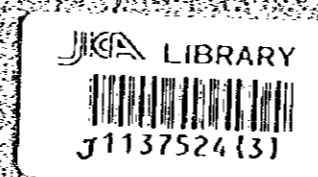


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
DIRECTORATE GENERAL OF ROADS
MINISTRY OF COMMUNICATIONS
THE SULTANATE OF OMAN

THE DETAILED DESIGN STUDY ON ROAD DEVELOPMENT PROJECT

FINAL REPORT
MAIN DRAWINGS

MARCH 1997



PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

SSF
CR (5)
97-015

**JAPAN INTERNATIONAL COOPERATION AGENCY [JICA]
DIRECTORATE GENERAL OF ROADS
MINISTRY OF COMMUNICATIONS
THE SULTANATE OF OMAN**

THE DETAILED DESIGN STUDY ON ROAD DEVELOPMENT PROJECT

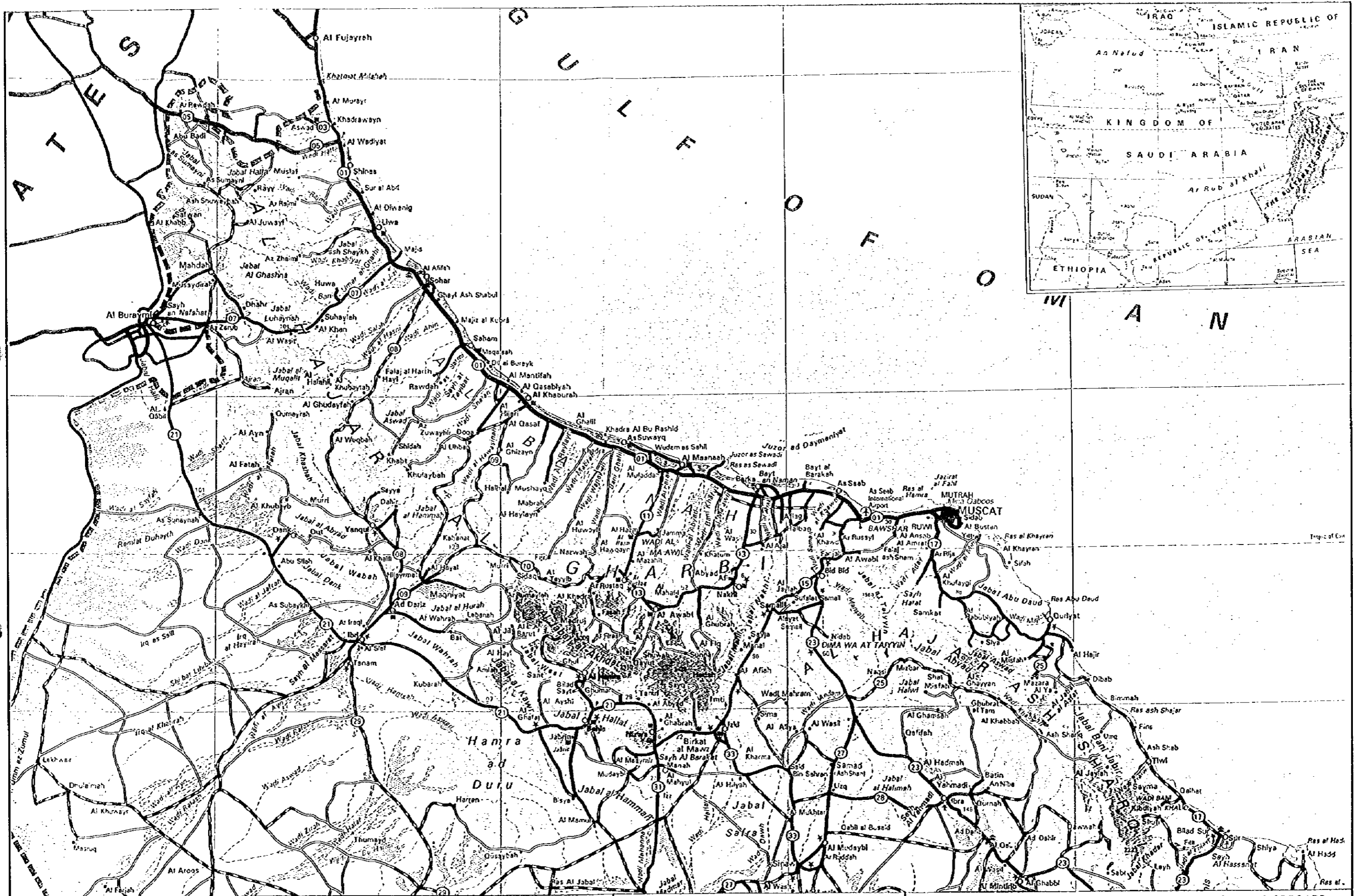
**FINAL REPORT
MAIN DRAWINGS**

MARCH 1997

**PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL**



1137524 (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: GENERAL LOCATION MAP
DATE: _____ DWG NO. G-1

DRAWING SCHEDULE (MAIN DRAWINGS)

SHEET NO.	TITLE	SHEET NO.	TITLE	SHEET NO.	TITLE
A	GENERAL	F03	R/A-5 AL MULADDAH	F06	R/A-12 SOHAR
G-1	General Location Map	R	Road	R	Road
G-2,G-3	Drawing Schedule	R-3	Plan	R-5,R-6	Plan (1/2), (2/2)
G-4	General Note	R-4	Profile	R-7	Profile
F	FLYOVERS	R-5	Typical Cross Section	R-8	Typical Cross Section
F01	R/A-2 A'NASEEM GARDEN	R-6	Detailed Plan	R-8	Detailed Plan
R	Road	B	Structure - Bridge	B	Structure - Bridge
R-3	Plan	B-1,B-2	General View (A-Line), (B-Line)	B-1,B-2	General View (A-Line), (B-Line)
R-4	Profile	B-3~B-6	Flaming Plan (A-Line), (B-Line)	B-3~B-6	Flaming Plan (A-Line), (B-Line)
R-5	Typical Cross Section	W	Structure - Retaining Wall	W	Structure - Retaining Wall
R-6	Detailed Plan	W-1,W-2	General View (1)-1, (1)-2	W-1,W-2	General View (1)-1, (1)-2
B	Structure - Bridge	W-23,W-24	General View (2)-1, (2)-2	W-20,W-21	General View (2)-1, (2)-2
B-1,B-2	General View (A-Line), (B-Line)	F04	R/A-8 AL KHABURAH	F07	R/A-14 FALAJ AL QABAIL
B-3~B-6	Flaming Plan (A-Line), (B-Line)	R	Road	R	Road
W	Structure - Retaining Wall	R-3	Plan	R-5,R-6	Plan (1/2), (2/2)
W-1,W-2	General View (1)-1, (1)-2	R-4	Profile	R-7	Profile
W-23,W-24	General View (2)-1, (2)-2	R-5	Typical Cross Section	R-8	Typical Cross Section
F02	R/A-3 BARKA	R-6	Detailed Plan	R-9	Detailed Plan
R	Road	B	Structure - Bridge	B	Structure - Bridge
R-3	Plan	B-1,B-2	General View (A-Line), (B-Line)	B-1,B-2	General View (A-Line), (B-Line)
R-4	Profile	B-3~B-6	Flaming Plan (A-Line), (B-Line)	B-3~B-6	Flaming Plan (A-Line), (B-Line)
R-5	Typical Cross Section	W	Structure - Retaining Wall	W	Structure - Retaining Wall
R-6	Detailed Plan	W-1,W-2	General View (1)-1, (1)-2	W-1,W-2	General View (1)-1, (1)-2
B	Structure - Bridge	W-20,W-21	General View (2)-1, (2)-2	W-20,W-21	General View (2)-1, (2)-2
B-1,B-2	General View (A-Line), (B-Line)	F05	R/A-10 SAHAM	F08	R/A-18 AQR
B-3~B-6	Flaming Plan (A-Line), (B-Line)	R	Road	R	Road
W	Structure - Retaining Wall	R-3	Plan	R-5~R-7	Plan (1/3), (2/3), (3/3)
W-1,W-2	General View (1)-1, (1)-2	R-4	Profile	R-8~R-10	Profile (1/3), (2/3), (3/3)
W-23,W-24	General View (2)-1, (2)-2	R-5	Typical Cross Section	R-11	Typical Cross Section
		R-6	Detailed Plan	B	Structure - Bridge
		B	Structure - Bridge	B-1,B-2	General View (A-Line), (B-Line)
		B-1,B-2	General View (A-Line), (B-Line)	B-3~B-6	Flaming Plan (A-Line), (B-Line)
		B-3~B-6	Flaming Plan (A-Line), (B-Line)	W	Structure - Retaining Wall
		W	Structure - Retaining Wall	W-1,W-2	General View (1)-1, (1)-2
		W-1,W-2	General View (1)-1, (1)-2	W-23,W-24	General View (2)-1, (2)-2
		W-20,W-21	General View (2)-1, (2)-2	C-1	General View of Box Culvert

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 BAYNAH HIGHWAY

TITLE : DRAWING SCHEDULE

DATE _____ DWG NO. G - 2

DRAWING SCHEDULE (MAIN DRAWINGS)

SHEET NO.	TITLE	SHEET NO.	TITLE
P	PEDESTRIAN UNDERPASSES		
PU1	BARKA	PU11	LIWA
P-1~P-3	General View (1)~(3)	P-1~P-3	General View (1)~(3)
PU2	AL BILLAH	PU12	ASRAR BANI SA'D
P-1~P-3	General View (1)~(3)	P-1~P-3	General View (1)~(3)
PU3	A' TAREEF		
P-1~P-5	General View (1)~(5)		
PU4	AL QARAT		
P-1~P-3	General View (1)~(3)		
PU5	A' THARMAD		
P-1~P-5	General View (1)~(5)		
PU6	A' SUWEIQ		
P-1~P-5	General View (1)~(5)		
PU7	AL KHADRA		
P-1~P-3	General View (1)~(3)		
PU8	QARIH		
P-1~P-3	General View (1)~(3)		
PU9	MAJAZ A' SUGHRA		
P-1~P-3	General View (1)~(3)		
PU10	KHOR A' SIYABI		
P-1~P-3	General View (1)~(3)		

JAPAN INTERNATIONAL COOPERATION AGENCY

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CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

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TITLE : DRAWING SCHEDULE

DATE

DWG NO. G - 3

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)	Cubes (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, min (kgf/cm ²)	Yield strength, min (kgf/cm ²)
Grade40	4921	2812
Grade60	6327	4218 (Use)

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)	Yield Strength (kgf/mm ²)
12T15.2	1664.40	SWPR7B	190	160 (for Main Beam)
1T15.2	138.70	SWPR7B	190	160 (for Cross Beam)

ALLOWABLE STRESSES

1. CONCRETE

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

(1) Prestressed concrete structures (kgf/cm ²)	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 (Use)
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

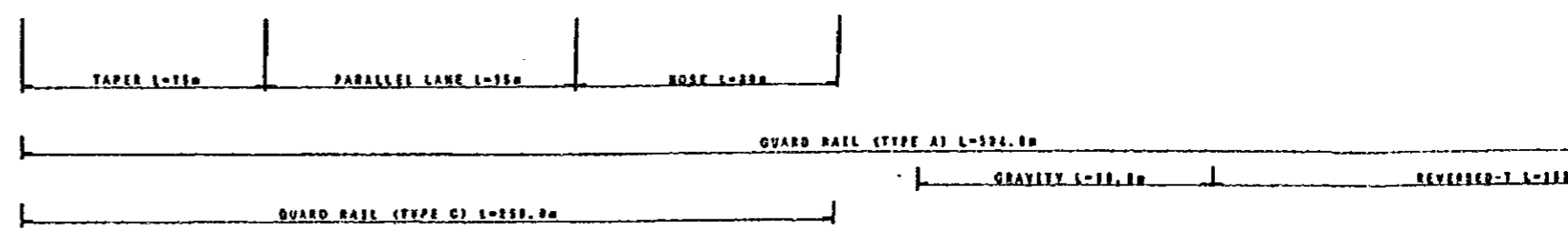
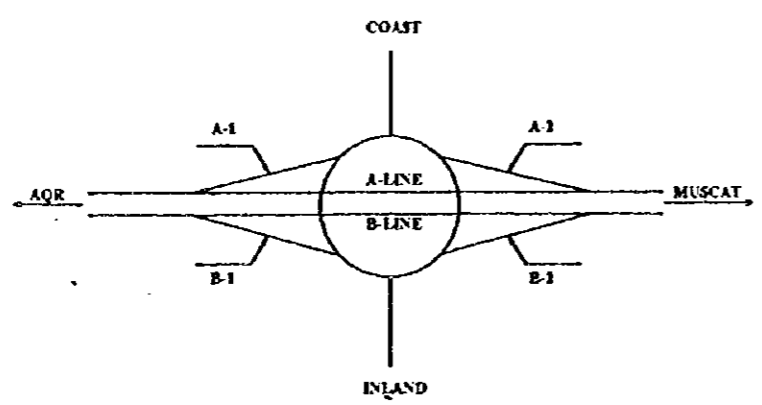
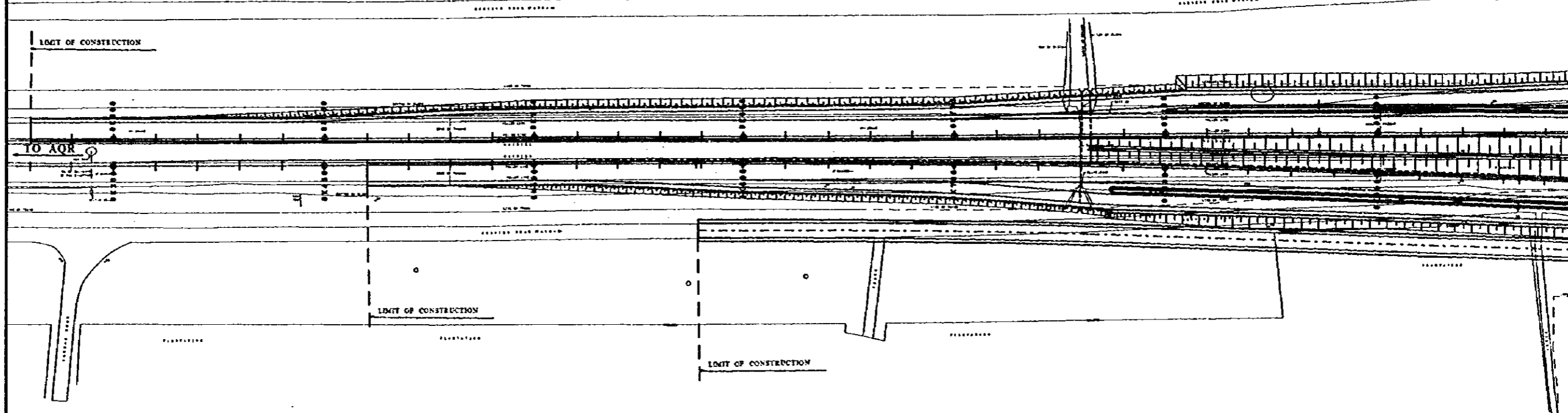
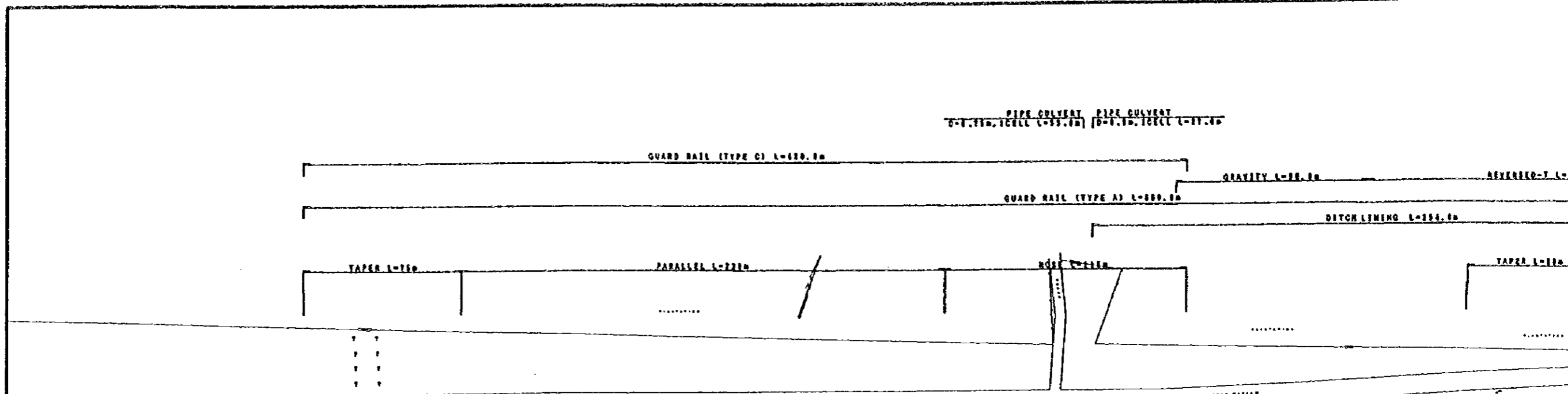
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		TITLE : GENERAL NOTES	DWG NO. : G - 4
		DATE :	

