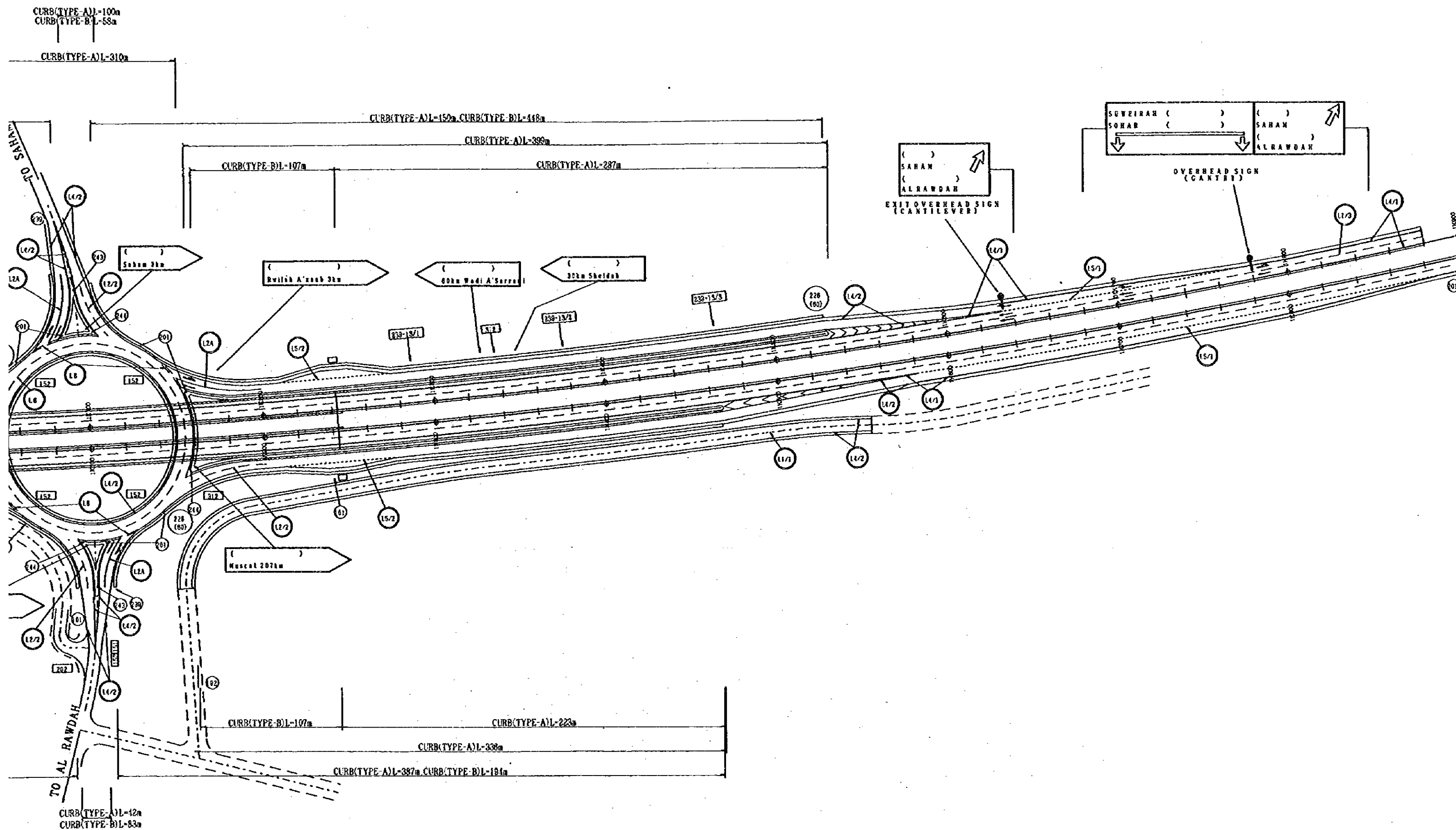
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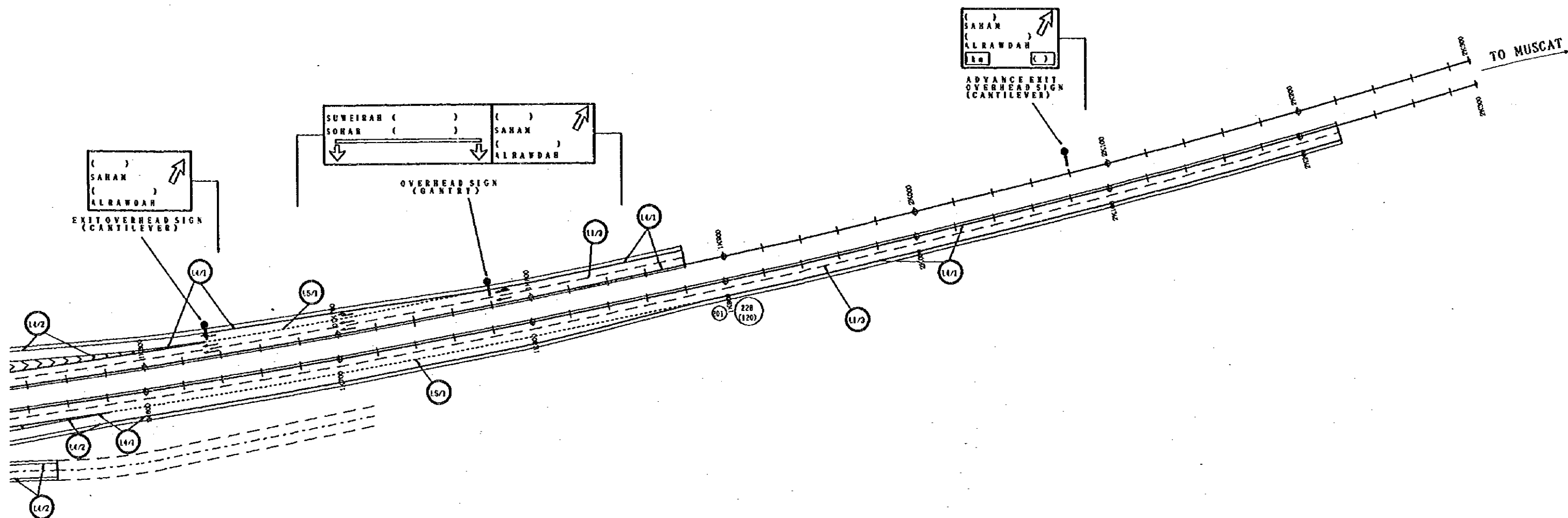
- (1) FOR DETAILS OF ROAD SIGNS, ROAD MARKINGS REFER TO THE HIGHWAY DESIGN MANUAL.
- (2) DIMENSIONS OF CURB TYPE-A AND TYPE-B ARE 150mm x 350mm AND 100mm x 200mm RESPECTIVELY. FOR DETAILS REFER STANDARD DRAWING SHEET NO. SCD2.1
- (3) PAINTING (YELLOW AND BLACK) IS APPLIED TO CURB TYPE-A.
- (4) FOR DETAILS OF INFORMATION SIGNBOARDS CONFIRM WITH DOR 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.