FLYOVERS

R/A- 2	A'Naseem Garden Flyover
R/A- 3	Barka Flyover
R/A- 5	Al Muladdah Flyover
R/A- 8	Al Khaburah Flyover
R/A- 10	Sham Flyover
R/A- 12	Sohar Flyover
R/A- 14	Falaj Al Qabail Flyover
R/A- 18	Aqr Flyover

A' Naseem Garden

FLYOVER

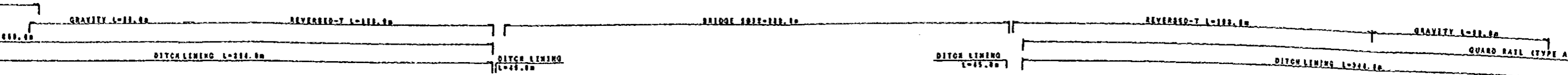


NOTES:

GRAVITY L-11.00
PIPE CULVERT L-18.00

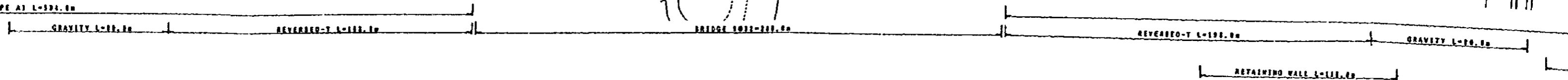
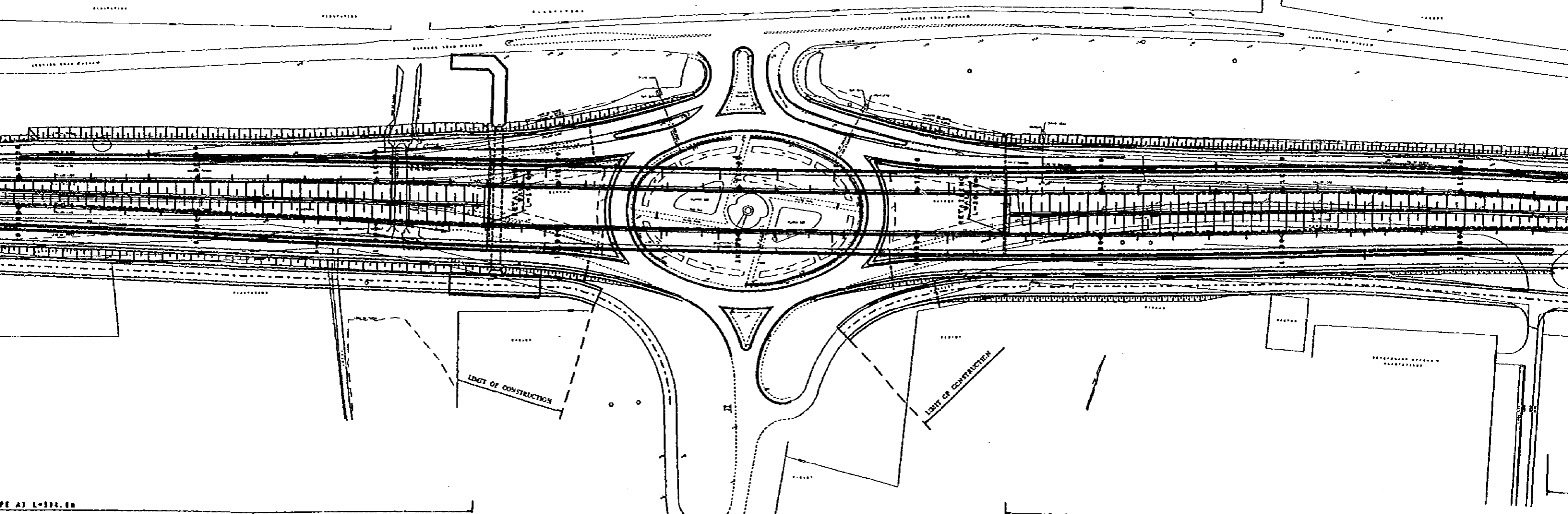
OPEN CHANNEL
1000.00 L-55.00
PIPE CULVERT L-18.00
SERVICE DUCT
0-0.110.1WAY L-11.00

PIPE CULVERT
0-0.110.1WAY L-18.00



TAPER L-80.00 PARALLEL LANE L-40.00

PARALLEL LANE L-40.00 TAPER L-80.00



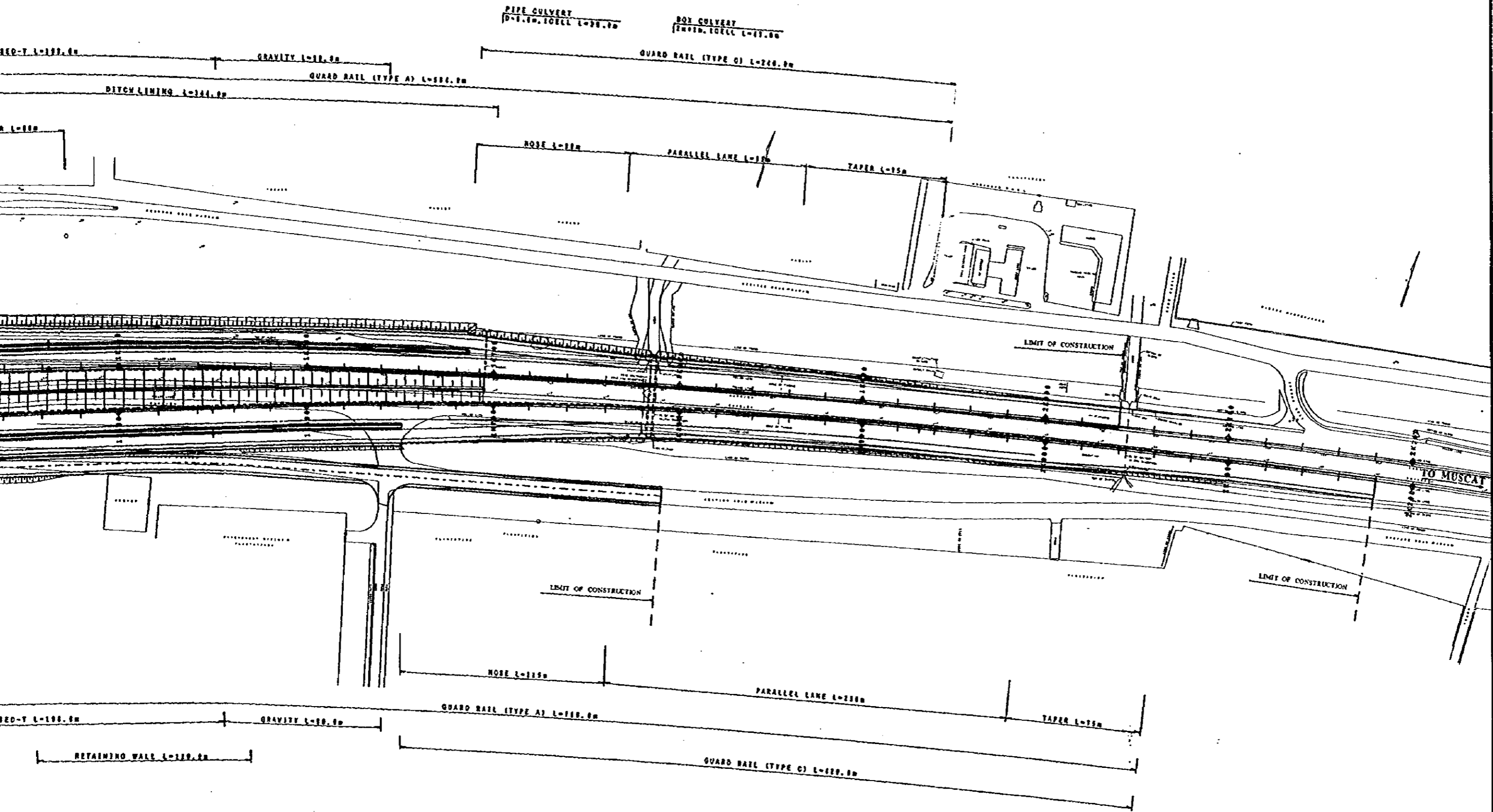
RAIN CROSSING
L-30.00

SERVICE DUCT
0-0.110.1WAY L-11.00

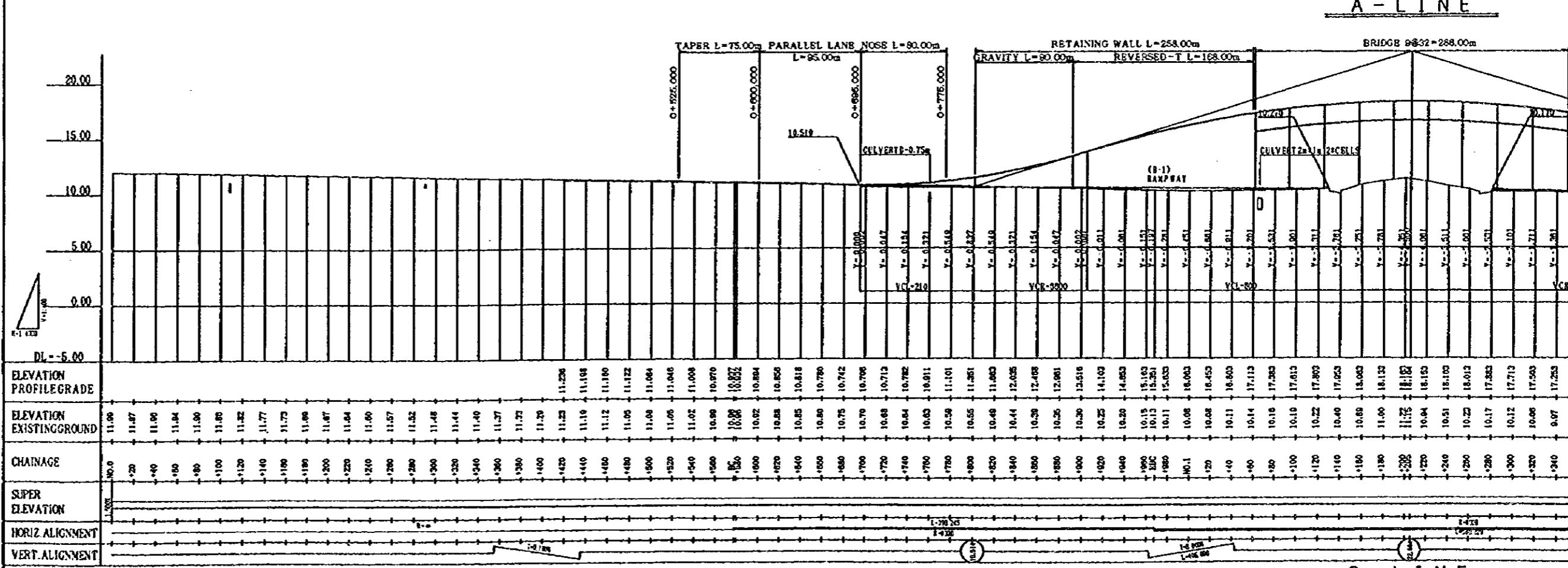
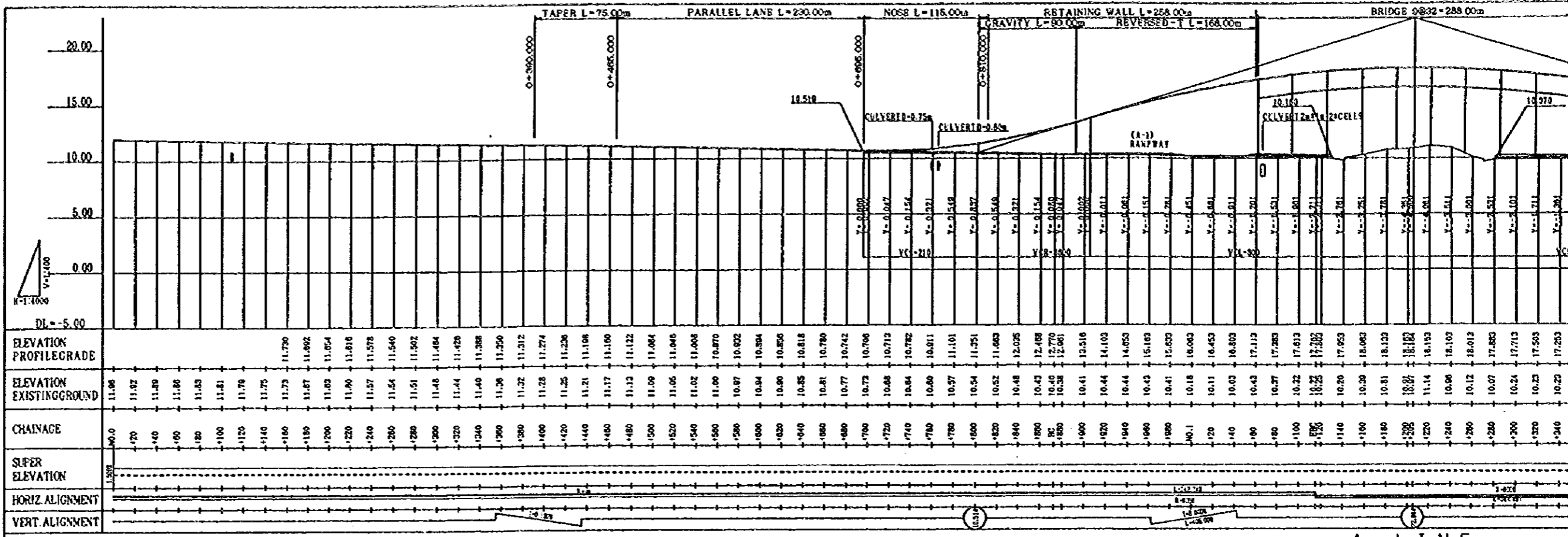
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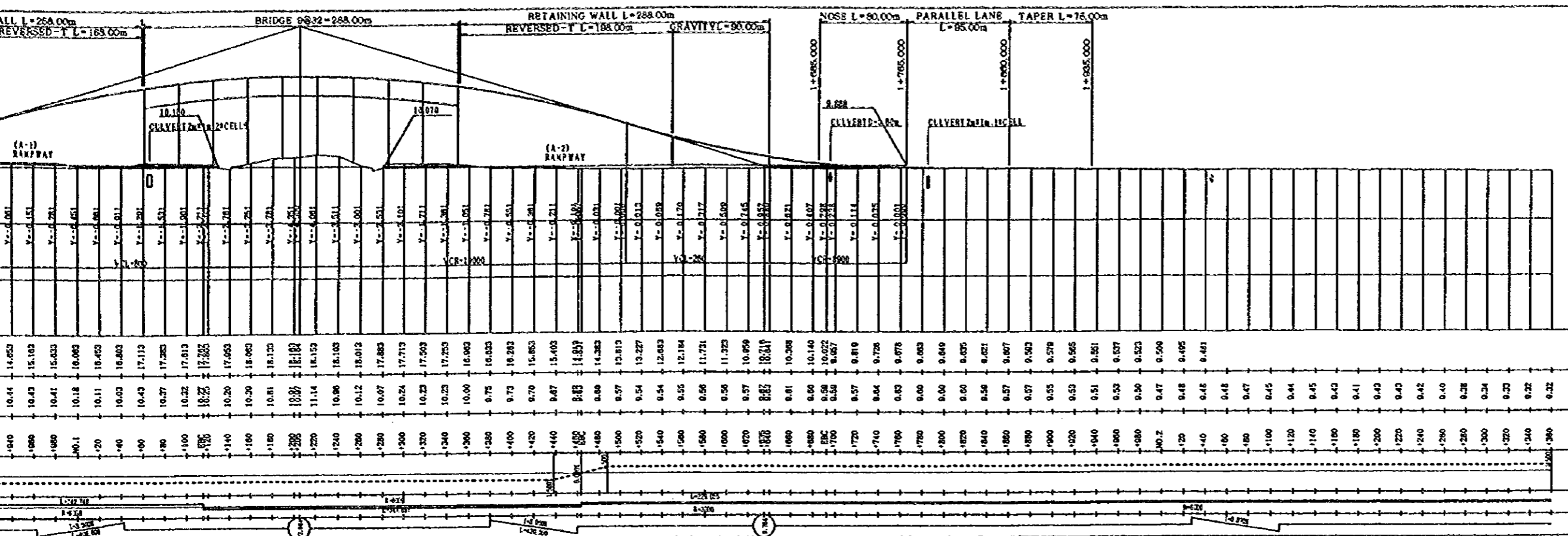
PLAN S1:2000



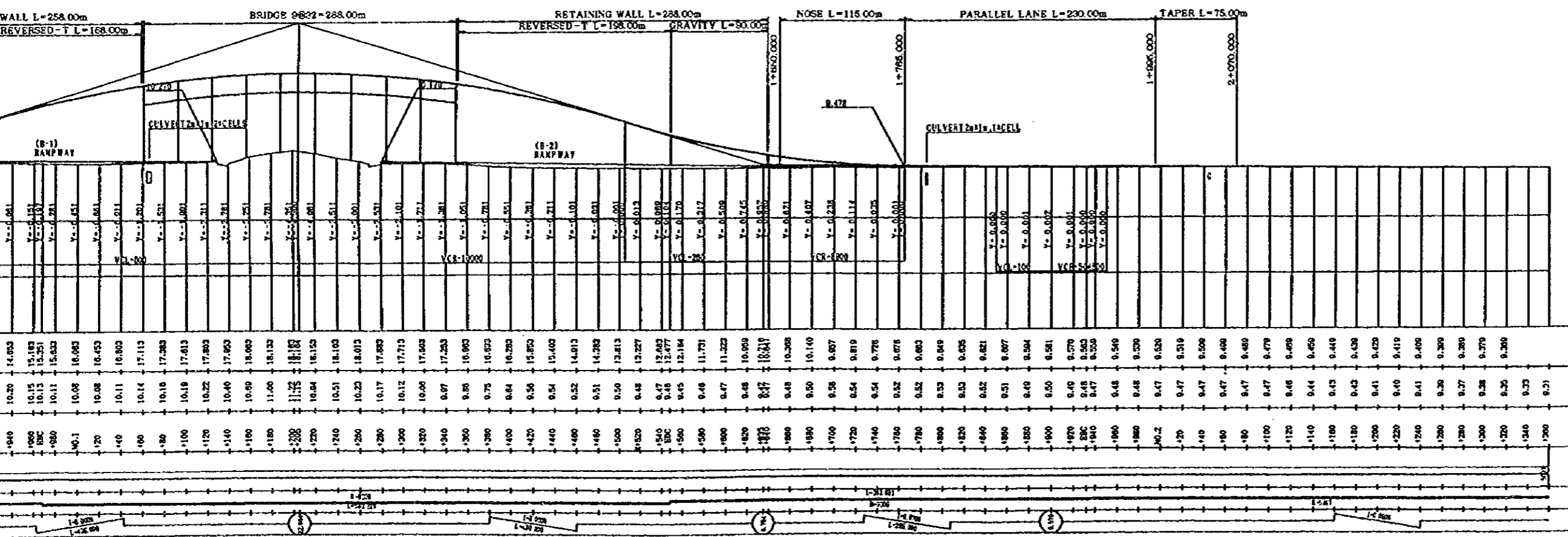
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) JICA STUDY TEAM PACIFIC CONSULTANTS INTERNATIONAL FUKUYAMA CONSULTANTS INTERNATIONAL	CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
	PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
TITLE RA/2 A'NASEEM GARDEN PLAN	DATE _____
_____	DWGNO. R-3



NOTES:

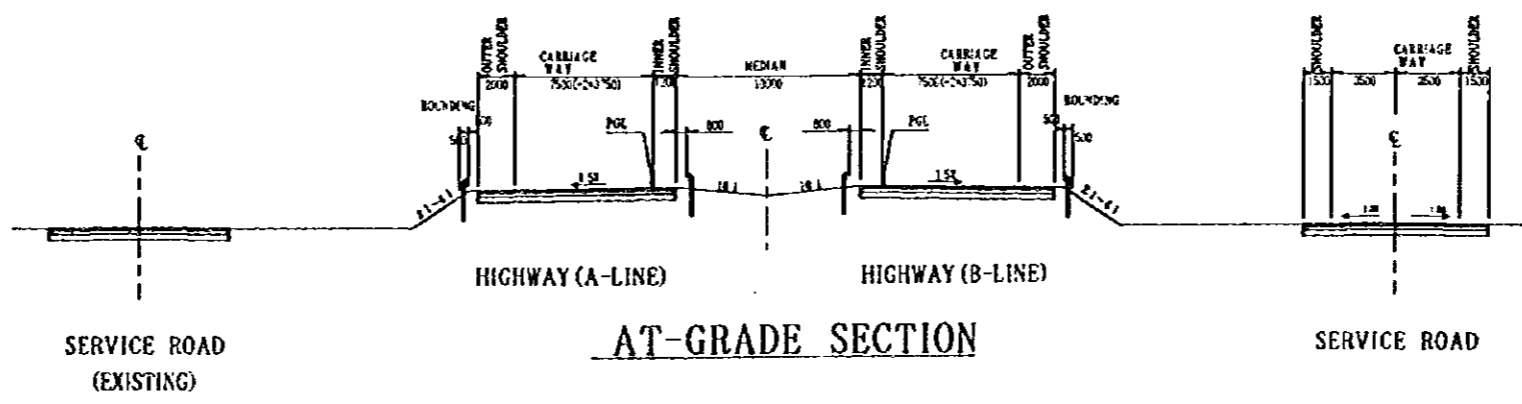
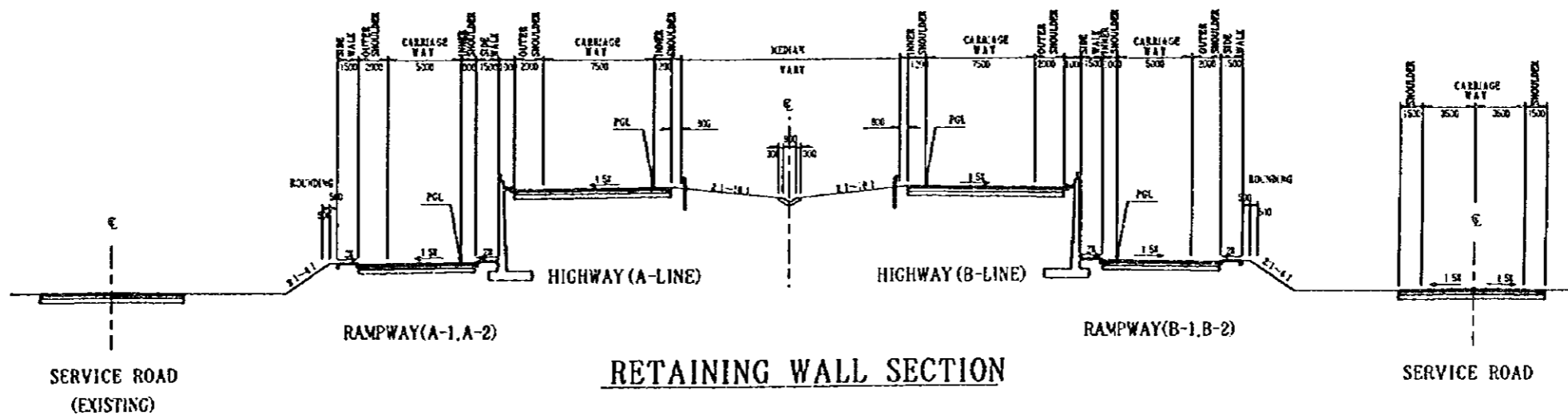
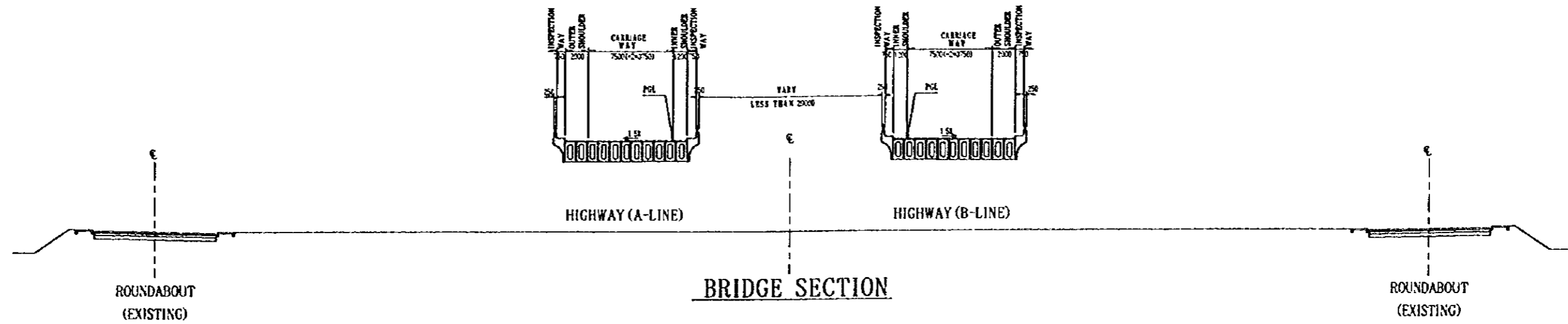


A-LINE



B-LINE

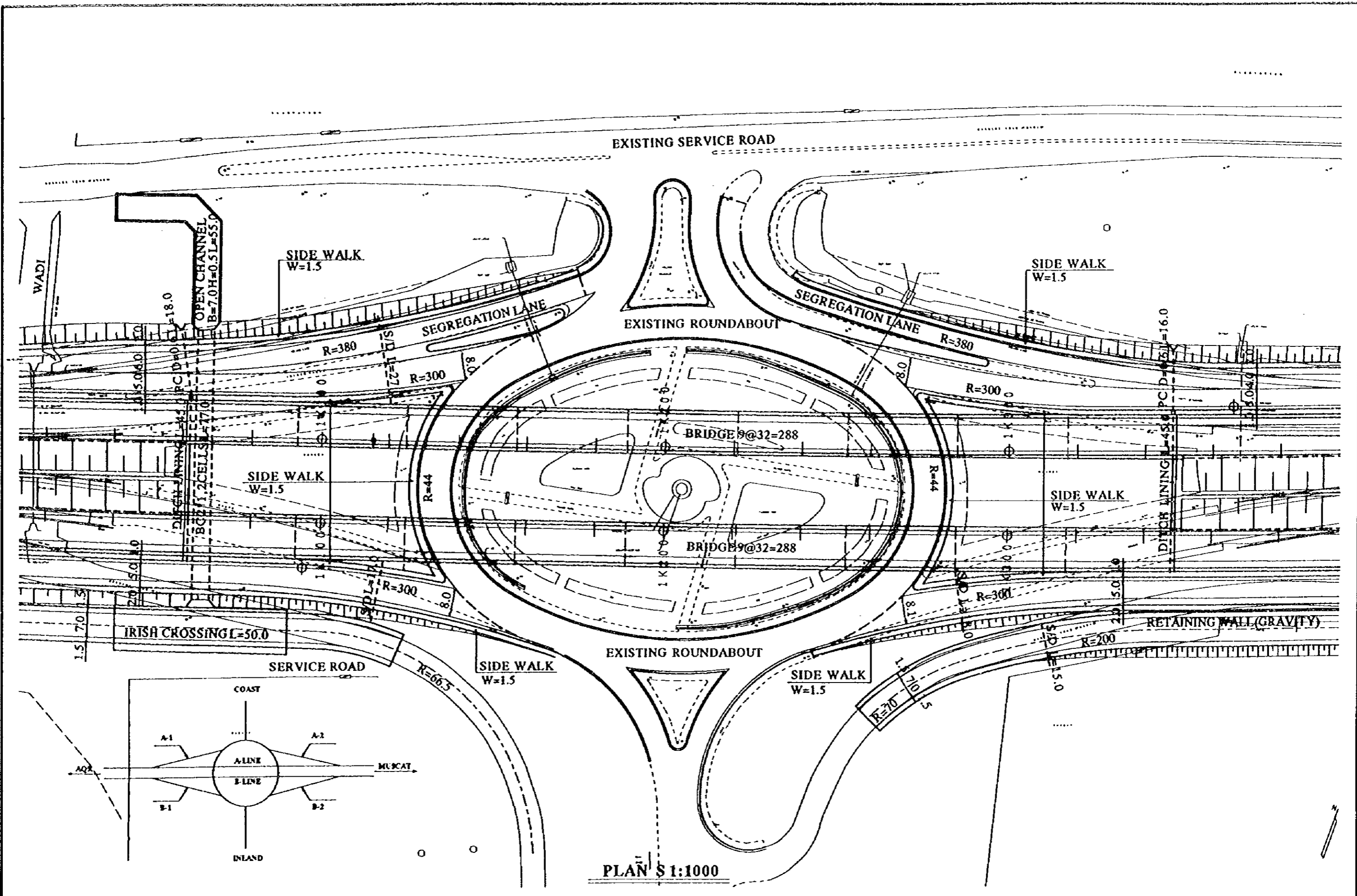
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	PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY	
	TITLE RA/2 A'NASEEM GARDEN PROFILE-HIGHWAY	
	DATE	DWGNO. R-4



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.

JAPAN INTERNATIONAL COOPERATION AGENCY
 (JICA)
 JICA STUDY TEAM
 PACIFIC CONSULTANTS INTERNATIONAL
 FUKUYAMA CONSULTANTS INTERNATIONAL

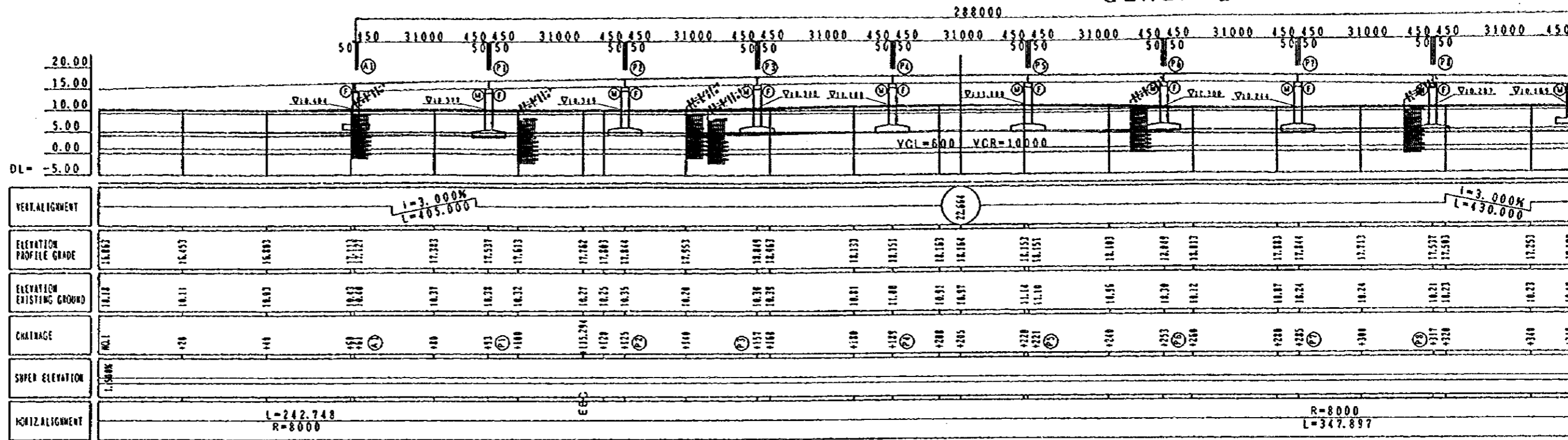
CLIENT : MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS
 PROJECT: D/D ON ROAD DEVELOPMENT PROJECT ON BATINAH HIGHWAY
 TITLE : RA/2 NASEEM GARDEN TYPICAL CROSS SECTION
 DATE : _____ DWG NO. : R-5



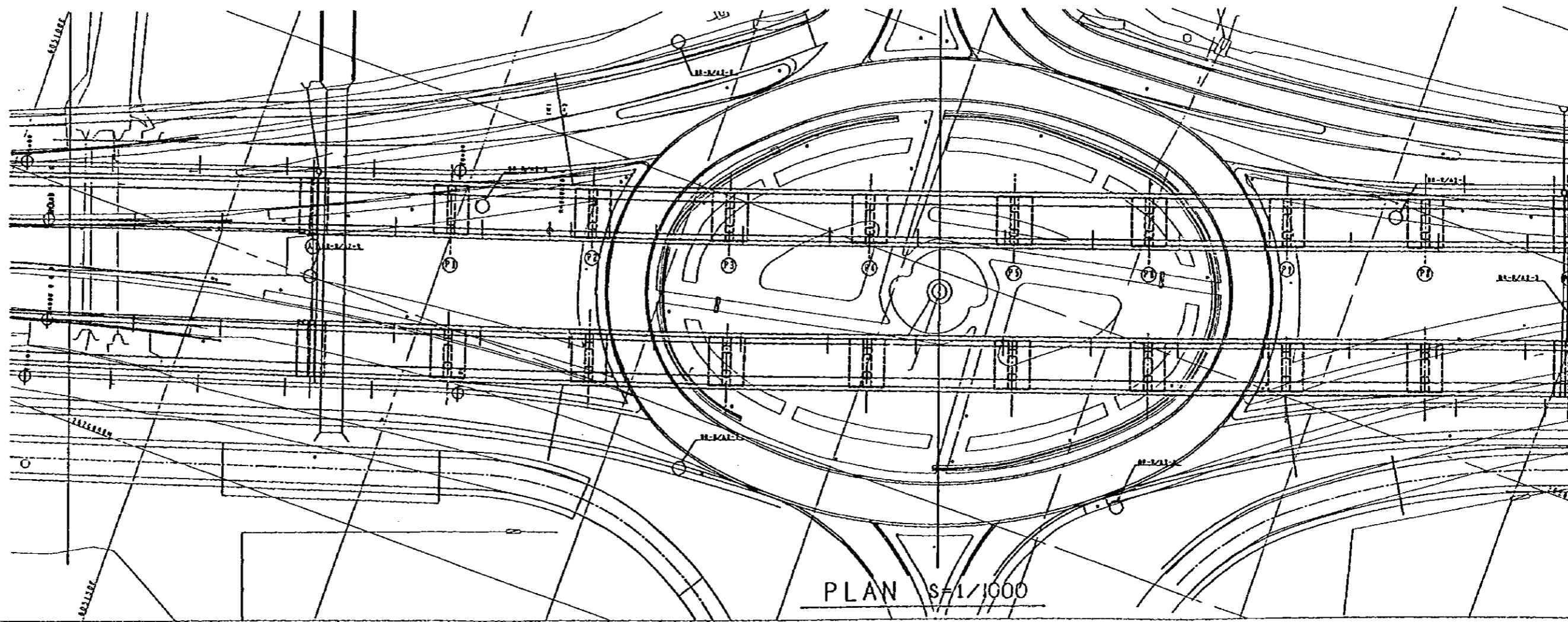
NOTES:
 (1) ALL DIMENSIONS ARE IN METER.
 (2) S/D INDICATES SERVICE DUCT (D=0.15m, 2WAY)
 (3) PC AND BC REPRESENTS PIPE CULVERT AND BOX CULVERT RESPECTIVELY.

JAPAN INTERNATIONAL COOPERATION AGENCY (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 DETAILED PLAN		DATE:
		DWG NO.: R-6

GENERAL VIEW RA/2 A'NA

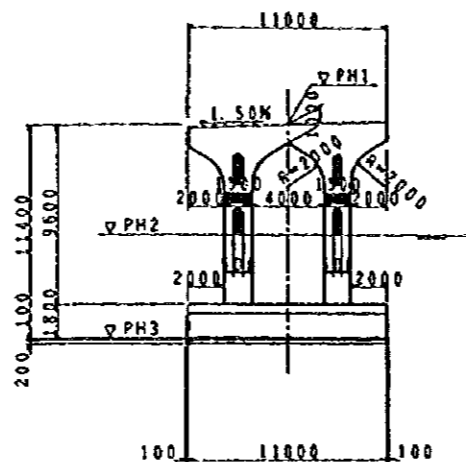
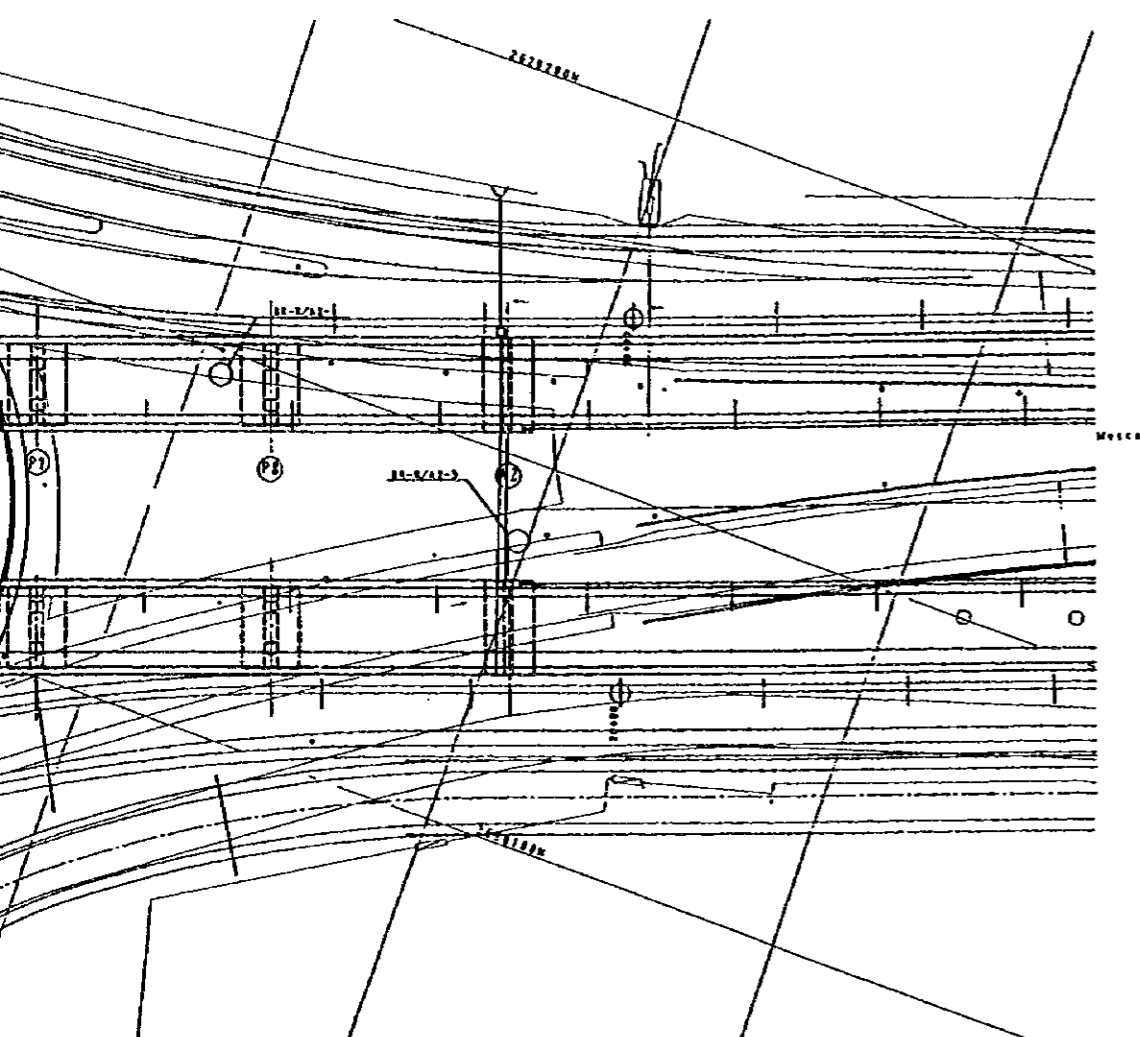
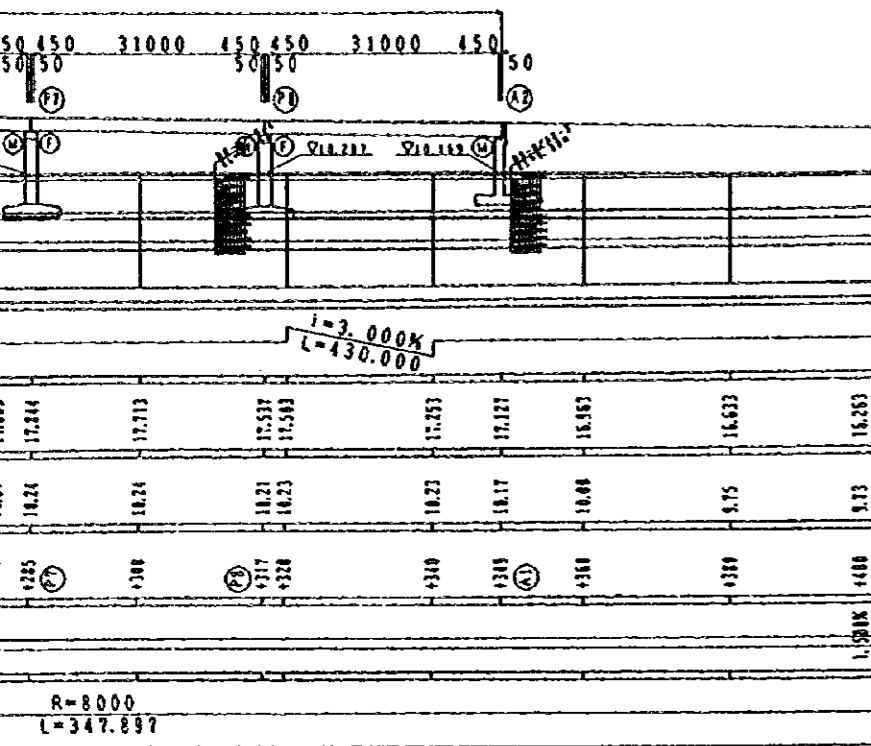


PROFILE (A-LINE) S=1/1000

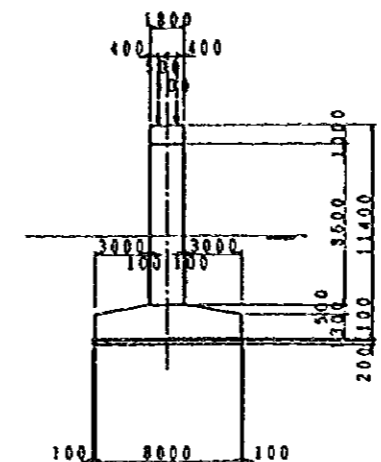


NOTES:

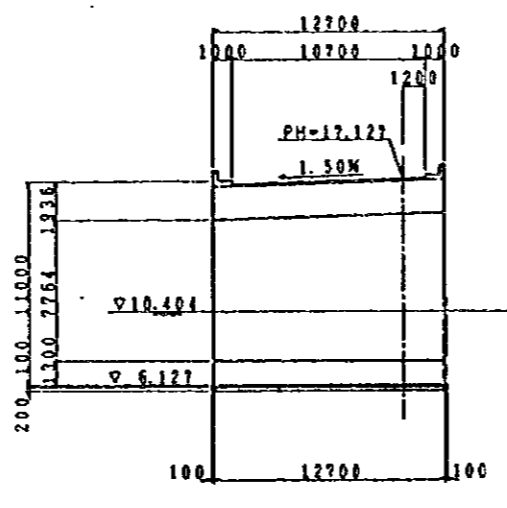
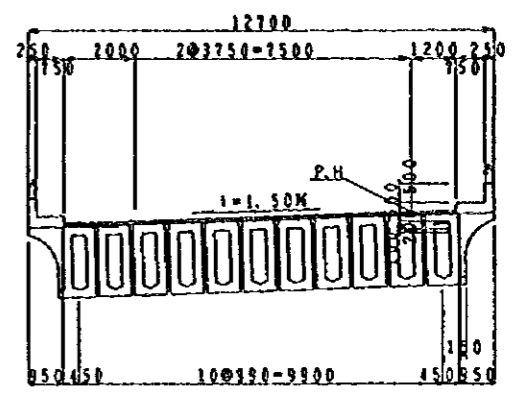
VIEW RA/2 A'NASEEM GARDEN (A-LINE)



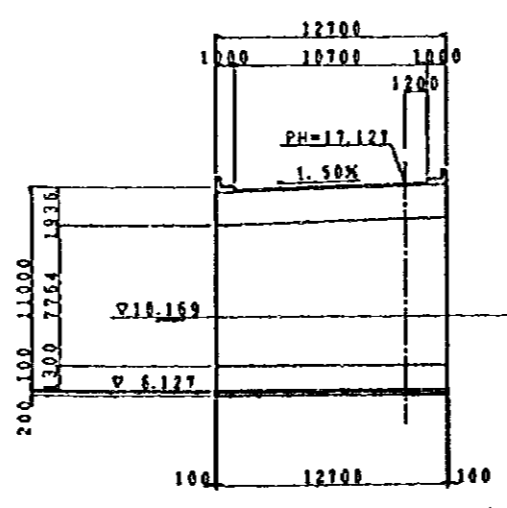
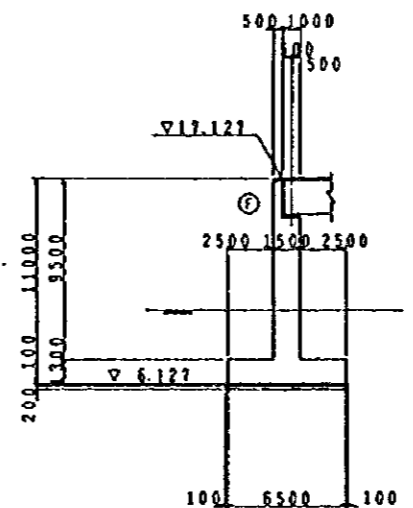
SECTION OF PIERS S=1/400



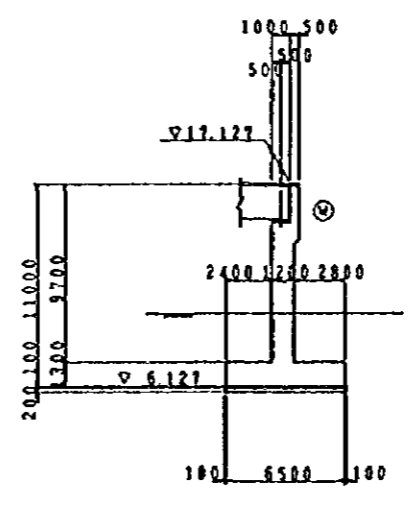
SECTION OF PC BOX GIRDER S=1/400



SECTION OF A1 ABUTMENT S=1/400



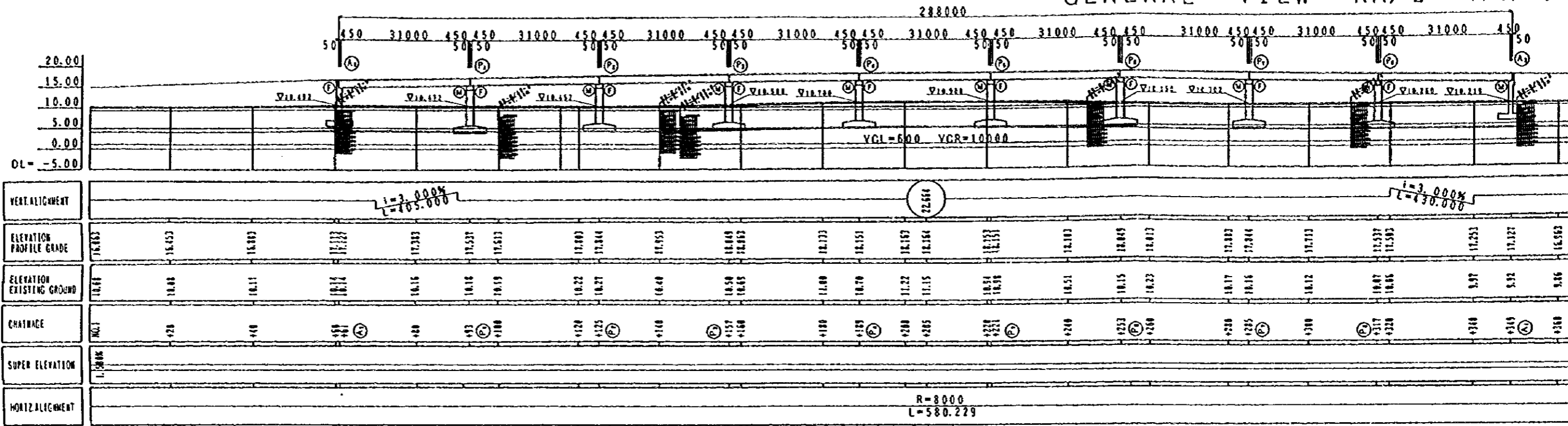
SECTION OF A2 ABUTMENT S=1/400



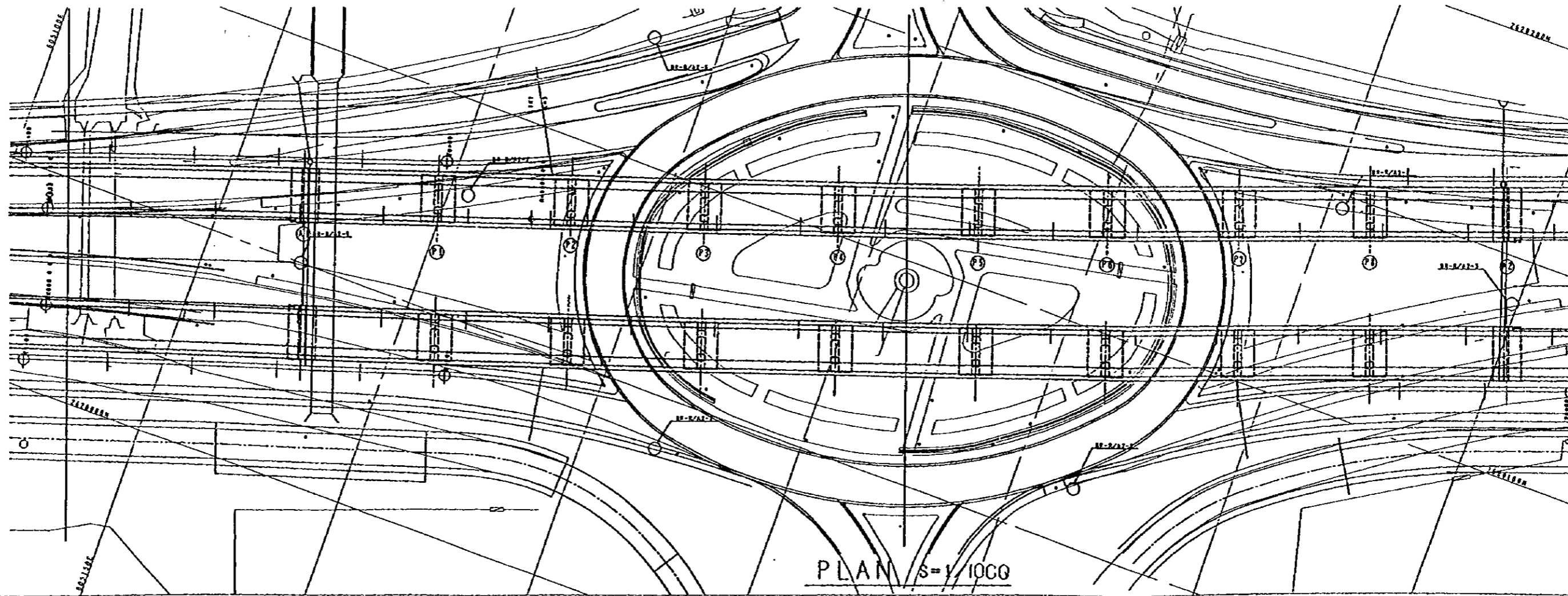
LIST OF PIER ELEVATION

	PH1	PH2	PH3
P1	15.522	10.377	4.122
P2	15.829	10.349	4.429
P3	16.034	10.300	4.634
P4	16.136	11.000	4.736
P5	16.136	11.100	4.736
P6	16.034	10.300	4.634
P7	15.829	10.244	4.429
P8	15.522	10.207	4.122

GENERAL VIEW RA/2 A'NASE



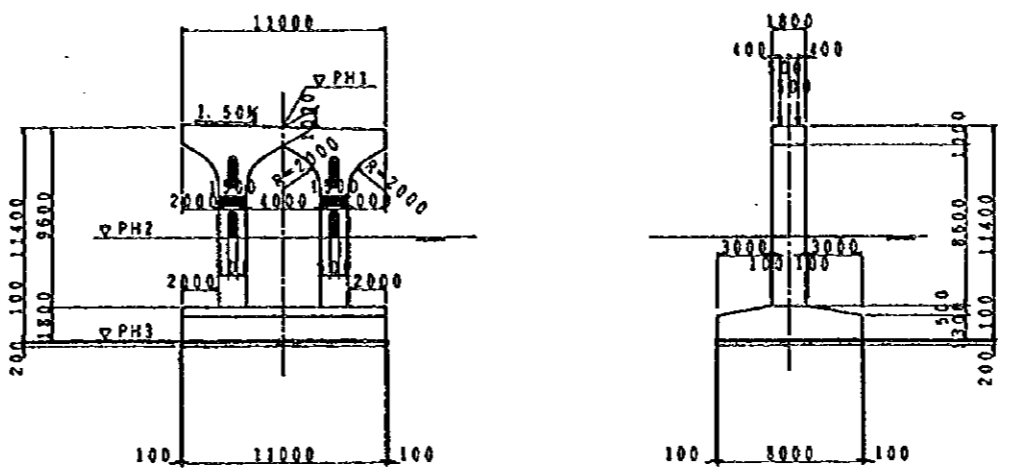
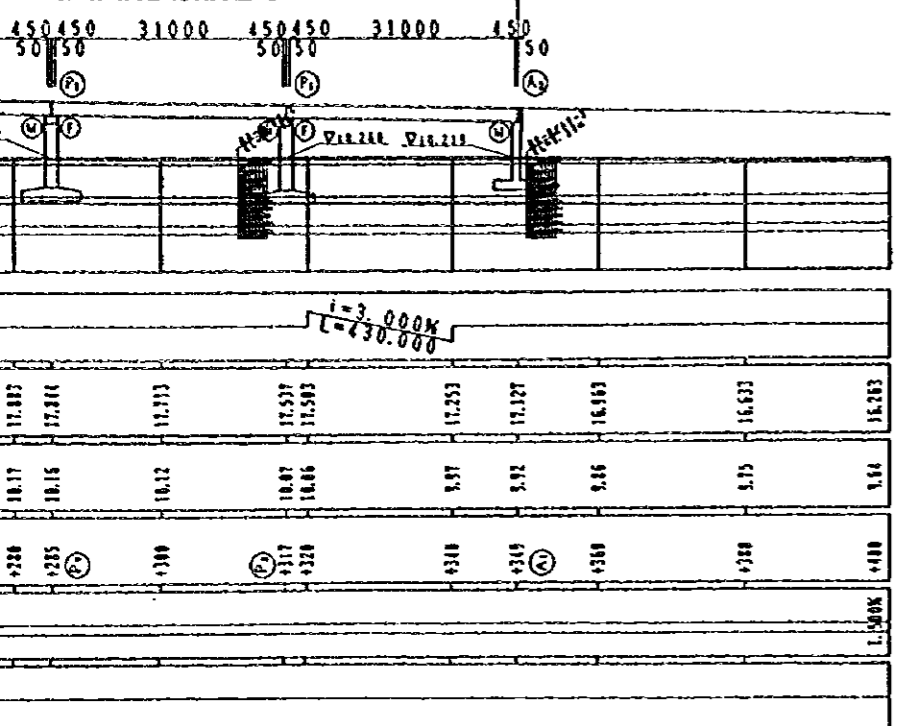
PROFILE (B-LINE) S=1/1000



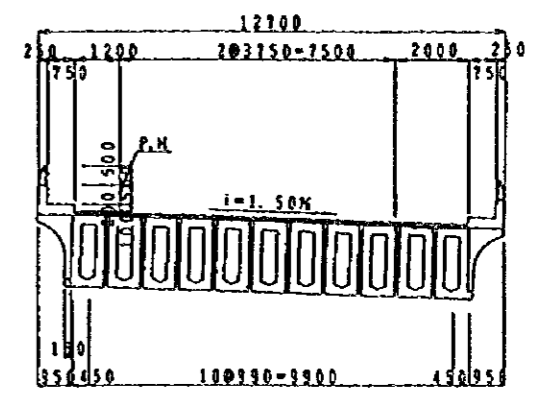
PLAN S=1/1000

NOTES:

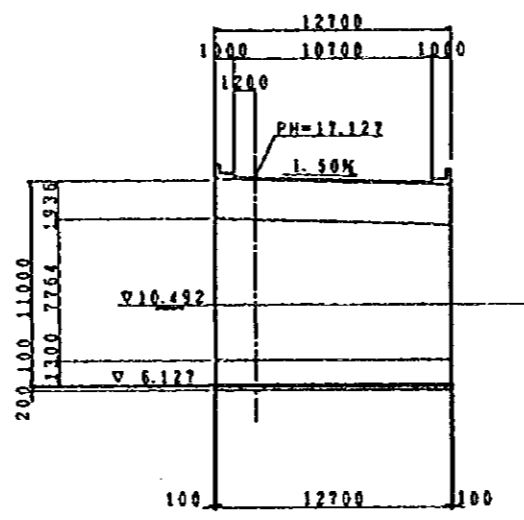
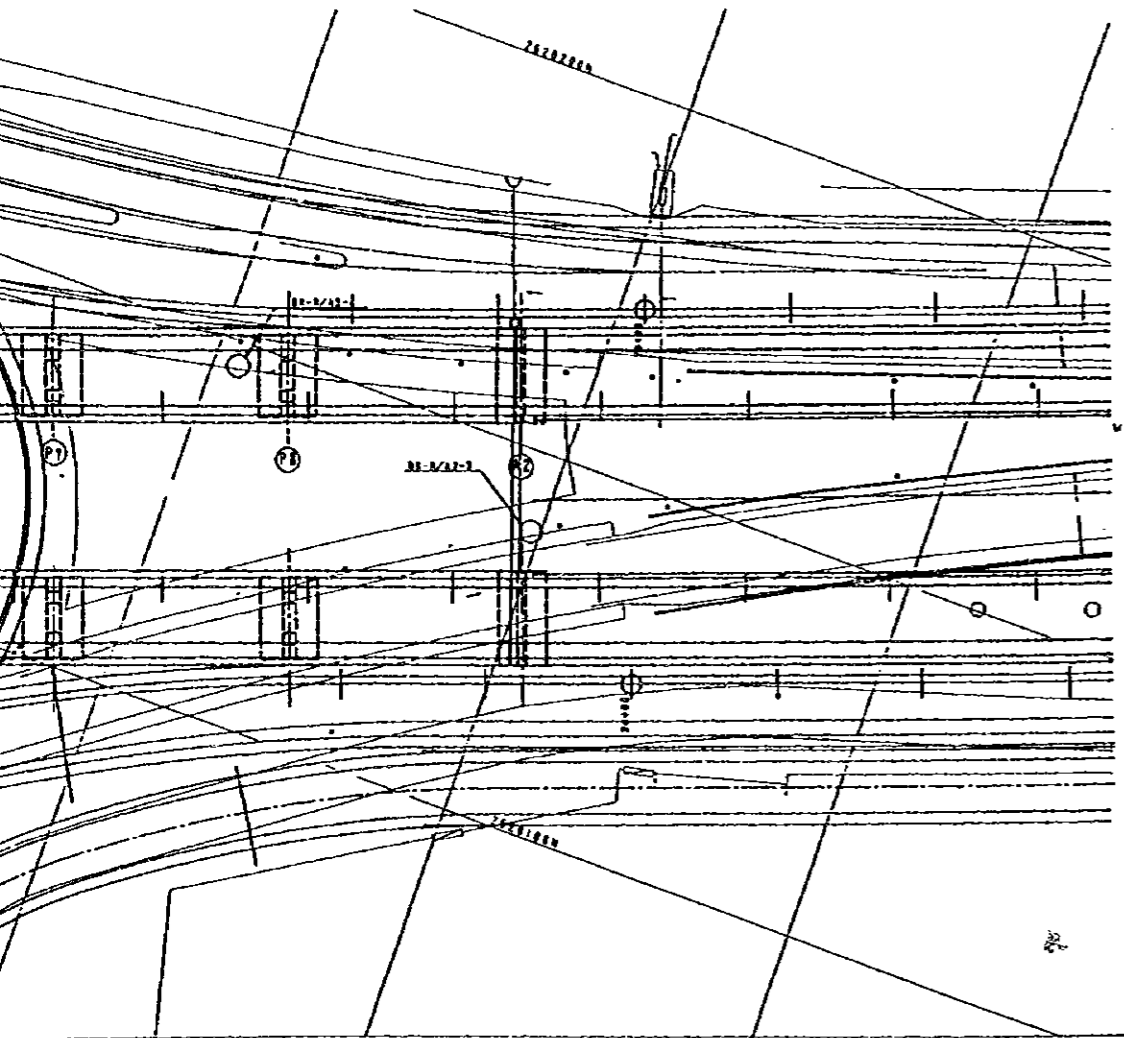
VIEW RA/2 A' NASEEM GARDEN (B-LINE)



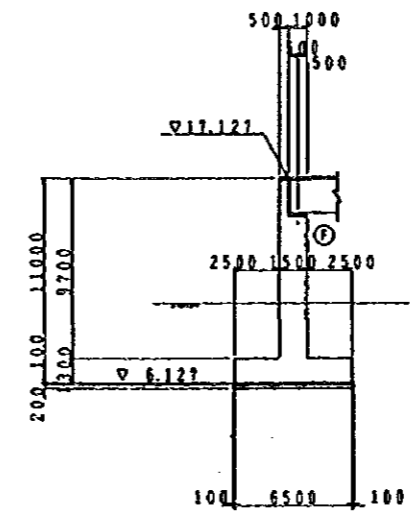
SECTION OF PIERS S=1/400



SECTION OF PC BOX GIRDER S=1/400



SECTION OF A1 ABUTMENT S=1/400

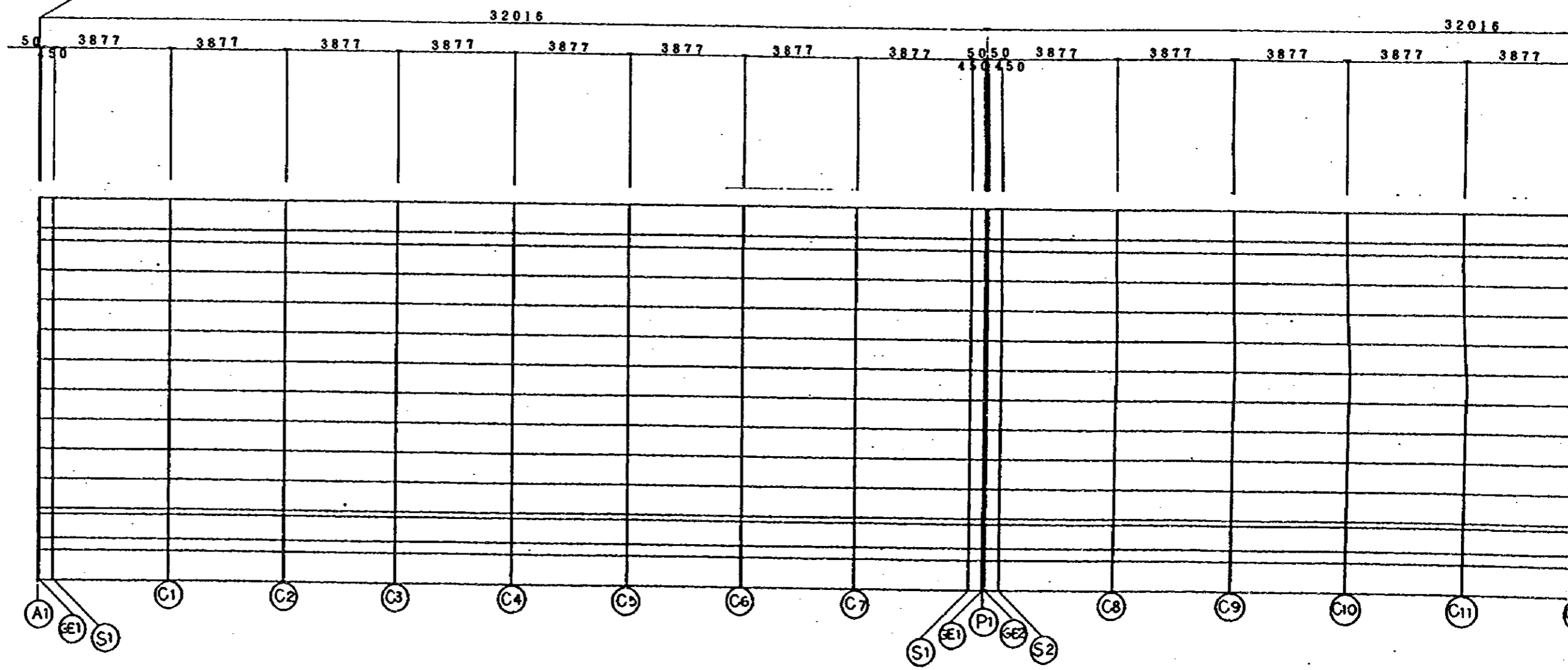


SECTION OF A2 ABUTMENT S=1/400

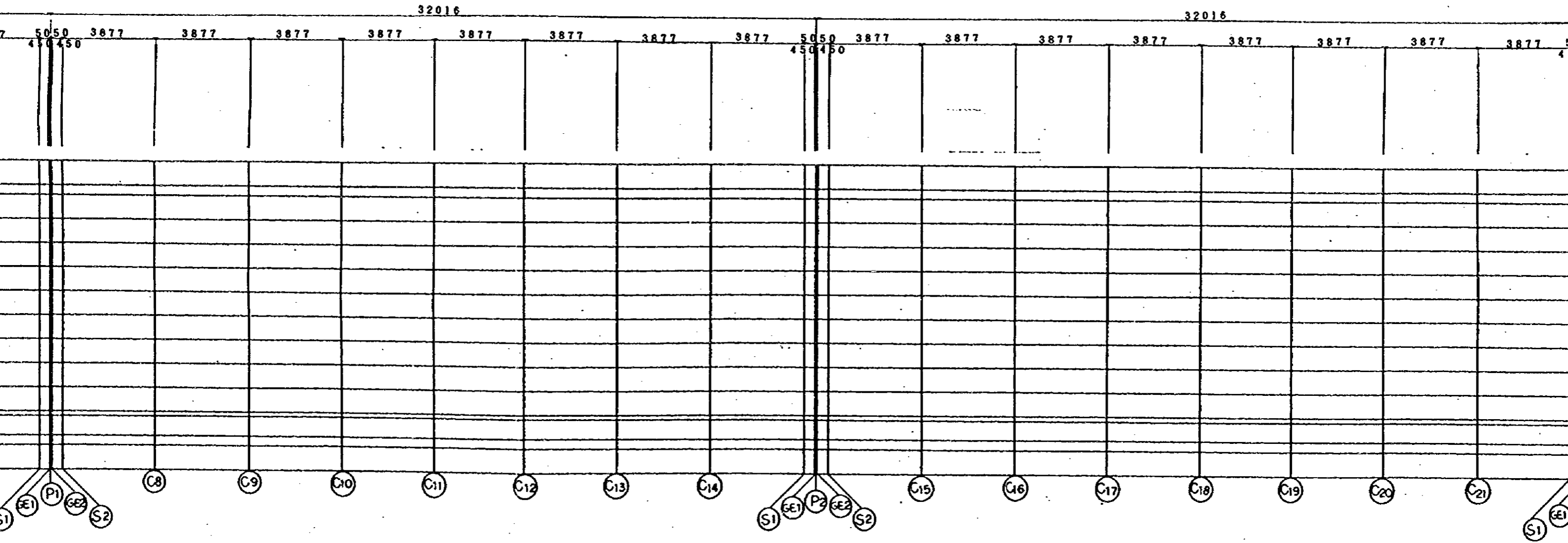
LIST OF PIER ELEVATION

	PH1	PH2	PH3
P1	15.522	10.472	4.122
P2	15.829	10.452	4.429
P3	16.034	10.500	4.634
P4	16.136	10.700	4.736
P5	16.136	10.900	4.736
P6	16.034	10.150	4.634
P7	15.829	10.302	4.429
P8	15.522	10.260	4.122

STA NO. 1+61.000



NOTES:



R/A-

32016

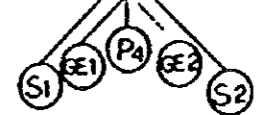
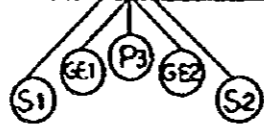
32016

3877 3877 3877 3877 3877 50 50 3877 3877 3877 3877 3877 3877 3877 3877 50 50 3877 3877 3877

450 450

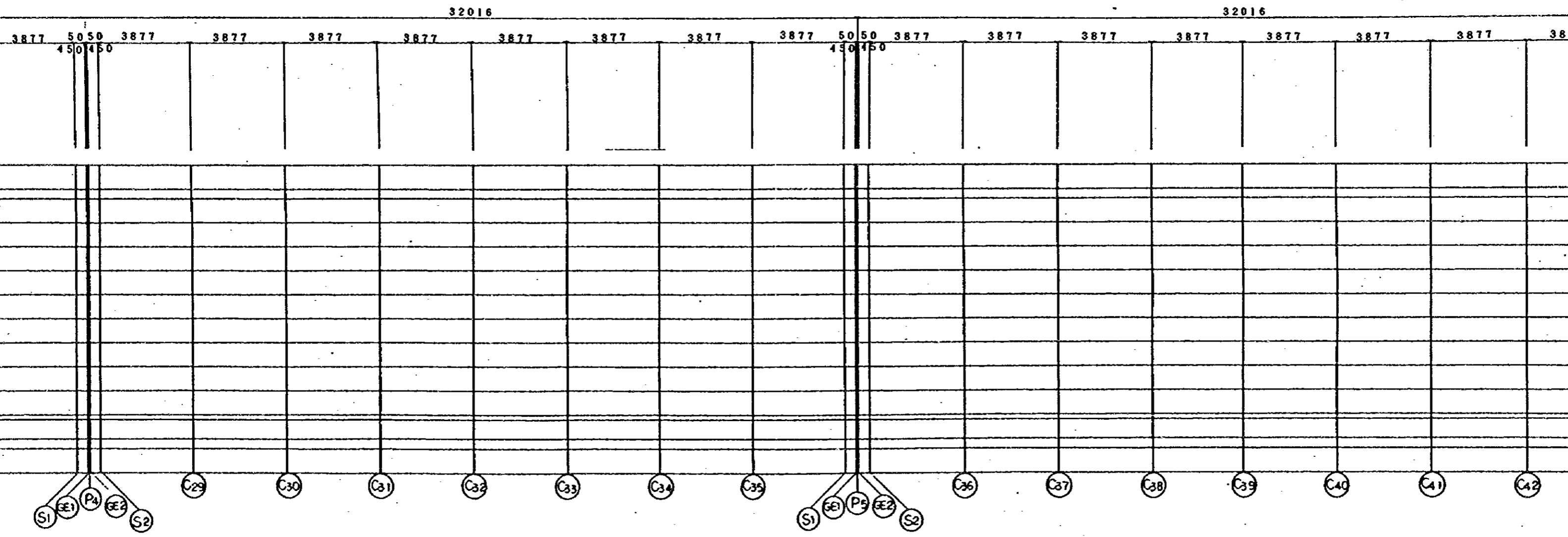
450 450

C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29 C30 C31



R/A-2A' NASEEM GARDEN

A-LINE



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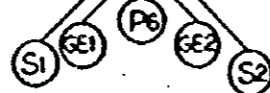
C38

C39

C40

C41

C42



C43

C44

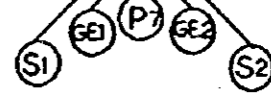
C45

C46

C47

C48

C49

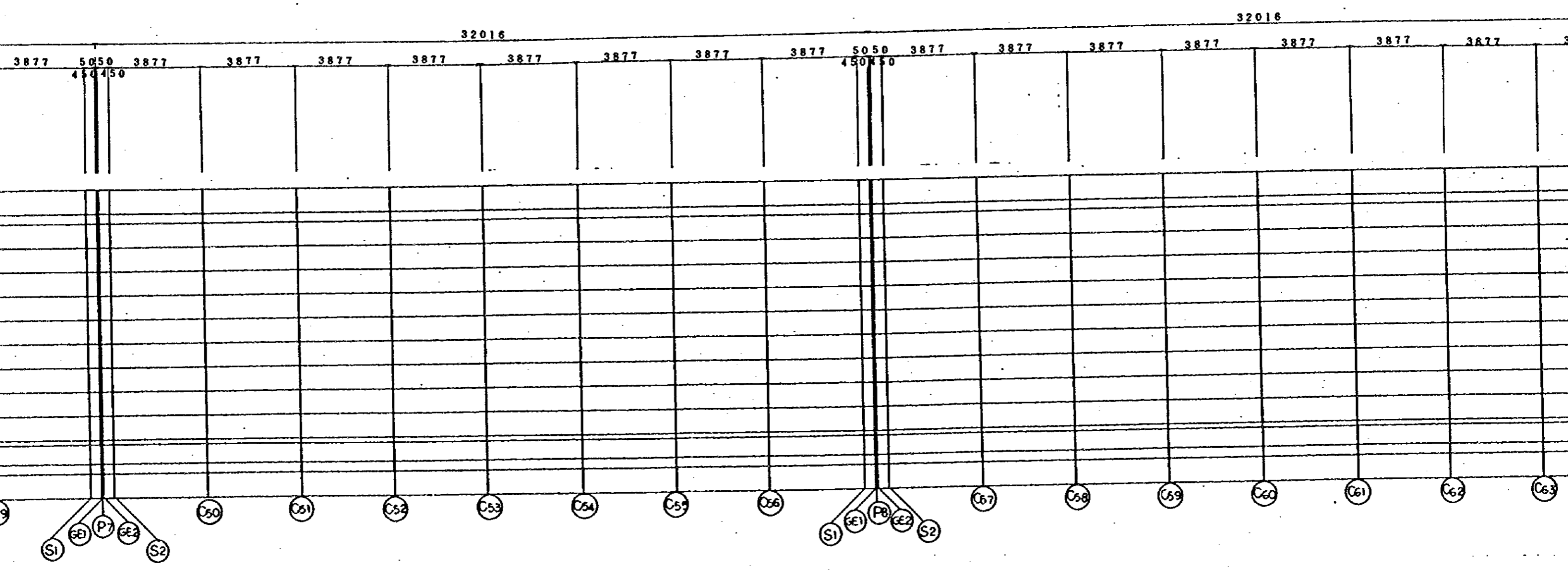


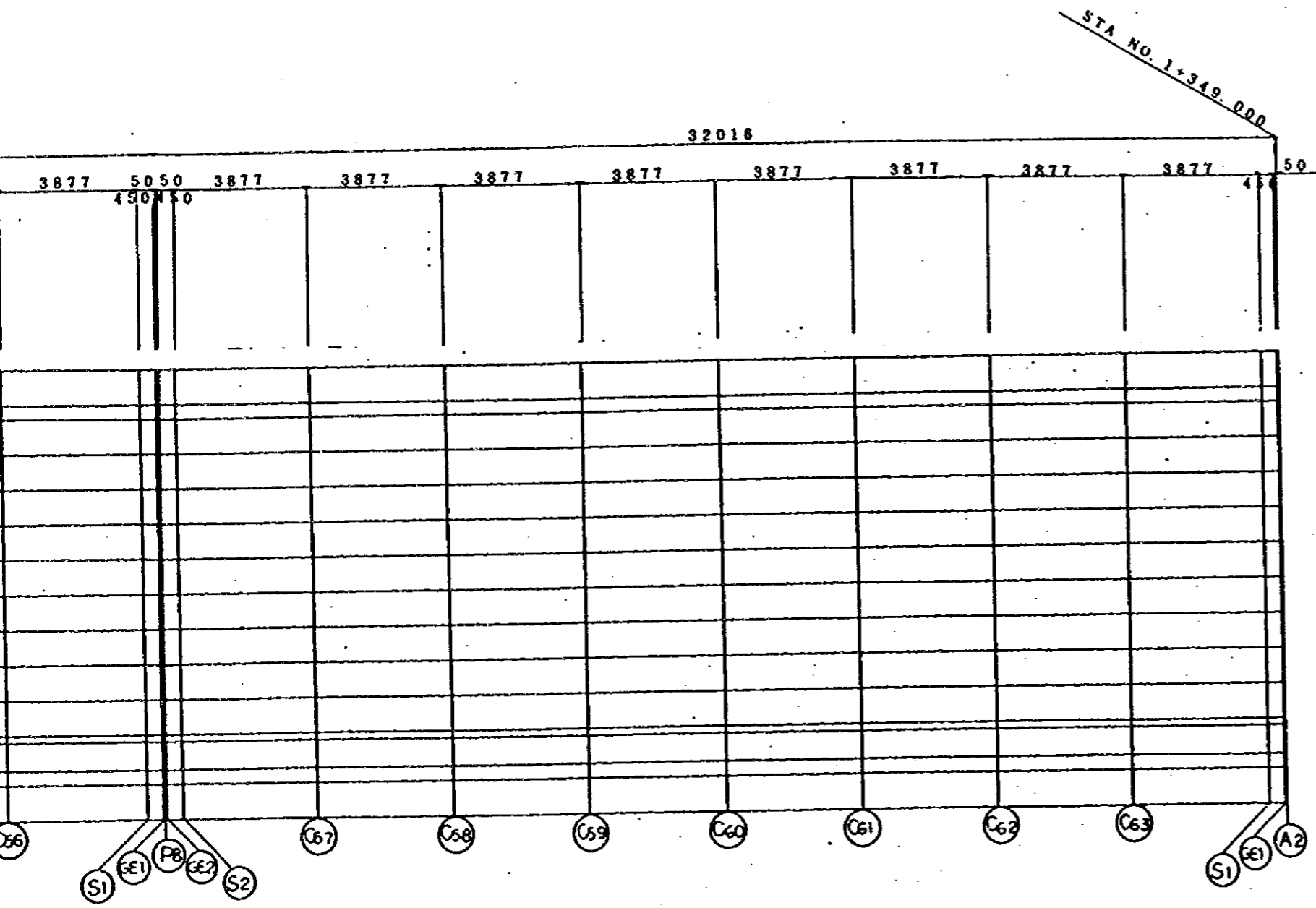
C50

C51

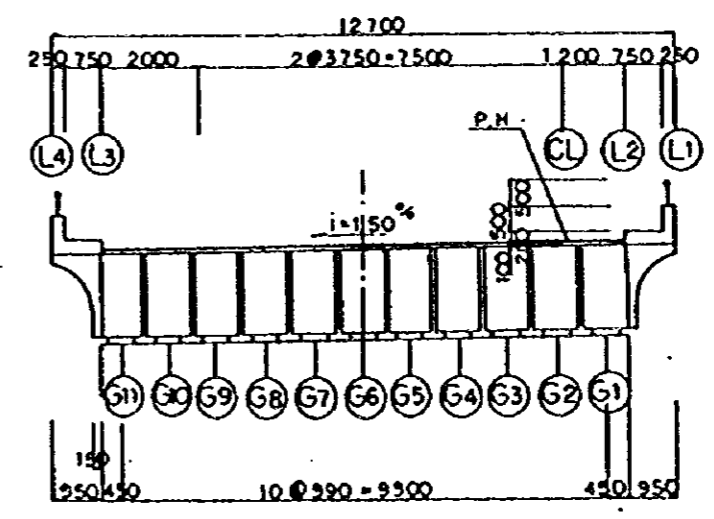
C52

STA NO.





A-LINE



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 DATE	FRAMING PLAN RA/2 AT A-LINE DWGNO. B-3

A'NASEEM GARDEN (A)

SECTION		A1	A1-GE1	A1-S1	C4	P1-S1	P1-GE1	P1	P1-GE2	P1-S2	C11	P2-S1	P2-G
STATION		1+ 61.0000	1+ 61.0500	1+ 61.5000	1+ 77.0000	1+92.5000	1+92.9500	1+93.0000	1+93.0500	1+93.5000	1+108.9965	1+124.5000	1+124.9
L4	X	0.0362	0.0862	0.5362	16.0569	31.5773	32.0272	32.0772	32.1272	32.5772	48.0899	63.5917	64.9
	Y	6.3499	6.3496	6.347	6.2425	6.1079	6.1035	6.103	6.1025	6.0982	5.9316	5.7458	5.7
	Z	16.8697	16.8704	16.8769	17.0873	17.2737	17.2787	17.2793	17.2799	17.2849	17.4456	17.5825	17.5
L3	X	0.0305	0.0805	0.5305	16.0492	31.5676	32.0175	32.0675	32.1175	32.5675	48.0786	63.5805	64.0
	Y	5.3499	5.3496	5.347	5.2425	5.1079	5.1036	5.1031	5.1026	5.0982	4.9317	4.7458	4.7
	Z	16.9847	16.9854	16.9919	17.2023	17.3887	17.3937	17.3943	17.3949	17.3999	17.5606	17.6975	17.7
G6(PIER CENTER)	X	0	0.05	0.5	16.0078	31.5158	31.9656	32.0156	32.0656	32.5156	48.0178	63.5201	63.9
	Y	0	-0.0004	-0.0039	-0.1233	-0.2428	-0.2463	-0.2467	-0.2472	-0.2523	-0.4281	-0.6038	-0.6
	Z	17.0649	17.0657	17.0721	17.2828	17.469	17.474	17.4745	17.4751	17.4801	17.6411	17.7777	17.7
CL	X	-0.0237	0.0263	0.4763	15.976	31.4754	31.9254	31.9754	32.0254	32.4753	47.9709	63.4733	63.9
	Y	-4.15	-4.1502	-4.1528	-4.2572	-4.3916	-4.396	-4.3965	-4.397	-4.4013	-4.5677	-4.7536	-4.7
	Z	17.1272	17.1279	17.1344	17.3448	17.5312	17.5362	17.5368	17.5374	17.5424	17.7032	17.84	17.8
L2	X	-0.0305	0.0195	0.4695	15.9667	31.4637	31.9137	31.9637	32.0137	32.4637	47.9573	63.4598	63.9
	Y	-5.3499	-5.3502	-5.3528	-5.4572	-5.5916	-5.5959	-5.5964	-5.5969	-5.6013	-5.7676	-5.9535	-5.9
	Z	17.1452	17.1459	17.1524	17.3628	17.5492	17.5542	17.5548	17.5554	17.5604	17.7212	17.858	17.8
L1	X	-0.0362	0.0138	0.4638	15.959	31.454	31.904	31.954	32.004	32.454	47.946	63.4485	63.8
	Y	-6.3499	-6.3502	-6.3528	-6.4572	-6.5915	-6.5959	-6.5964	-6.5969	-6.6012	-6.7676	-6.9534	-6.9
	Z	17.0602	17.0609	17.0674	17.2778	17.4642	17.4692	17.4698	17.4704	17.4754	17.6362	17.773	17.7

NOTE:

	P1-S2	C11	P2-S1	P2-GE1	P2	P2-GE2	P2-S2	C18	P3-S1	P3-GE1	P3	P3-GE2	P3-S2	C25	P4-S1	P4-GE1	P4	P4-GE2	P4-S2	C32	P5-	
	1+93.5000	1+108.9965	1+124.5000	1+124.9500	1+125.0000	1+125.0500	1+125.5000	1+141.0000	1+156.5000	1+156.9500	1+157.0000	1+157.0500	1+157.5000	1+173.0000	1+188.5000	1+188.9500	1+189.0000	1+189.0500	1+189.5000	1+205.0000	1+220.	
2	32.5772	48.0899	63.5917	64.0417	64.0917	64.1417	64.5917	80.0699	95.5483	95.9983	96.0483	96.0983	96.5483	112.027	127.5058	127.9558	128.0058	128.0558	128.5058	143.9848	159	
5	6.0982	5.9316	5.7458	5.7407	5.7401	5.7396	5.7345	5.5759	5.4473	5.444	5.4436	5.4433	5.44	5.3433	5.2766	5.2751	5.275	5.2748	5.2734	5.2386	5	
9	17.2849	17.4456	17.5825	17.5861	17.5865	17.5869	17.5905	17.7017	17.7889	17.7911	17.7913	17.7915	17.7937	17.8553	17.8929	17.8936	17.8937	17.8938	17.8945	17.9065	17	
5	32.5675	48.0786	63.5805	64.0304	64.0804	64.1304	64.5804	80.0606	95.541	95.991	96.041	96.091	96.541	112.0217	127.5026	127.9526	128.0026	128.0526	128.5026	143.9835	159	
6	5.0982	4.9317	4.7458	4.7407	4.7402	4.7396	4.7346	4.5759	4.4473	4.444	4.4437	4.4433	4.44	4.3433	4.2766	4.2751	4.275	4.2748	4.2734	4.2386	4	
9	17.3999	17.5606	17.6975	17.7011	17.7015	17.7019	17.7055	17.8167	17.9039	17.9061	17.9063	17.9065	17.9087	17.9703	18.0079	18.0086	18.0087	18.0088	18.0095	18.0215	18	
6	32.5156	48.0178	63.5201	63.9701	64.0201	64.0701	64.5201	80.0111	95.5021	95.9521	96.0021	96.0521	96.5021	111.9936	127.485	127.935	127.985	128.035	128.485	143.9767	159	
2	-0.2523	-0.4281	-0.6038	-0.6089	-0.6095	-0.6099	-0.6141	-0.7578	-0.9016	-0.9057	-0.9062	-0.9065	-0.9088	-0.9906	-1.0724	-1.0747	-1.075	-1.0751	-1.0756	-1.0954	-1	
1	17.4801	17.6411	17.7777	17.7813	17.7818	17.7821	17.7857	17.8967	17.9841	17.9863	17.9865	17.9868	17.9889	18.0503	18.0881	18.0889	18.089	18.089	18.089	18.0897	18.1015	18
4	32.4753	47.9709	63.4733	63.9233	63.9733	64.0233	64.4733	79.9725	95.4719	95.9219	95.9719	96.0219	96.4719	111.9716	127.4714	127.9214	127.9714	128.0214	128.4714	143.9714	159	
7	-4.4013	-4.5677	-4.7536	-4.7587	-4.7592	-4.7598	-4.7648	-4.9237	-5.0524	-5.0557	-5.0561	-5.0565	-5.0597	-5.1565	-5.2233	-5.2248	-5.225	-5.2251	-5.2266	-5.2614	-5	
4	17.5424	17.7032	17.84	17.8436	17.844	17.8444	17.848	17.9592	18.0464	18.0486	18.0488	18.049	18.0512	18.1128	18.1504	18.1511	18.1512	18.1513	18.152	18.164	18	
7	32.4637	47.9573	63.4598	63.9098	63.9598	64.0098	64.4597	79.9613	95.4632	95.9132	95.9632	96.0132	96.4631	111.9653	127.4675	127.9175	127.9675	128.0175	128.4675	143.9699	159	
9	-5.6013	-5.7676	-5.9535	-5.9586	-5.9591	-5.9597	-5.9648	-6.1236	-6.2524	-6.2557	-6.2561	-6.2564	-6.2597	-6.3565	-6.4233	-6.4248	-6.425	-6.4251	-6.4266	-6.4614	-6	
4	17.5604	17.7212	17.858	17.8616	17.862	17.8624	17.866	17.9772	18.0644	18.0666	18.0668	18.067	18.0692	18.1308	18.1684	18.1691	18.1692	18.1693	18.17	18.182	18	
4	32.454	47.946	63.4485	63.8985	63.9485	63.9985	64.4484	79.952	95.4559	95.9059	95.9559	96.0059	96.4559	111.96	127.4642	127.9142	127.9642	128.0142	128.4642	143.9686	159	
9	-6.6012	-6.7676	-6.9534	-6.9585	-6.9591	-6.9596	-6.9647	-7.1236	-7.2524	-7.2557	-7.256	-7.2564	-7.2597	-7.3565	-7.4233	-7.4248	-7.425	-7.4251	-7.4266	-7.4614	-7	
4	17.4754	17.6362	17.773	17.7766	17.777	17.7774	17.781	17.8922	17.9794	17.9816	17.9818	17.982	17.9842	18.0458	18.0834	18.0841	18.0842	18.0843	18.085	18.097	18	

FRAMING PLAN AT RA/02 A'NASEEM GARDEN (A-LINE)

	P4-GE1	P4	P4-GE2	P4-S2	C32	P5-S1	P5-GE1	P5	P5-GE2	P5-S2	C39	P6-S1	P6-GE1	P6	P6-GE2	P6-S2	C46	P7-S1	P7-GE1	P7	P7-C
0	1+188.9500	1+189.0000	1+189.0500	1+189.5000	1+205.0000	1+220.5000	1+220.9500	1+221.0000	1+221.0500	1+221.5000	1+237.0000	1+252.5000	1+252.9500	1+253.000	1+253.0500	1+253.5000	1+269.0000	1+284.5000	1+284.9500	1+285.000	1+285.000
58	127.9558	128.0058	128.0558	128.5058	143.9848	159.4638	159.9138	159.9638	160.0138	160.4638	175.9428	191.4217	191.8717	191.9217	191.9717	192.4216	207.9004	223.3789	223.8289	223.8789	223.8789
66	5.2751	5.275	5.2748	5.2734	5.2386	5.2338	5.2341	5.2342	5.2342	5.2345	5.2617	5.3188	5.3209	5.3212	5.3214	5.3235	5.4126	5.5316	5.5356	5.536	5.536
29	17.8936	17.8937	17.8938	17.8945	17.9065	17.8945	17.8938	17.8937	17.8936	17.8929	17.8553	17.7937	17.7915	17.7913	17.7911	17.7889	17.7017	17.5905	17.5869	17.5865	17.5865
26	127.9526	128.0026	128.0526	128.5026	143.9835	159.4645	159.9145	159.9645	160.0145	160.4645	175.9455	191.4264	191.8764	191.9264	191.9764	192.4264	207.9071	223.3876	223.8376	223.8876	223.8876
56	4.2751	4.275	4.2748	4.2734	4.2386	4.2338	4.2341	4.2342	4.2342	4.2345	4.2617	4.3188	4.3209	4.3212	4.3214	4.3235	4.4126	4.5317	4.5356	4.536	4.536
79	18.0086	18.0087	18.0088	18.0095	18.0215	18.0095	18.0088	18.0087	18.0088	18.0079	17.9703	17.9087	17.9065	17.9063	17.9061	17.9039	17.8167	17.7055	17.7019	17.7015	17.7015
35	127.935	127.985	128.035	128.485	143.9767	159.4684	159.9184	159.9684	160.0184	160.4684	175.96	191.4516	191.9016	191.9516	192.0016	192.4516	207.943	223.4343	223.8843	223.9343	223.9343
24	-1.0747	-1.075	-1.0751	-1.0756	-1.0954	-1.1152	-1.1158	-1.1158	-1.1157	-1.1145	-1.0723	-1.0301	-1.0289	-1.0288	-1.0284	-1.0254	-0.9213	-0.8171	-0.8141	-0.8138	-0.8138
31	18.0889	18.089	18.089	18.0897	18.1015	18.0897	18.089	18.0889	18.0889	18.0881	18.0503	17.9889	17.9868	17.9865	17.9863	17.9841	17.8967	17.7857	17.7821	17.7817	17.7817
14	127.9214	127.9714	128.0214	128.4714	143.9714	159.4714	159.9214	159.9714	160.0214	160.4714	175.9714	191.4712	191.9212	191.9712	192.0212	192.4712	207.971	223.4705	223.9205	223.9705	223.9705
33	-5.2248	-5.225	-5.2251	-5.2266	-5.2814	-5.2862	-5.2659	-5.2658	-5.2658	-5.2655	-5.2383	-5.1811	-5.179	-5.1787	-5.1785	-5.1763	-5.0872	-4.968	-4.964	-4.9636	-4.9636
04	18.1511	18.1512	18.1513	18.152	18.164	18.152	18.1513	18.1512	18.1511	18.1504	18.1128	18.0512	18.049	18.0488	18.0486	18.0464	17.9592	17.848	17.8444	17.844	17.844
75	127.9175	127.9675	128.0175	128.4675	143.9699	159.4722	159.9222	159.9722	160.0222	160.4722	175.9746	191.4769	191.9269	191.9769	192.0269	192.4769	207.9791	223.481	223.931	223.981	223.981
33	-6.4248	-6.425	-6.4251	-6.4266	-6.4814	-6.4862	-6.4659	-6.4658	-6.4658	-6.4655	-6.4383	-6.3811	-6.3789	-6.3787	-6.3785	-6.3763	-6.2871	-6.1679	-6.164	-6.1636	-6.1636
34	18.1691	18.1692	18.1693	18.17	18.182	18.17	18.1693	18.1692	18.1691	18.1684	18.1308	18.0692	18.067	18.0668	18.0666	18.0644	17.9772	17.866	17.8624	17.862	17.862
12	127.9142	127.9642	128.0142	128.4642	143.9686	159.473	159.923	159.973	160.023	160.473	175.9774	191.4816	191.9316	191.9816	192.0316	192.4816	207.9858	223.4897	223.9397	223.9897	223.9897
33	-7.4248	-7.425	-7.4251	-7.4266	-7.4814	-7.4862	-7.4659	-7.4658	-7.4658	-7.4655	-7.4383	-7.381	-7.3789	-7.3787	-7.3785	-7.3763	-7.2871	-7.1679	-7.164	-7.1635	-7.1635
34	18.0841	18.0842	18.0843	18.085	18.097	18.085	18.0843	18.0842	18.0841	18.0834	18.0458	17.9842	17.982	17.9818	17.9816	17.9794	17.8922	17.781	17.7774	17.777	17.777

P7-S2	C46	P7-S1	P7-GE1	P7	P7-GE2	P7-S2	C53	P8-S1	P8-GE1	P8	P8-GE2	P8-S2	C60	A2-S1	A2-GE1	A2
1+3.5000	1+269.0000	1+284.5000	1+284.9500	1+285.000	1+285.0500	1+285.5000	1+301.0000	1+316.5000	1+316.9500	1+317.0000	1+317.0500	1+317.5000	1+333.0000	1+348.5000	1+348.9500	1+349.0000
2.4216	207.9004	223.3789	223.8289	223.8789	223.9289	224.3789	239.8572	255.3351	255.7851	255.835	255.885	256.335	271.8128	287.2898	287.7398	287.7898
5.3235	5.4128	5.5318	5.5356	5.536	5.5364	5.5404	5.6913	5.8723	5.878	5.8787	5.8793	5.885	6.0979	6.3408	6.3483	6.3491
7.7889	17.7017	17.5905	17.5869	17.5865	17.5861	17.5825	17.4457	17.2849	17.2799	17.2793	17.2787	17.2737	17.0873	16.8769	16.8704	16.8697
2.4264	207.9071	223.3876	223.8376	223.8876	223.9376	224.3876	239.8679	255.3478	255.7978	255.8478	255.8978	256.3477	271.8273	287.3064	287.7563	287.8063
4.3235	4.4126	4.5317	4.5356	4.536	4.5365	4.5404	4.6914	4.8724	4.8781	4.8787	4.8794	4.8851	5.098	5.3409	5.3484	5.3493
7.9039	17.8167	17.7055	17.7019	17.7015	17.7011	17.6975	17.5607	17.3999	17.3949	17.3943	17.3937	17.3887	17.2023	16.9919	16.9854	16.9847
2.4516	207.943	223.4343	223.8843	223.9343	223.9843	224.4343	239.9251	255.4159	255.8658	255.9158	255.9658	256.4158	271.9058	287.3958	287.8458	287.8957
-1.0254	-0.9213	-0.8171	-0.8141	-0.8138	-0.8132	-0.8084	-0.6423	-0.4762	-0.4714	-0.4708	-0.4701	-0.4635	-0.2354	-0.0073	-0.0007	0
7.9841	17.8967	17.7857	17.7821	17.7817	17.7813	17.7777	17.6407	17.4801	17.4751	17.4745	17.474	17.4689	17.2823	17.0721	17.0657	17.0649
2.4712	207.971	223.4705	223.9205	223.9705	224.0205	224.4705	239.9697	255.4687	255.9186	255.9686	256.0186	256.4686	271.9671	287.4652	287.9151	287.9651
-5.1763	-5.0872	-4.968	-4.964	-4.9636	-4.9632	-4.9592	-4.808	-4.6268	-4.6211	-4.6205	-4.6199	-4.6141	-4.4009	-4.1577	-4.1502	-4.1494
8.0464	17.9592	17.848	17.8444	17.844	17.8438	17.84	17.7032	17.5424	17.5374	17.5368	17.5362	17.5312	17.3448	17.1344	17.1279	17.1272
2.4769	207.9791	223.481	223.931	223.981	224.031	224.4809	239.9826	255.4839	255.9339	255.9839	256.0339	256.4839	271.9848	287.4853	287.9352	287.9852
-6.3763	-6.2871	-6.1679	-6.164	-6.1638	-6.1631	-6.1592	-6.008	-5.8267	-5.821	-5.8204	-5.8198	-5.814	-5.6008	-5.3576	-5.3501	-5.3492
8.0644	17.9772	17.866	17.8624	17.862	17.8616	17.858	17.7212	17.5604	17.5554	17.5548	17.5542	17.5492	17.3628	17.1524	17.1459	17.1452
2.4816	207.9858	223.4897	223.9397	223.9897	224.0397	224.4897	239.9933	255.4967	255.9466	255.9966	256.0466	256.4966	271.9995	287.502	287.9519	288.0019
-7.3763	-7.2871	-7.1679	-7.164	-7.1635	-7.1631	-7.1591	-7.0079	-6.8267	-6.8209	-6.8203	-6.8197	-6.8139	-6.6007	-6.3574	-6.3499	-6.3491
7.9794	17.8922	17.781	17.7774	17.777	17.7766	17.773	17.6362	17.4754	17.4704	17.4698	17.4692	17.4642	17.2778	17.0674	17.0609	17.0602

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL

CLIENT: MINISTRY OF COMMUNICATIONS, DIRECTORATE GENERAL OF ROADS

PROJECT: B/D ON ROAD DEVELOPMENT PROJECT ON BATHAN FREEWAY

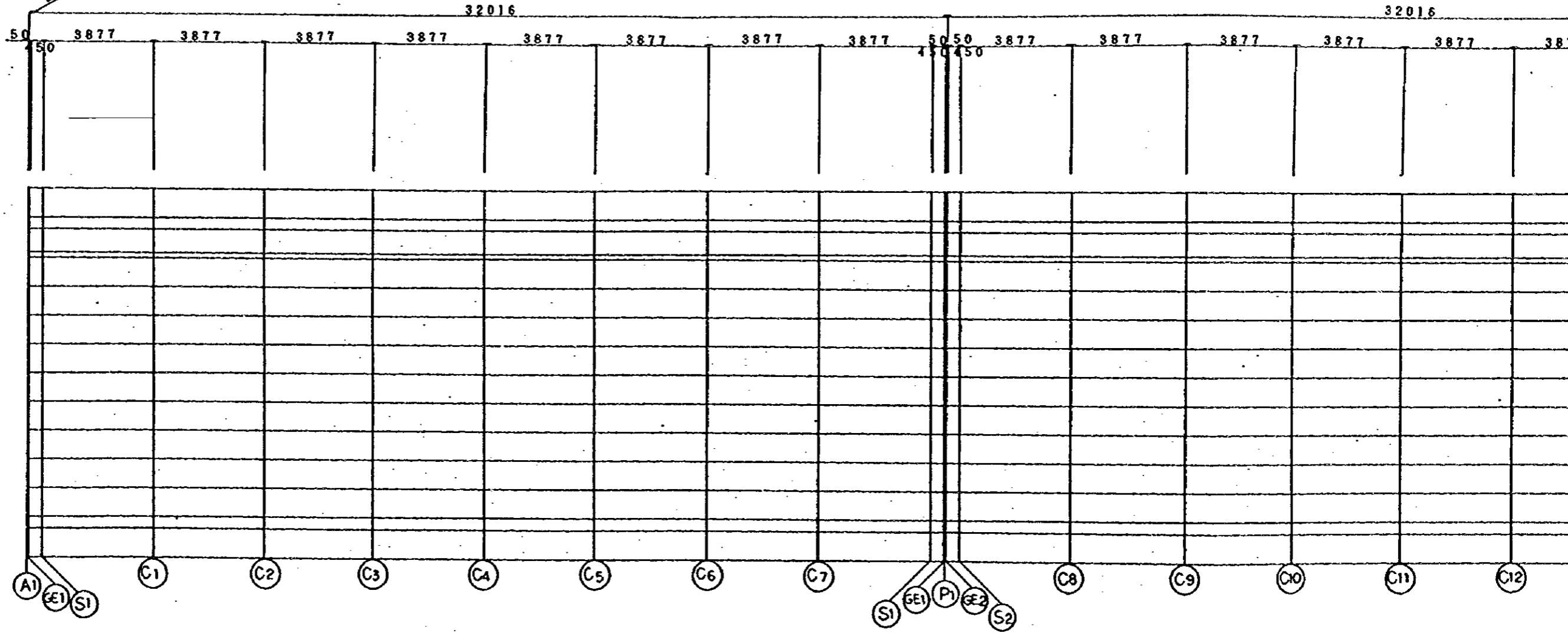
TITLE CO-ORDINATE LIST RA02 AT A-LINE

DATE

DWGNO.

B-4

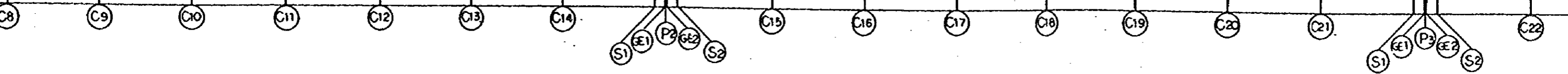
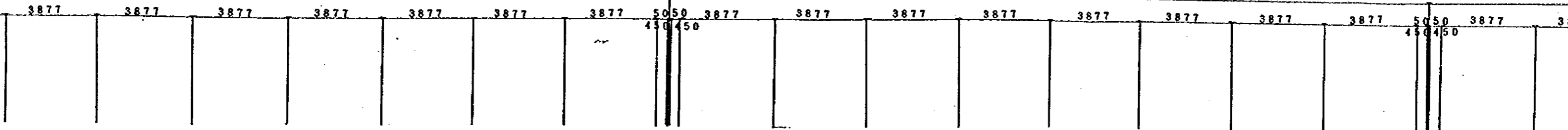
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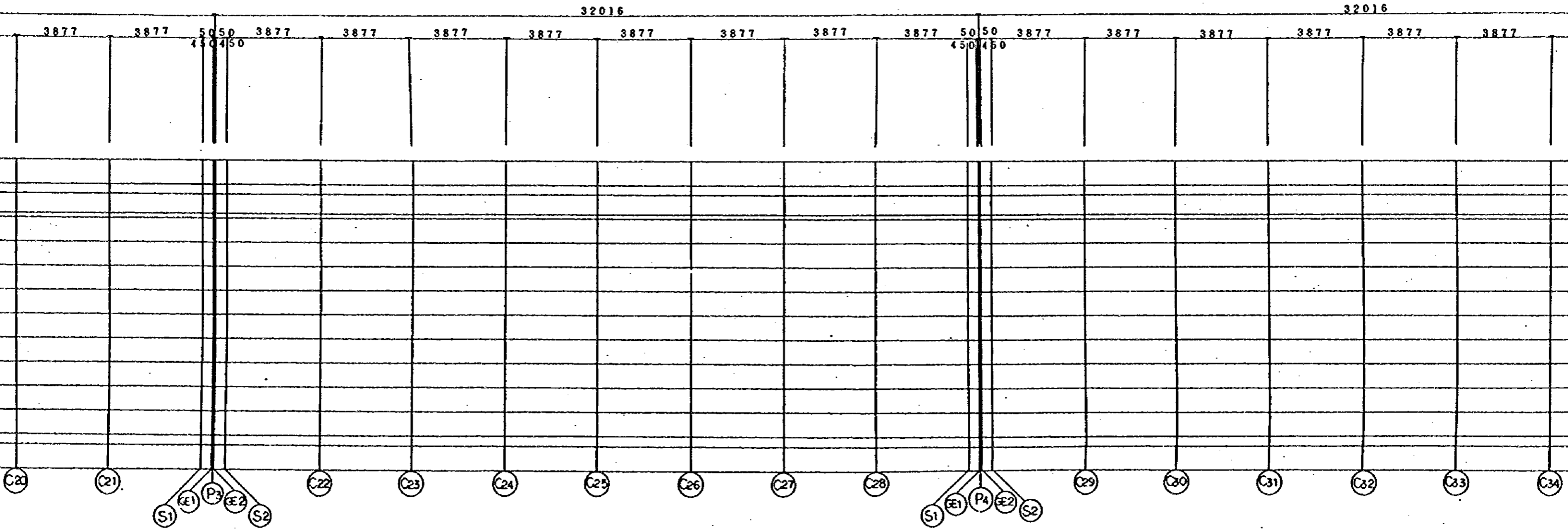
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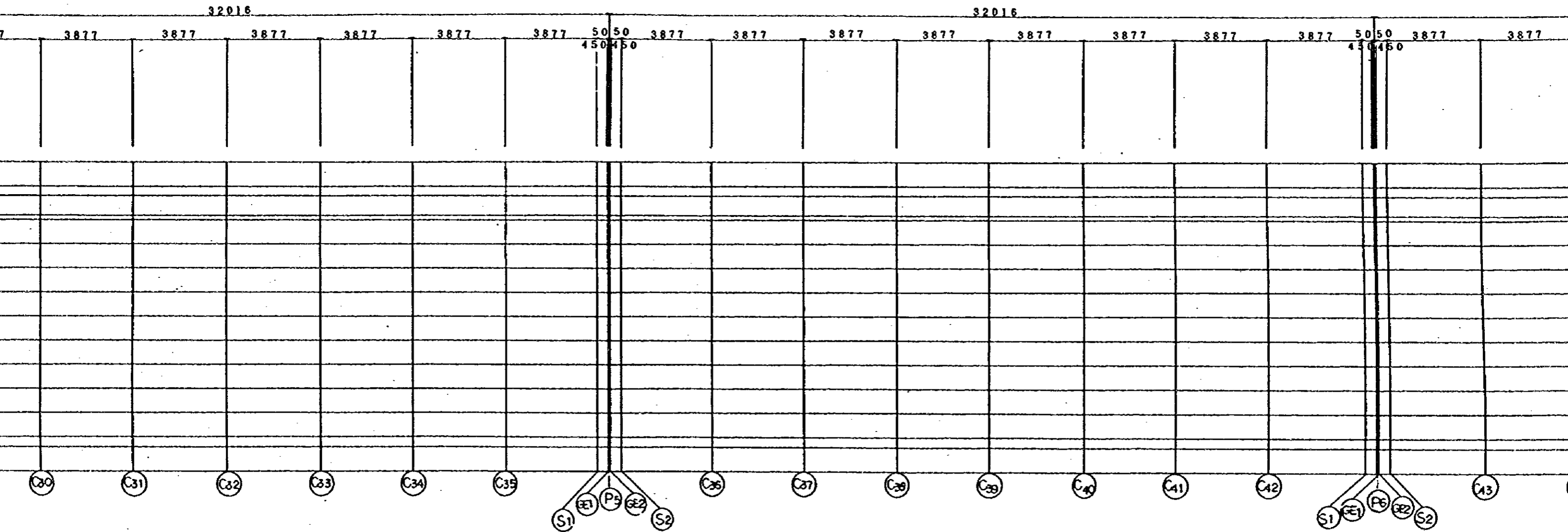
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B-LINE



A-2A' NASEEM GARDEN

B-LINE



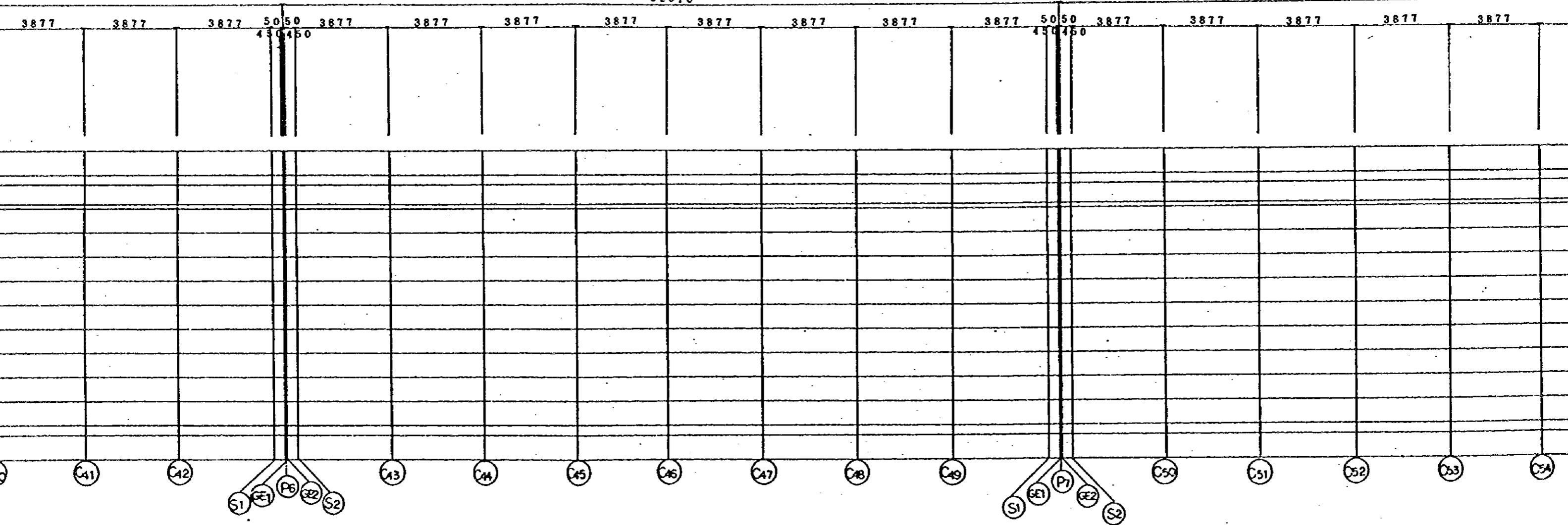
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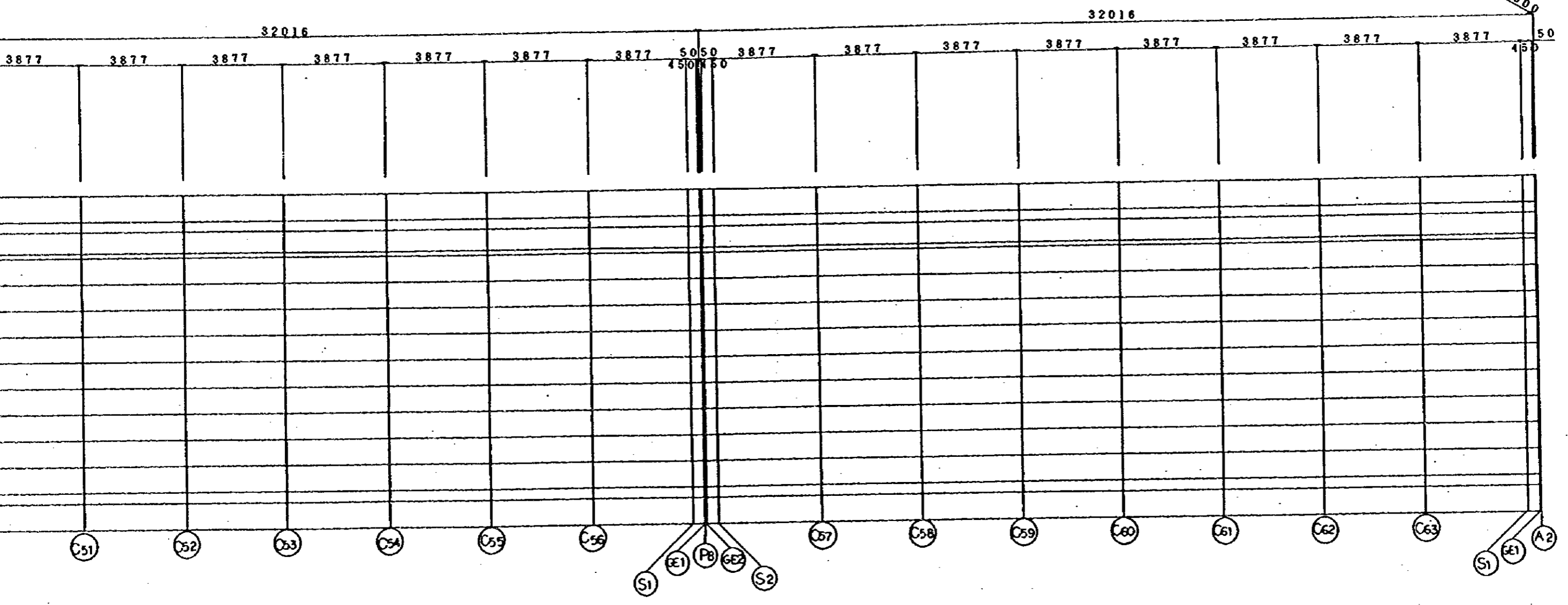


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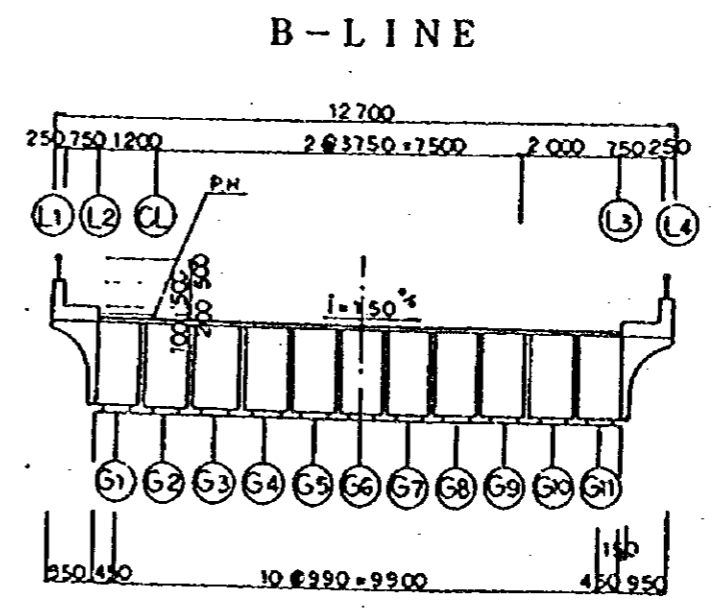
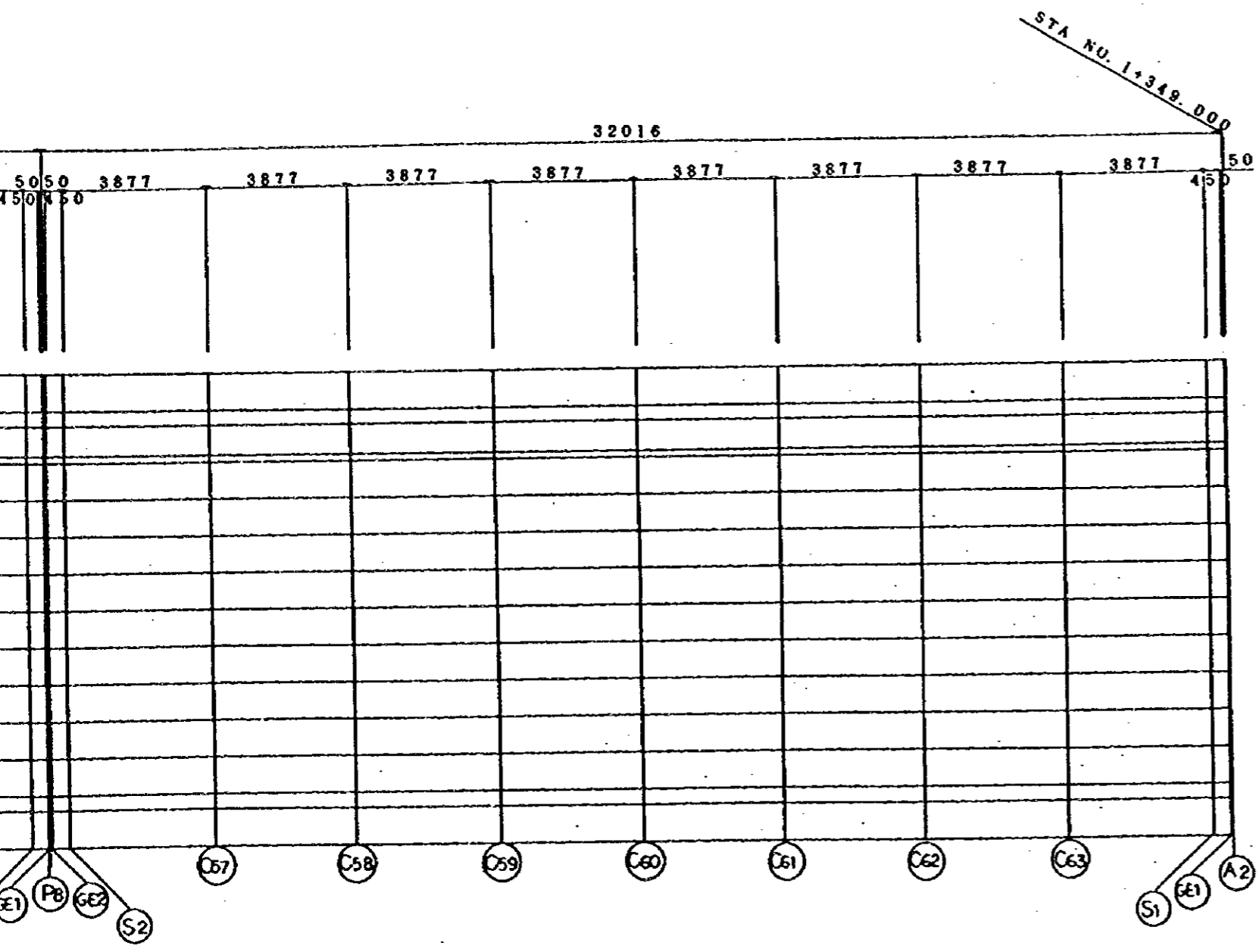
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JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)
JICA STUDY TEAM
PACIFIC CONSULTANTS INTERNATIONAL
FUKUYAMA CONSULTANTS INTERNATIONAL



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: FRAMING PLAN RA01 AT B-LINE	
	DATE:	DWGNO. B-5