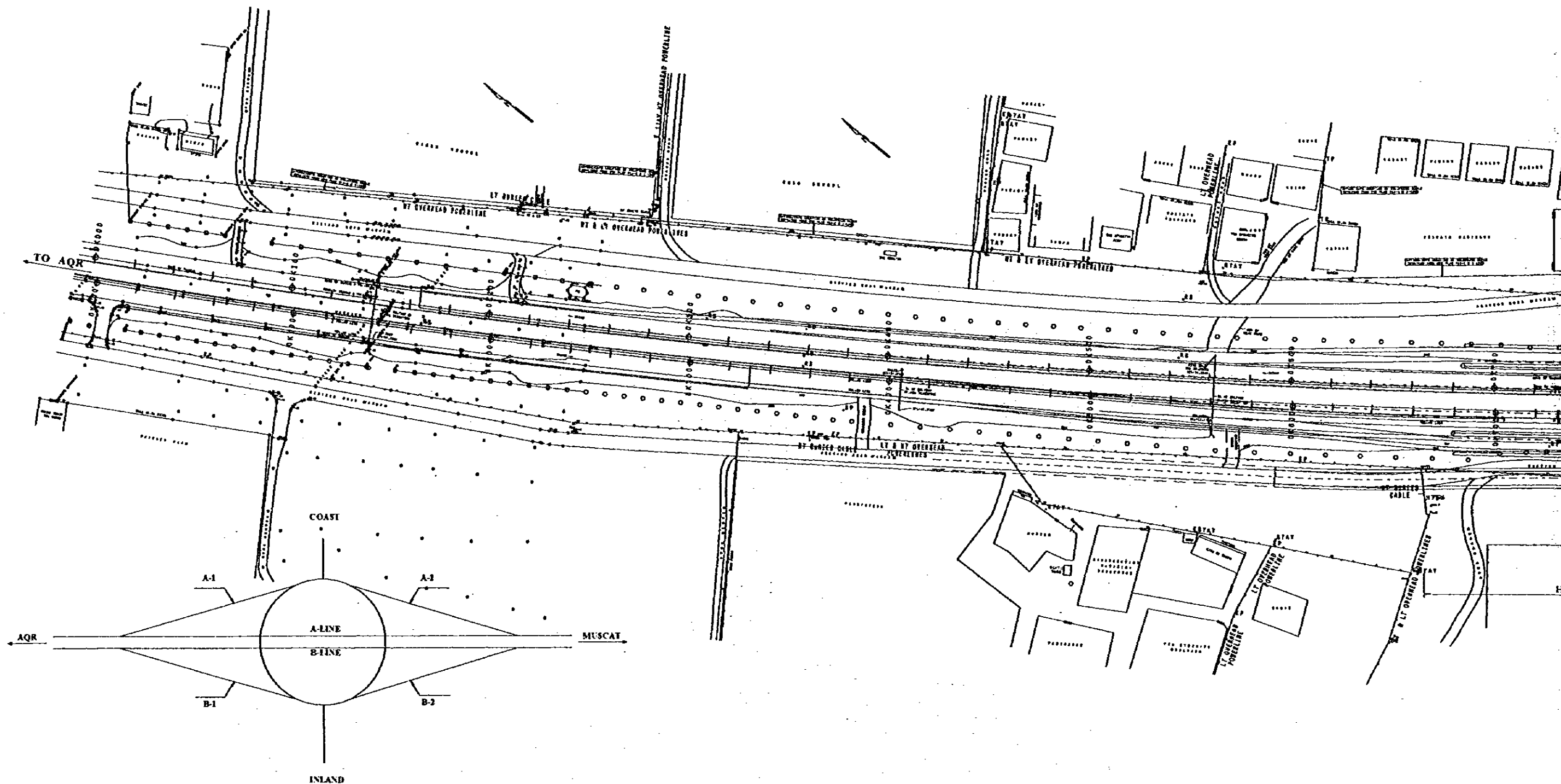
O BE FINALIZED DURING CONSTRUCTION.
 RATE LOCATION 300-1000m AHEAD FROM OVERHEAD SIGN.





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CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE: RA/10 SAHAM ROAD MARKING AND TRAFFIC SIGN
DATE: _____ DWGNO. R-13



NOTES:

