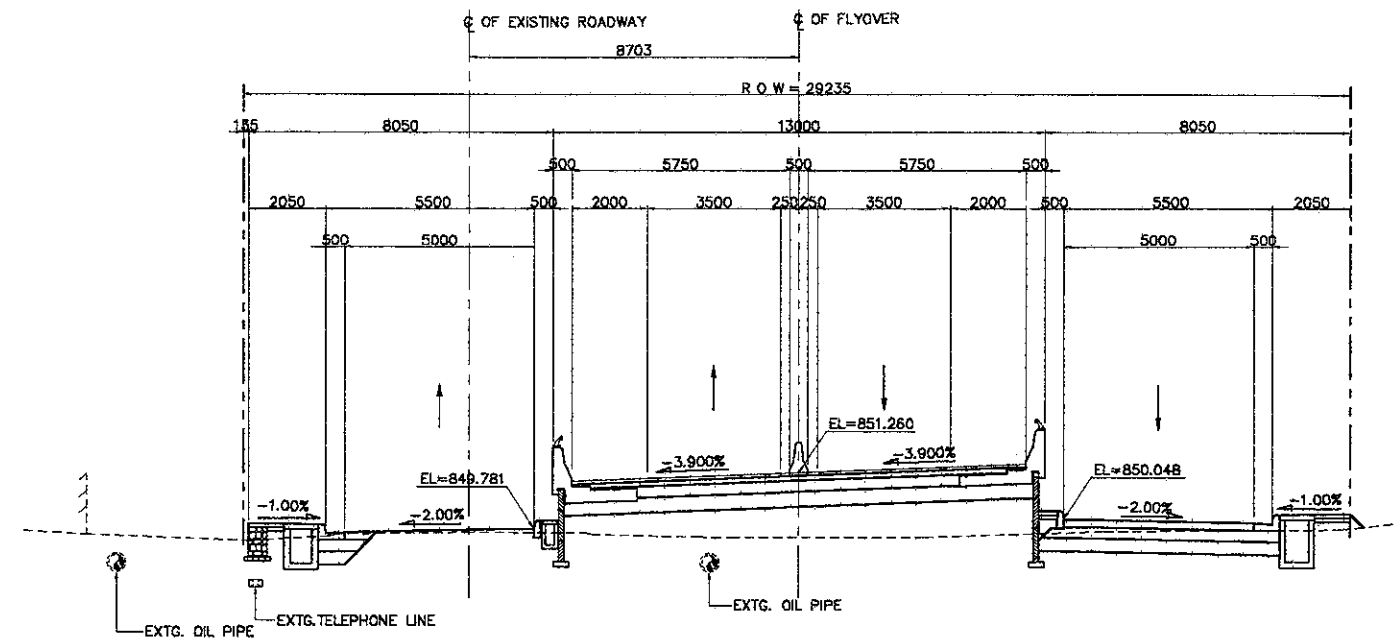
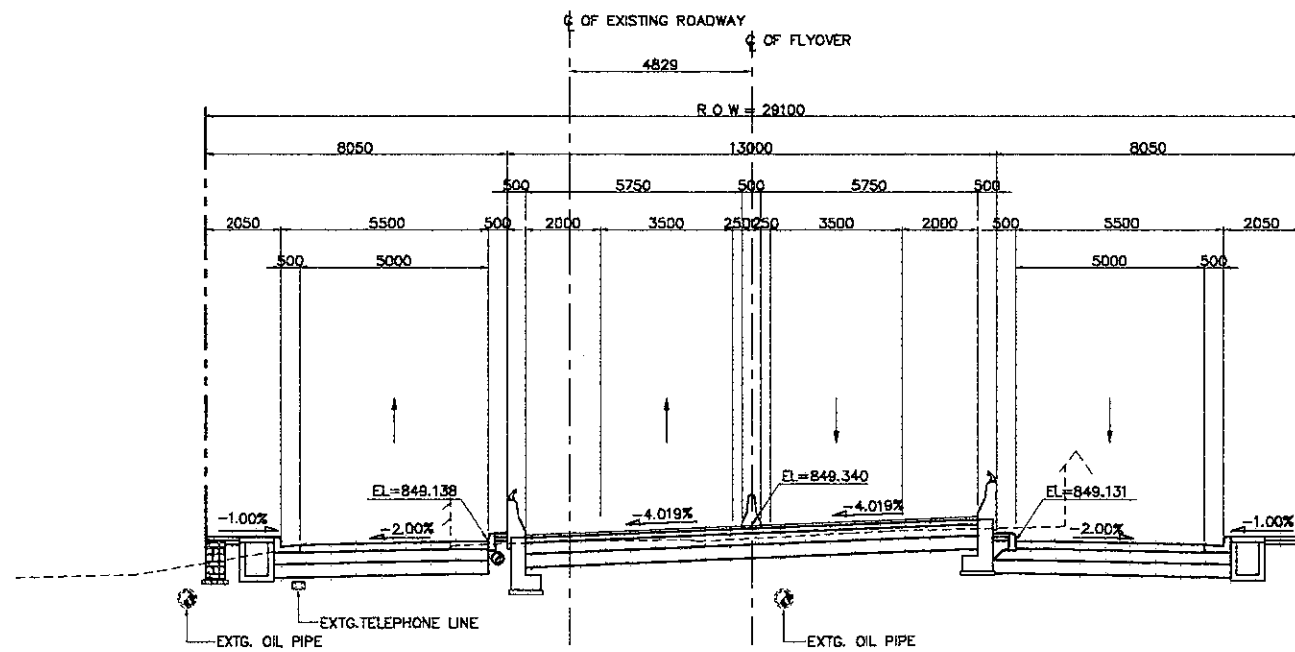


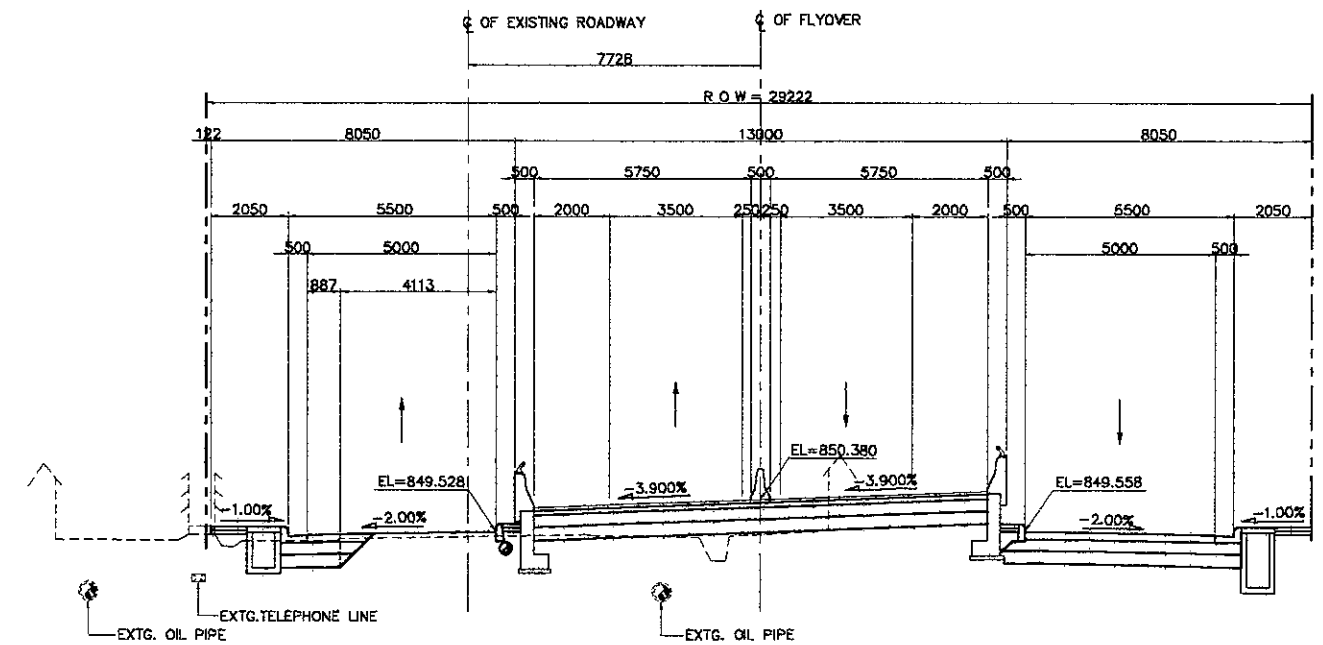
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4 SECTION (STA. 0 + 220.000)
 SCALE 1:200

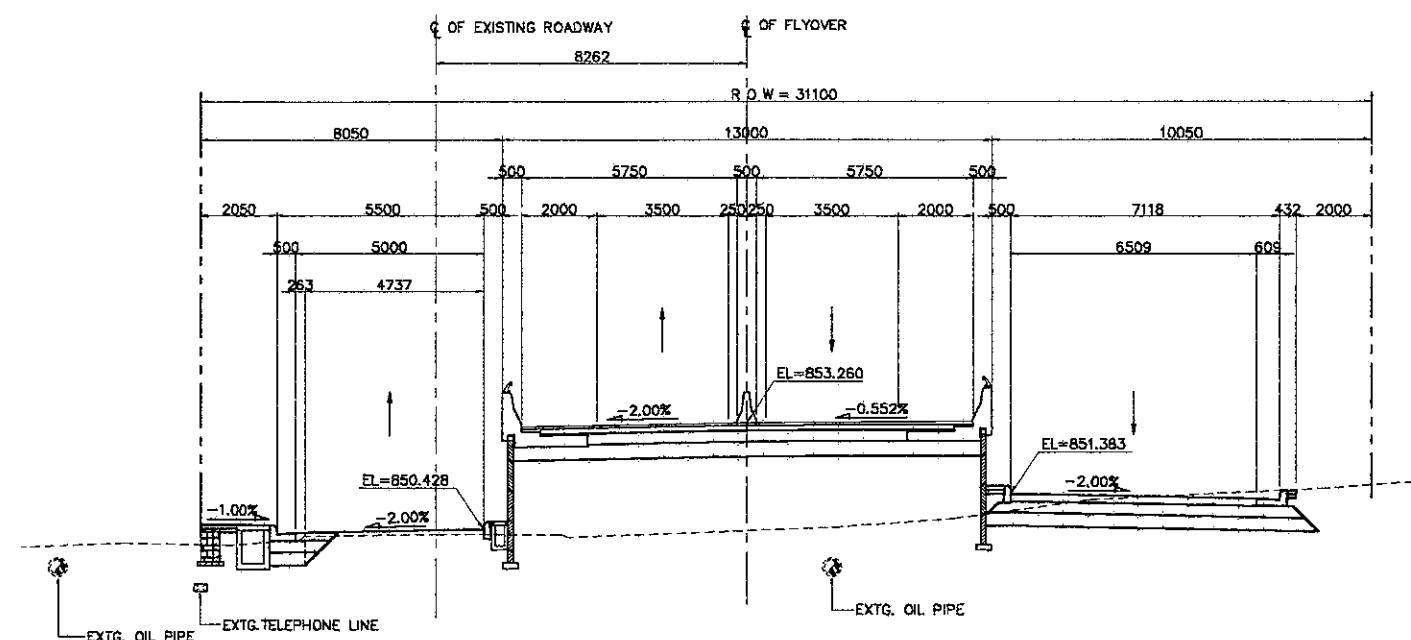


1 SECTION (STA. 0 + 160.000)
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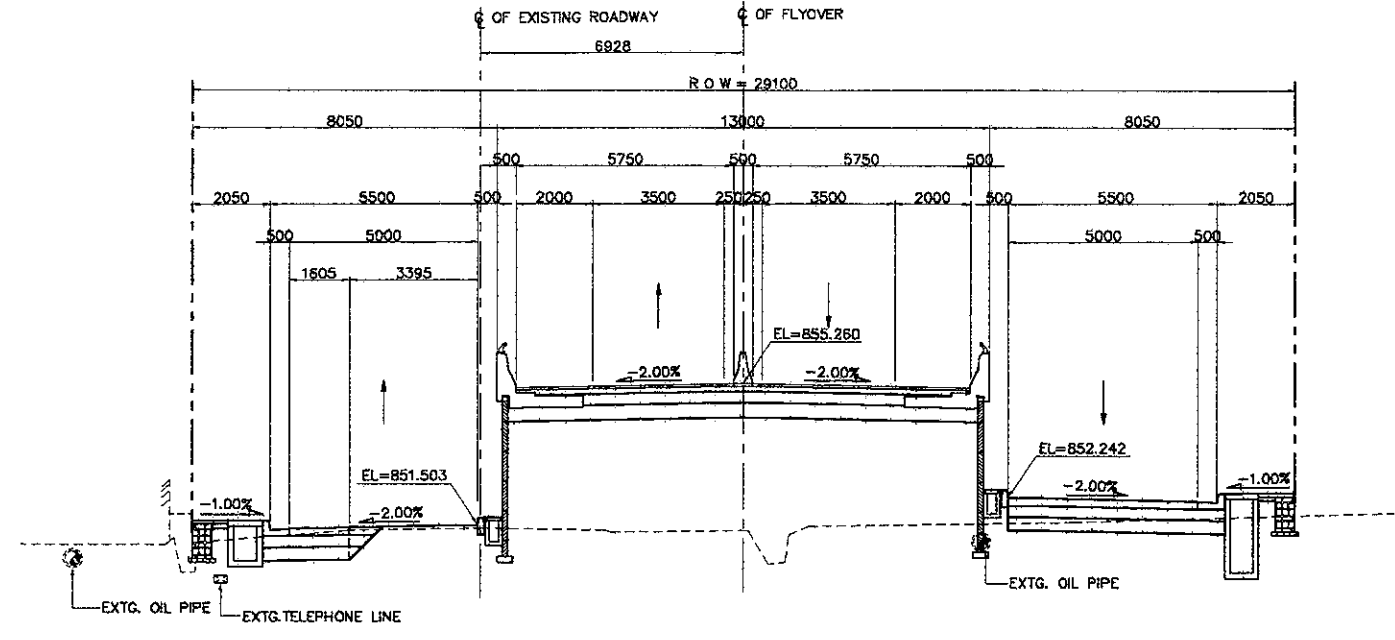


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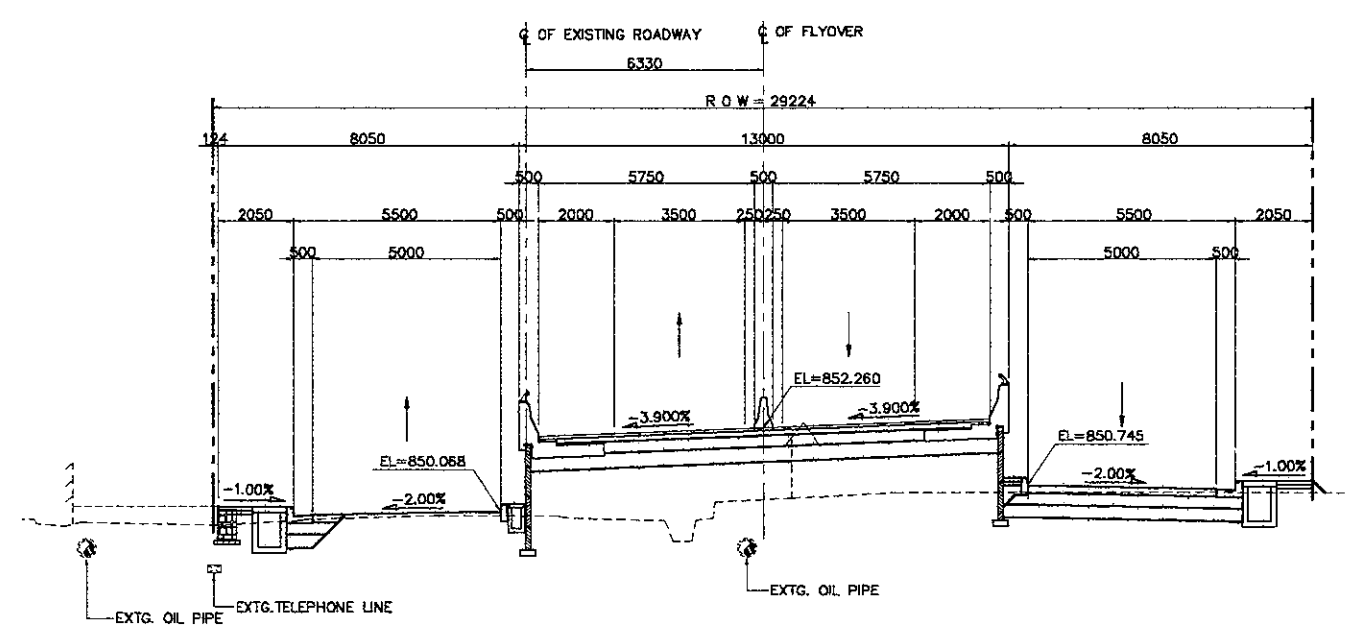
- NOTES:
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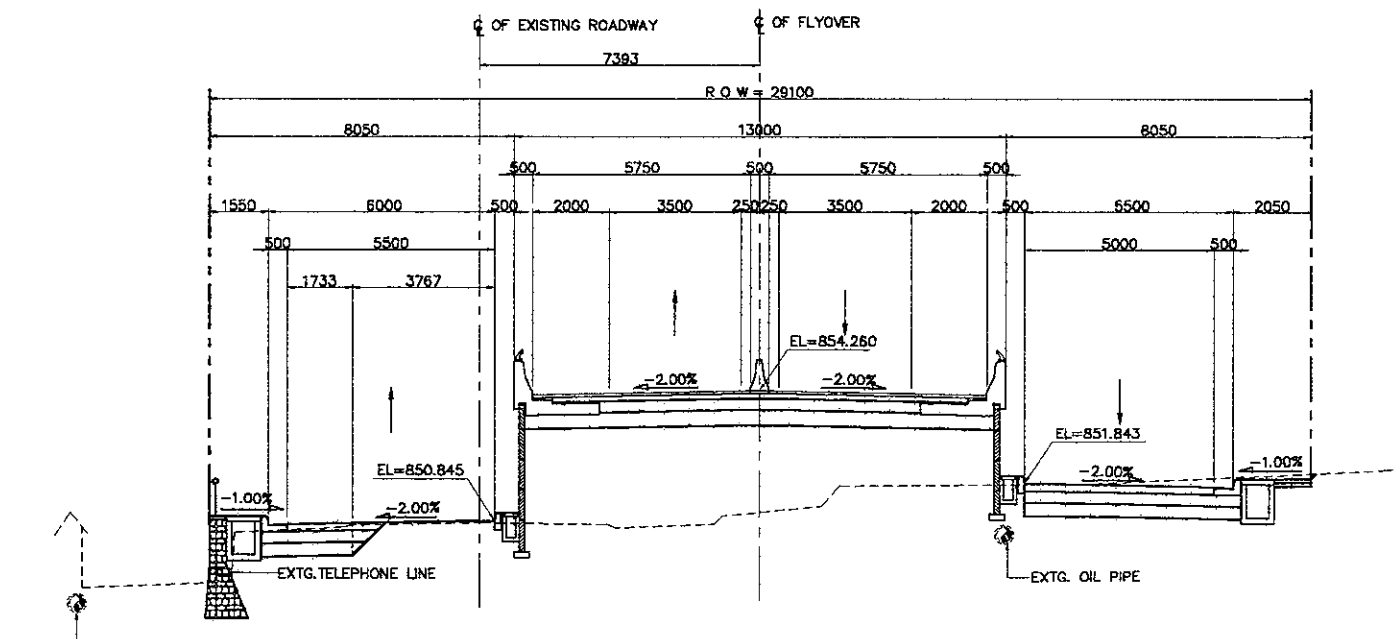
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4 SECTION (STA. 0 + 300.000)
 SCALE 1:200

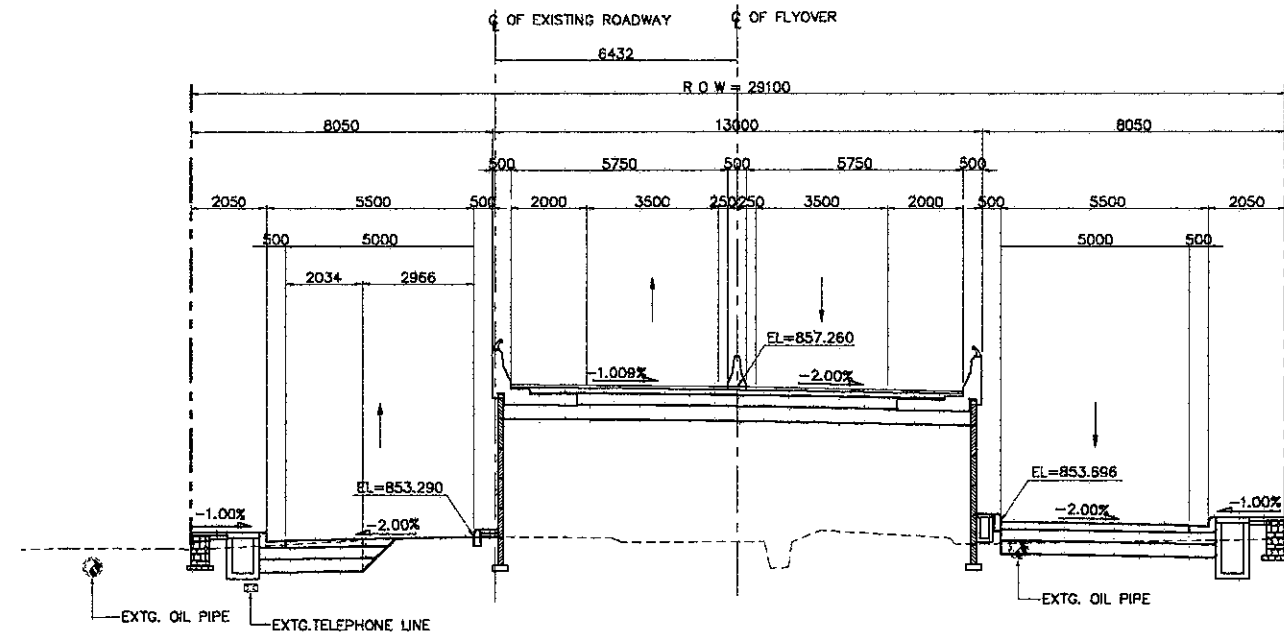


1 SECTION (STA. 0 + 240.000)
 SCALE 1:200

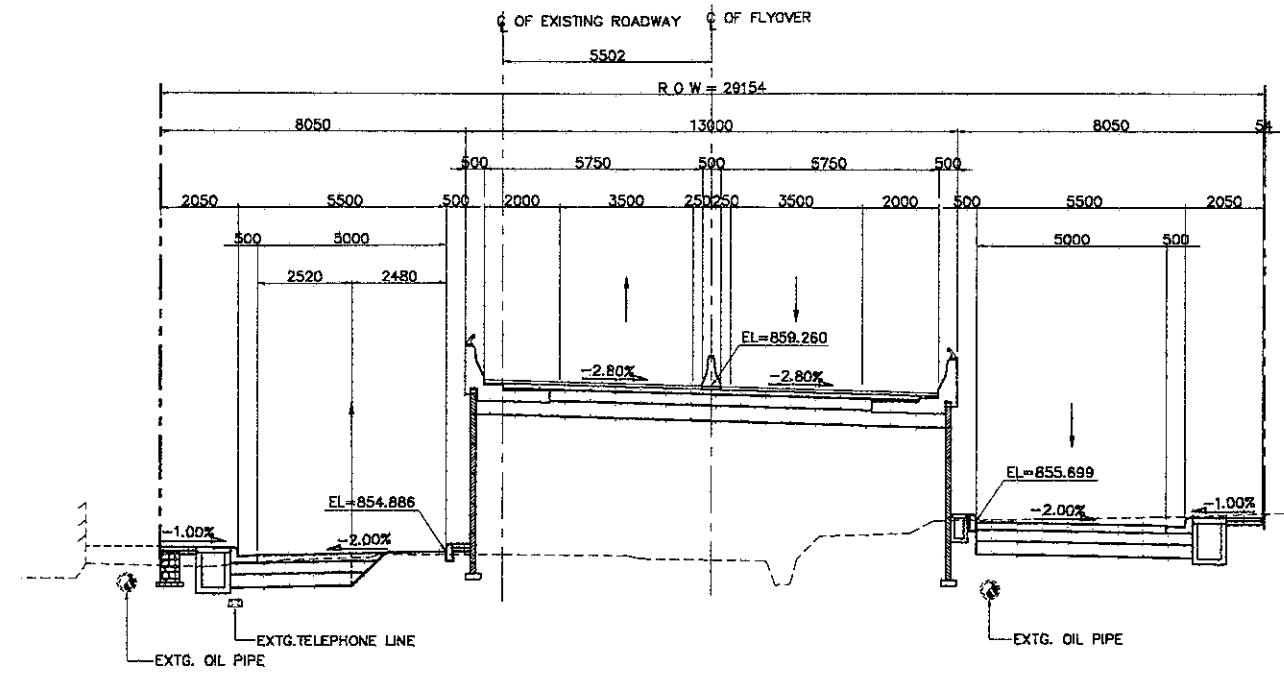


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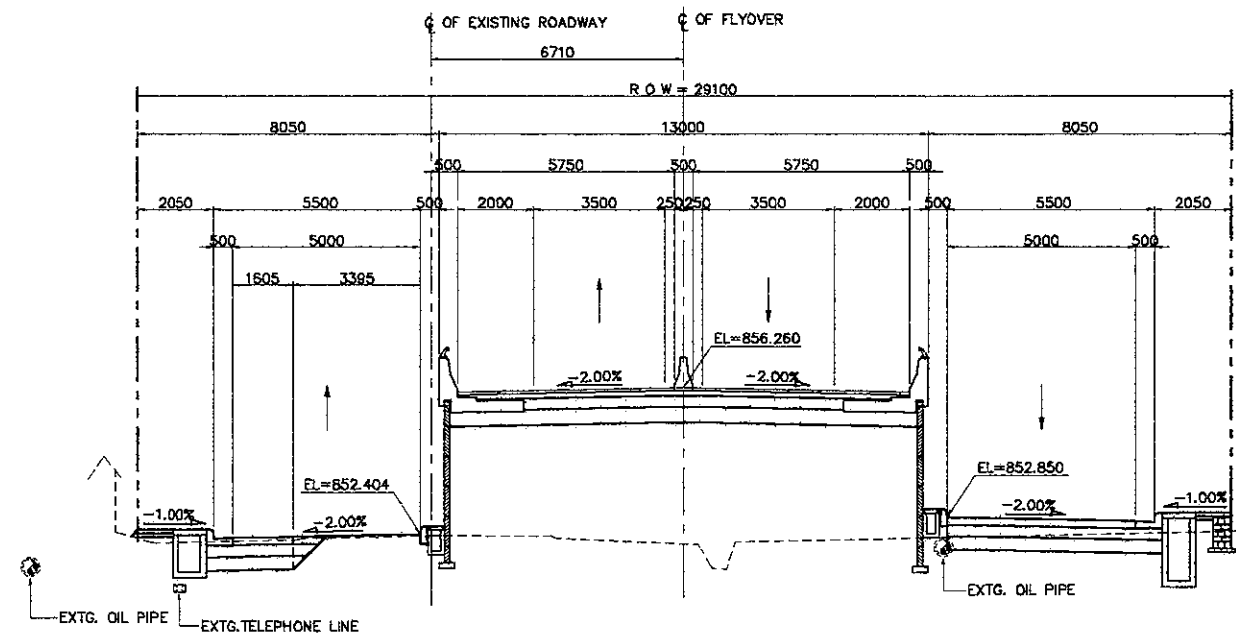
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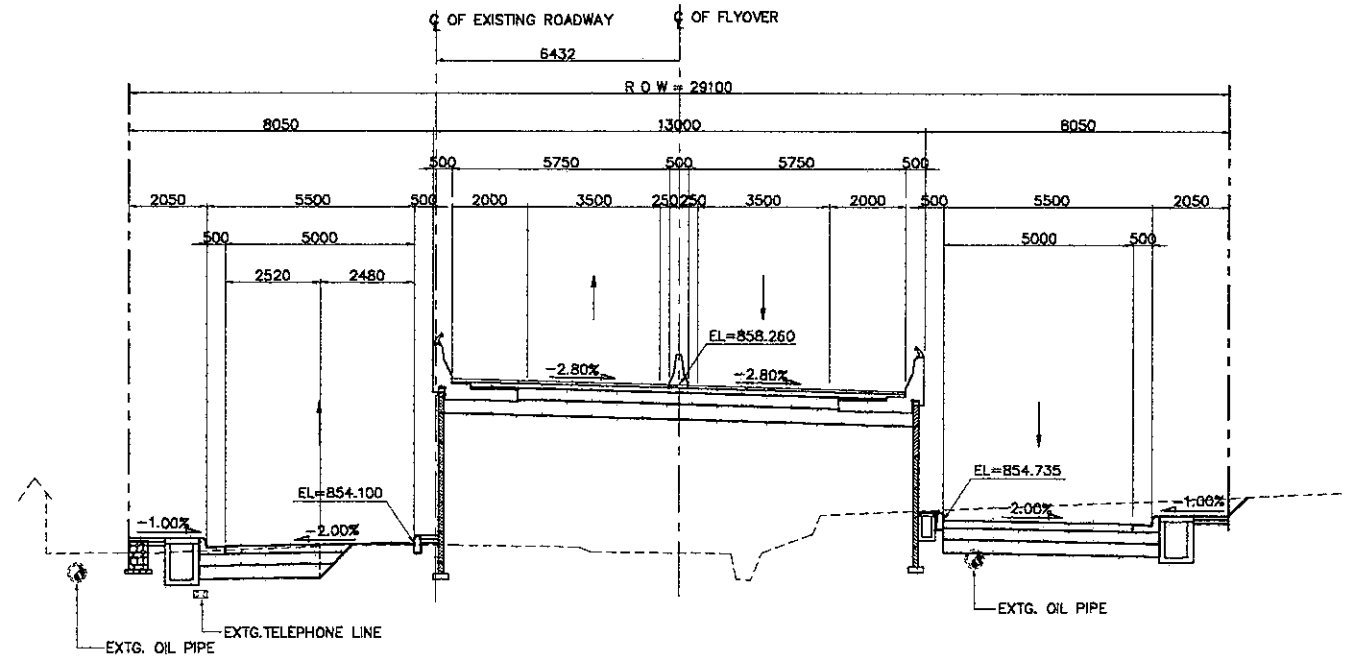
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4 SECTION (STA. 0 + 380.000)
 SCALE 1:200

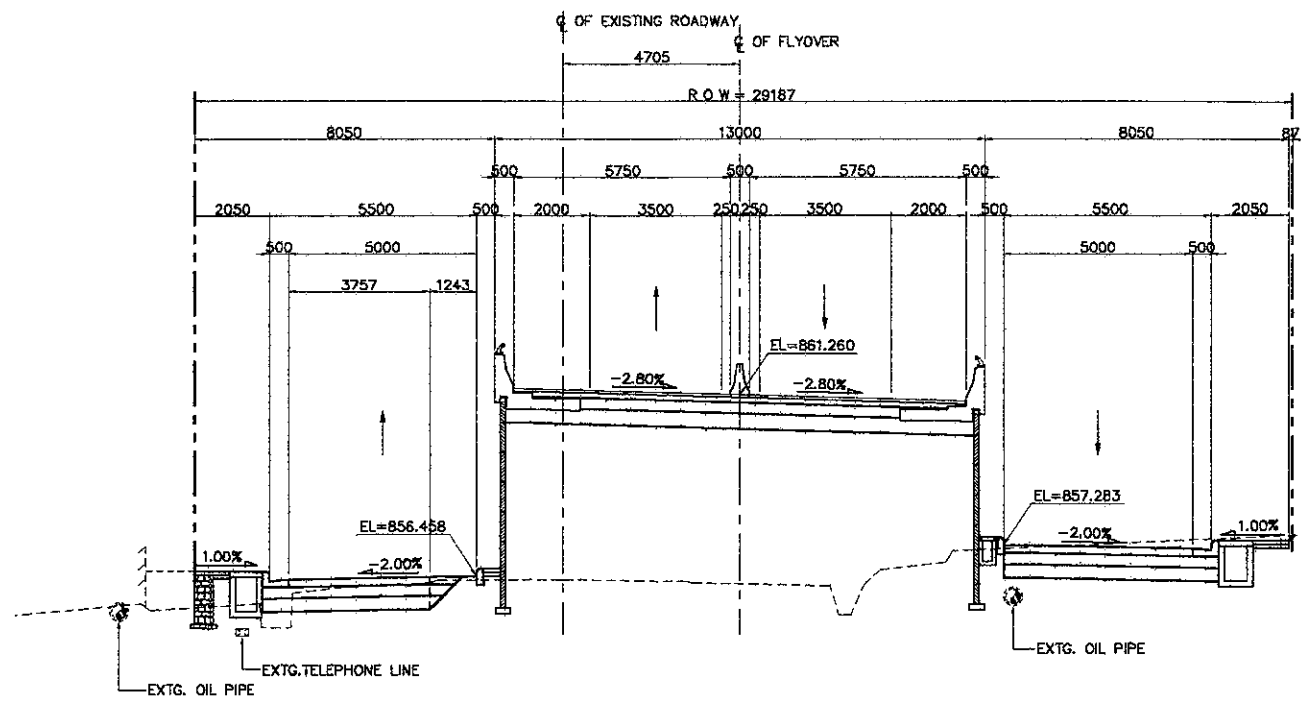


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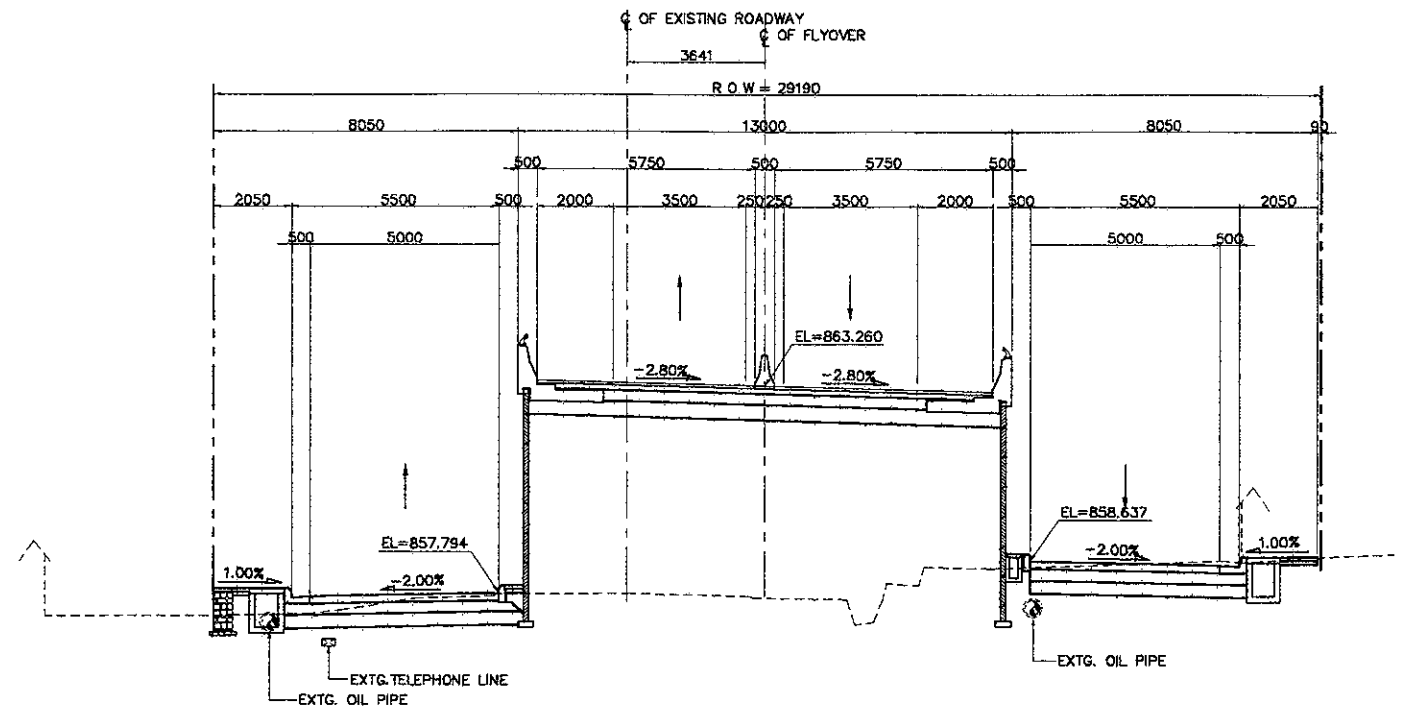


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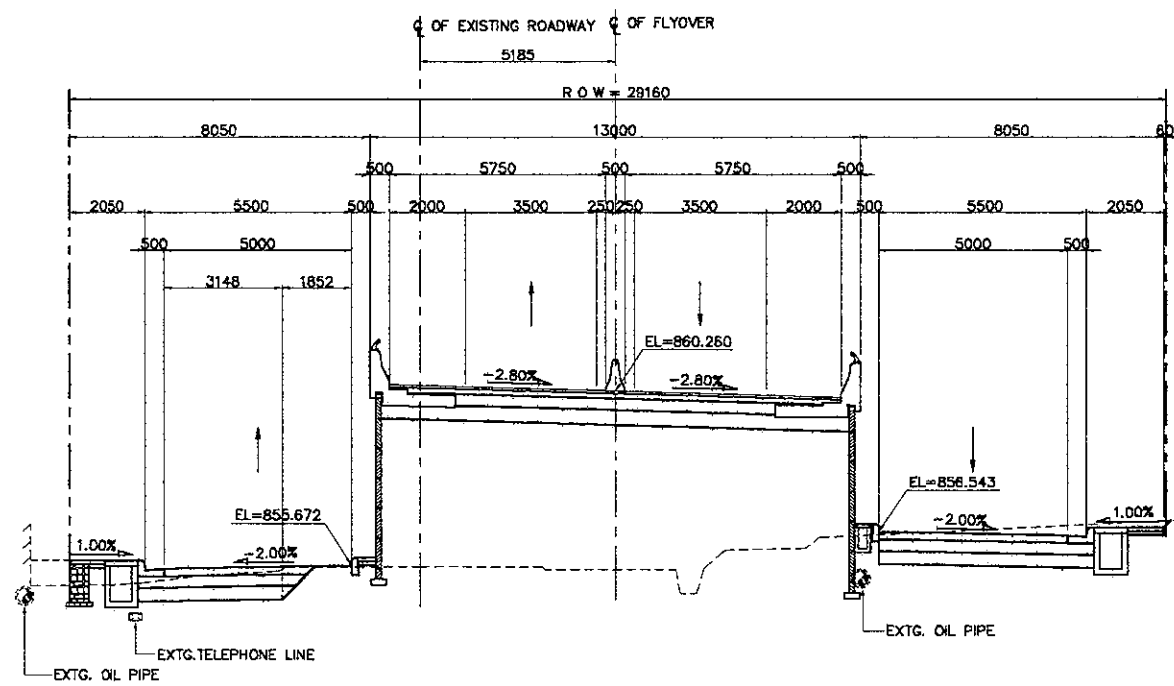
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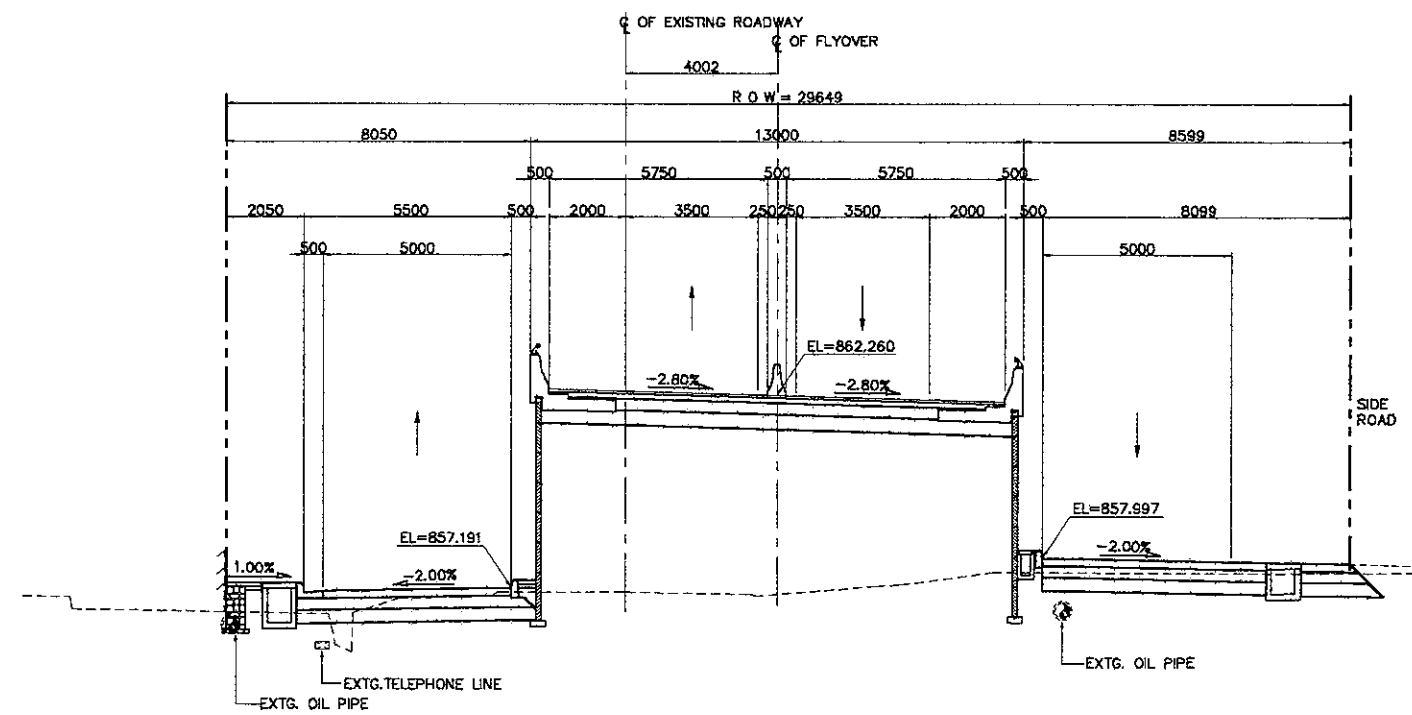
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4 SECTION (STA. 0 + 460.000)
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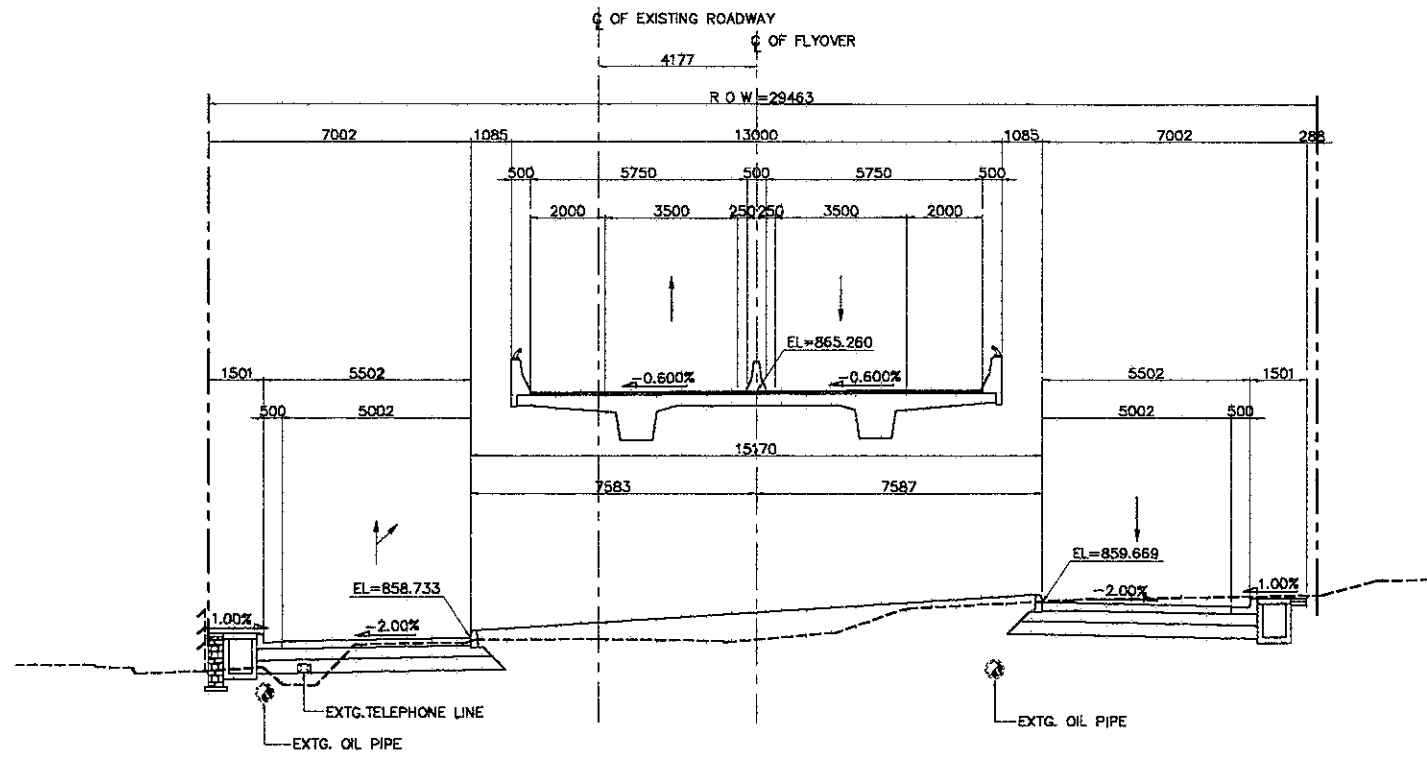


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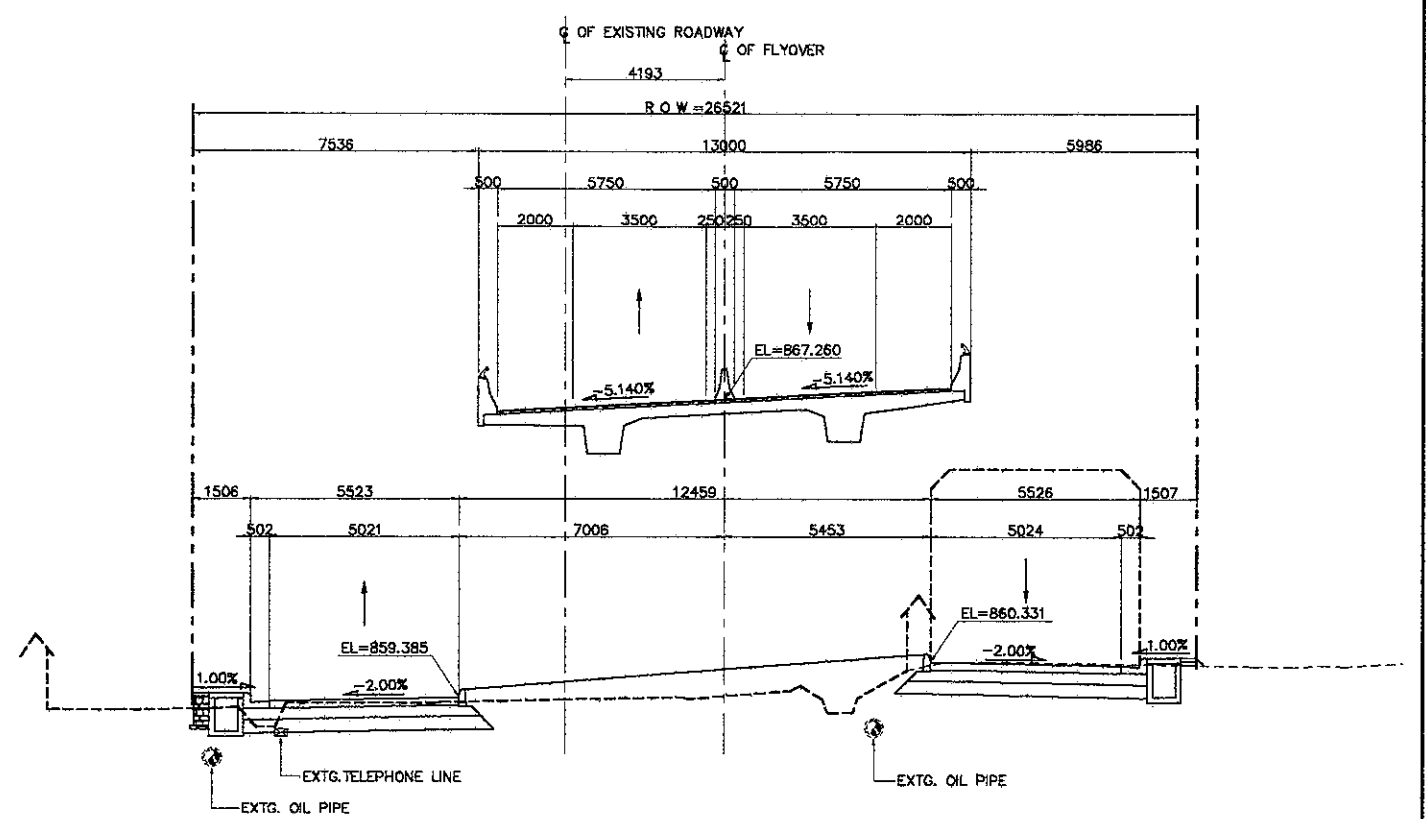


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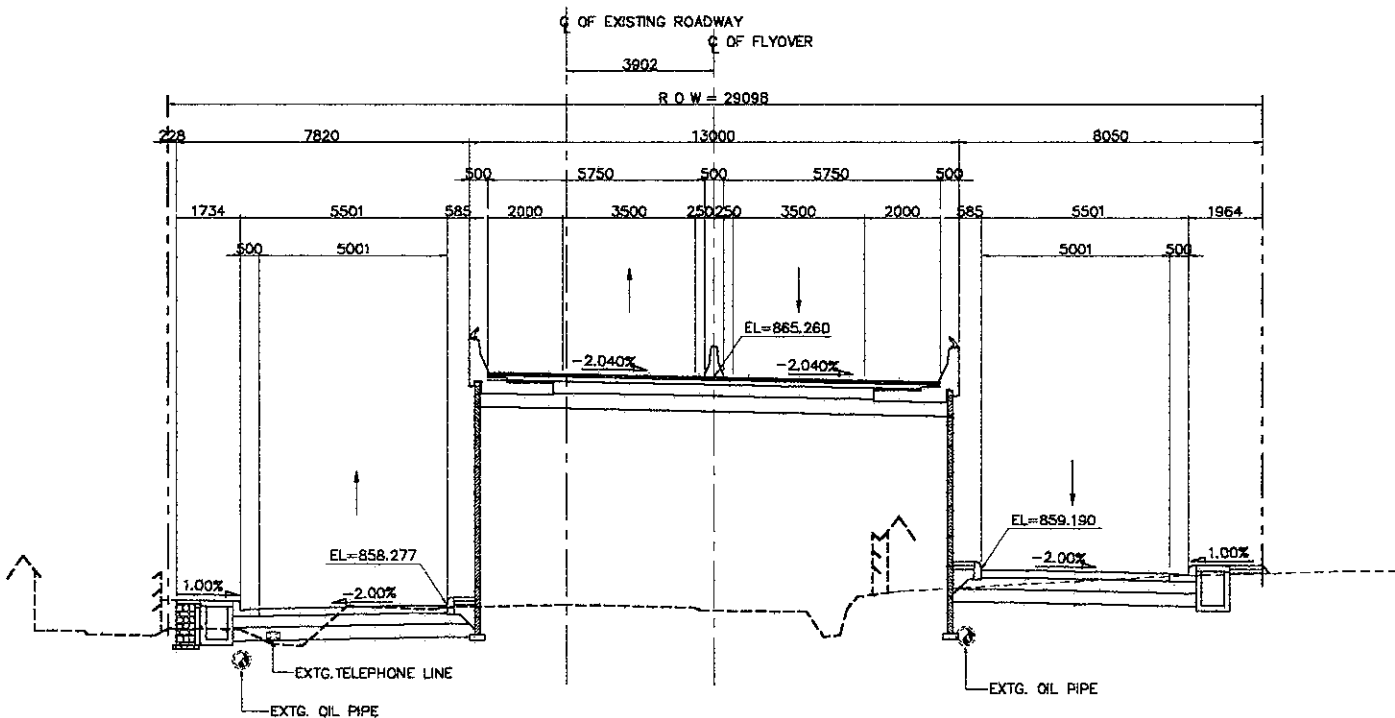
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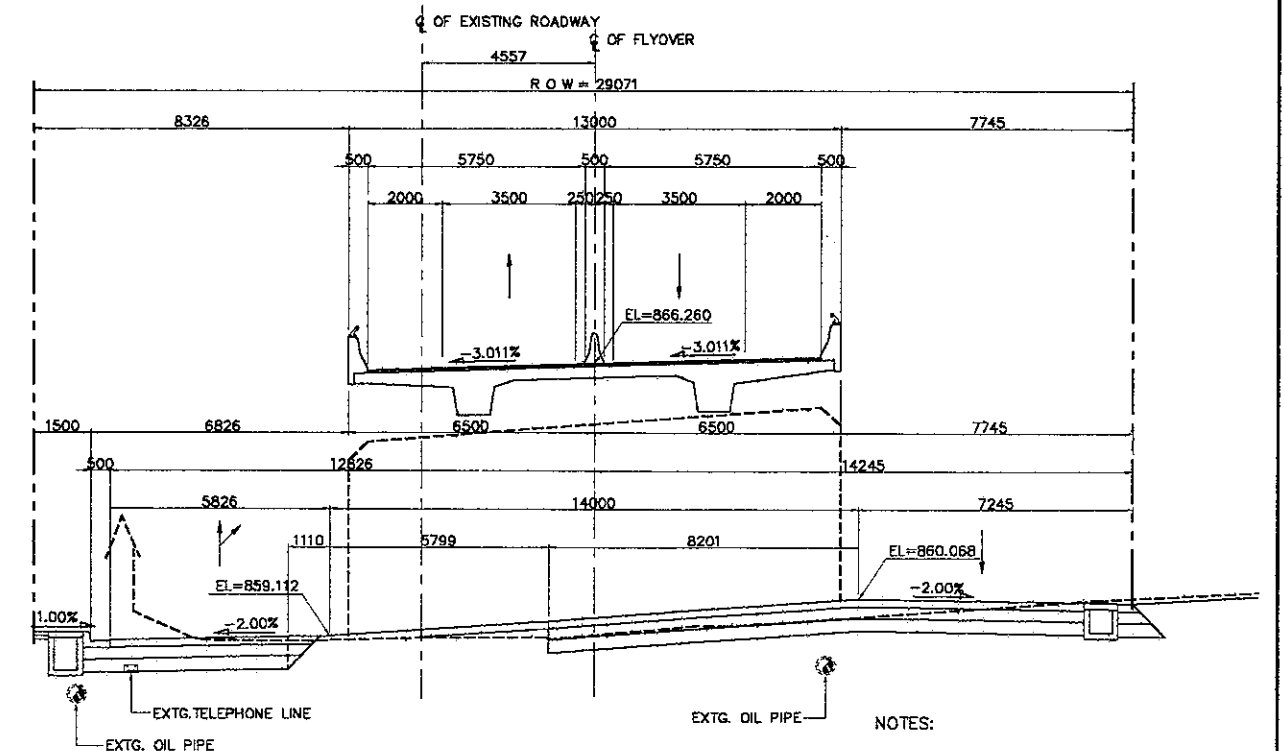
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4 SECTION (STA. 0 + 540.000)
 SCALE 1:200

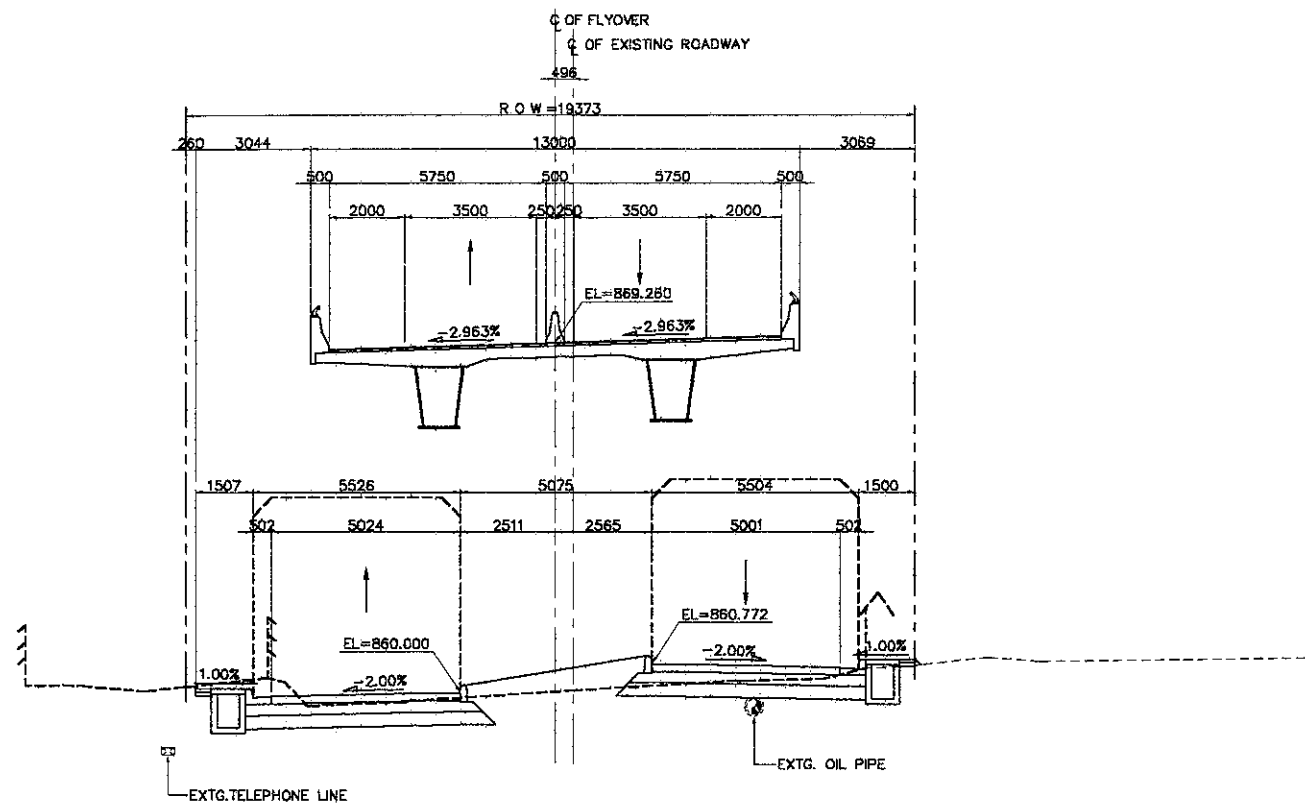


1 SECTION (STA. 0 + 480.000)
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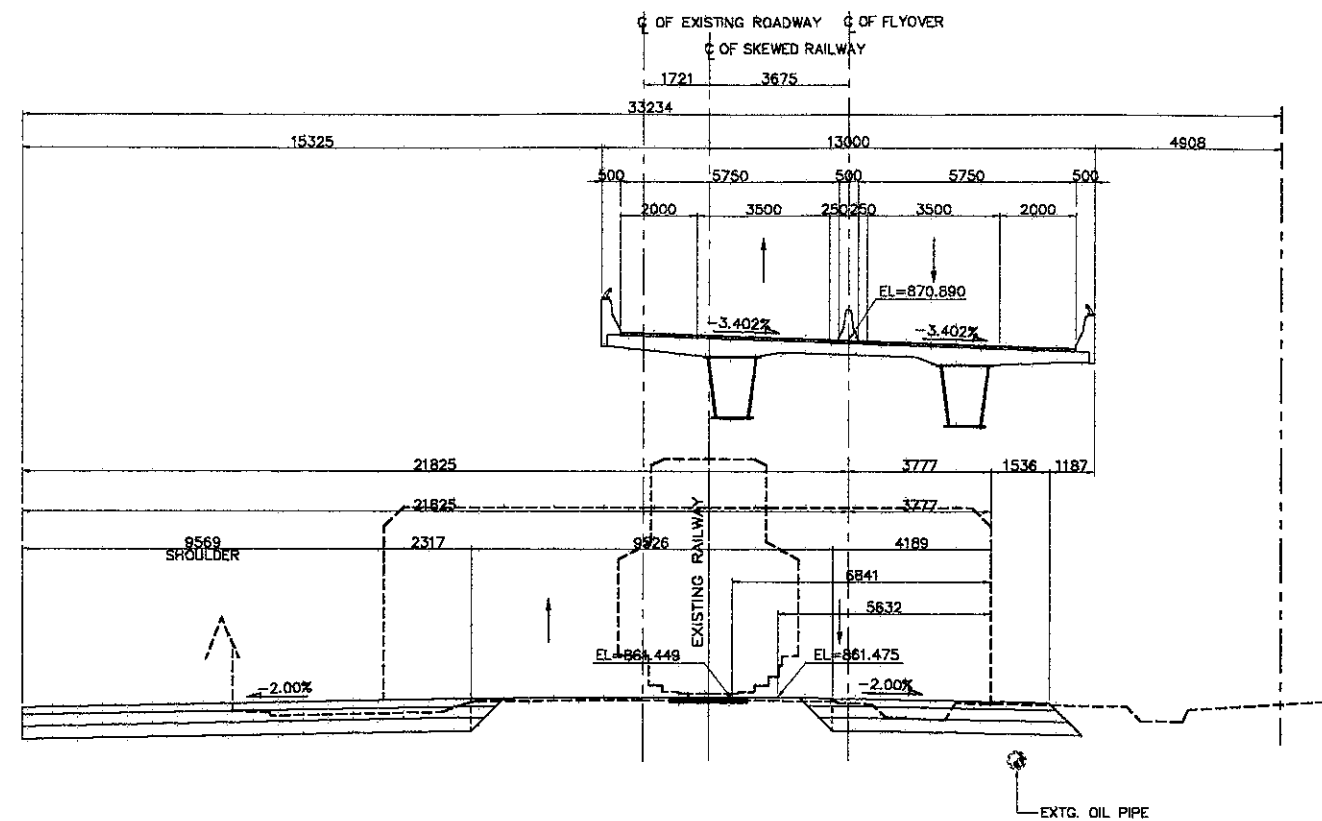


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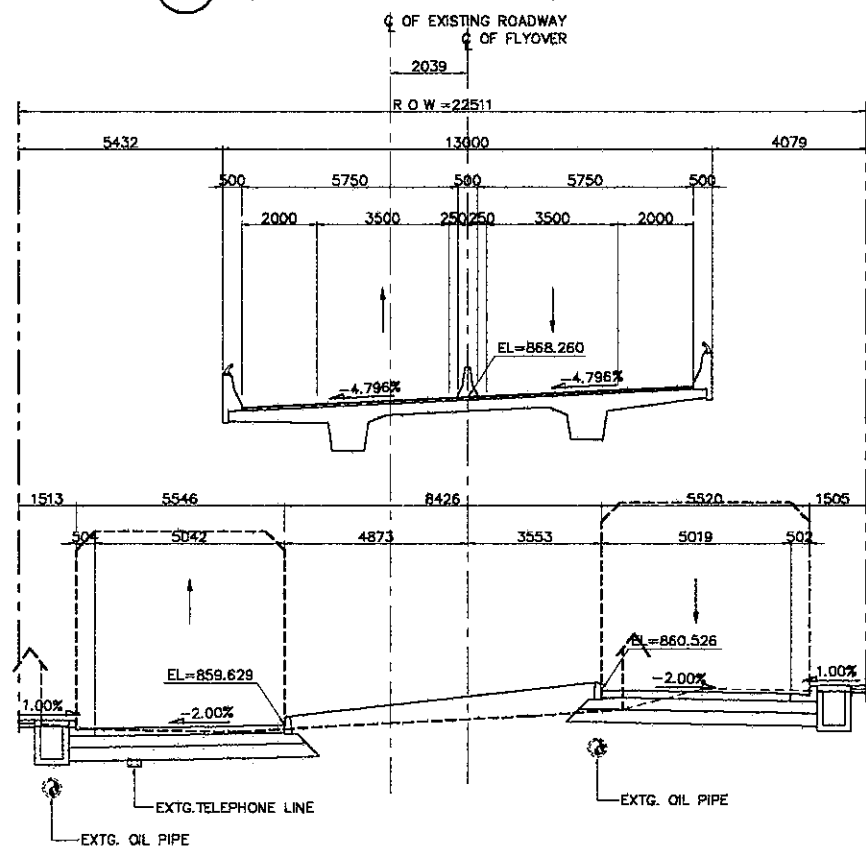
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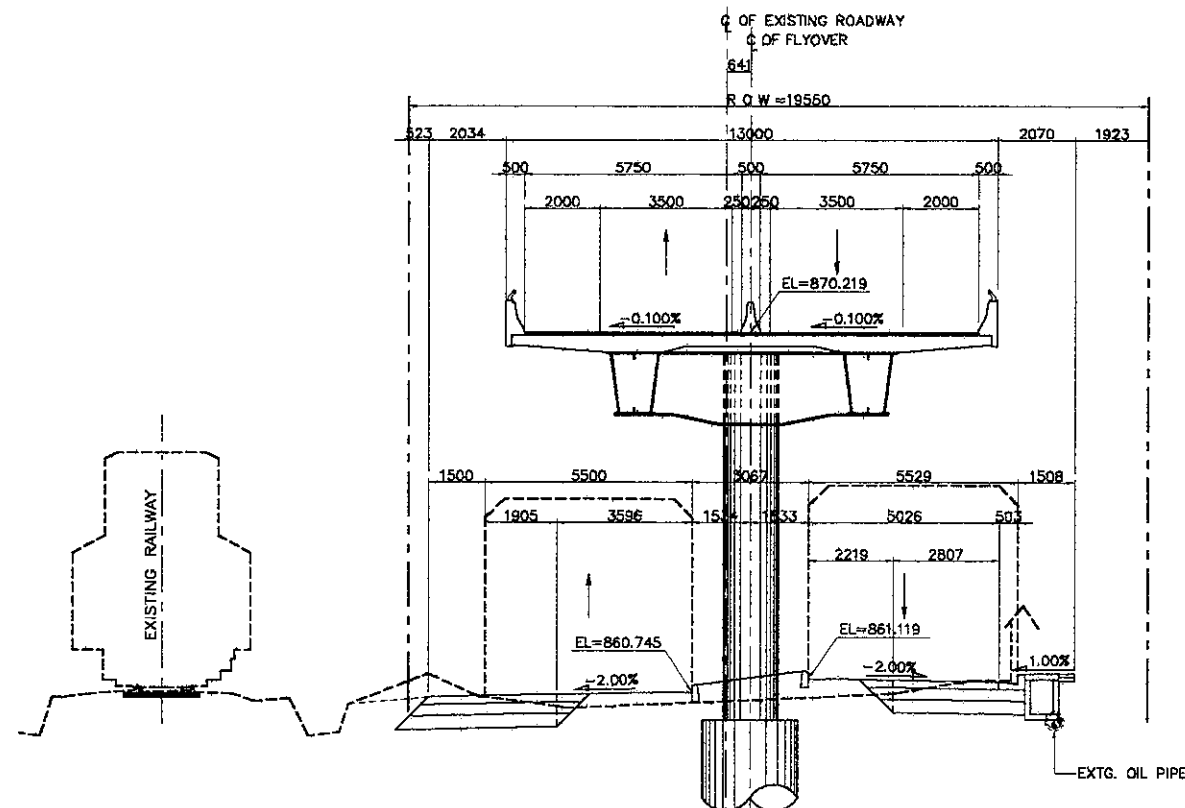
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4 SECTION (STA. 0 + 620.000)
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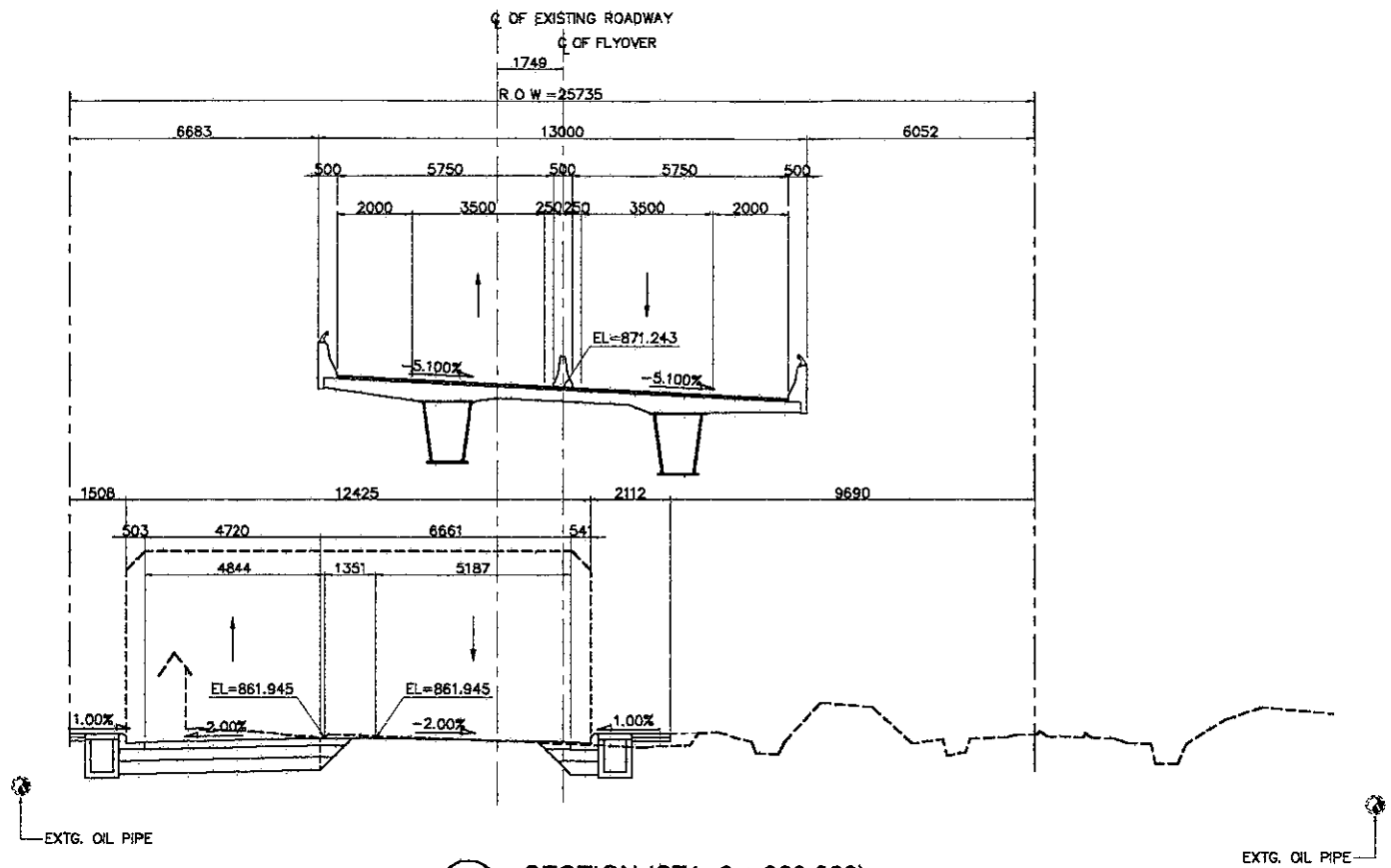


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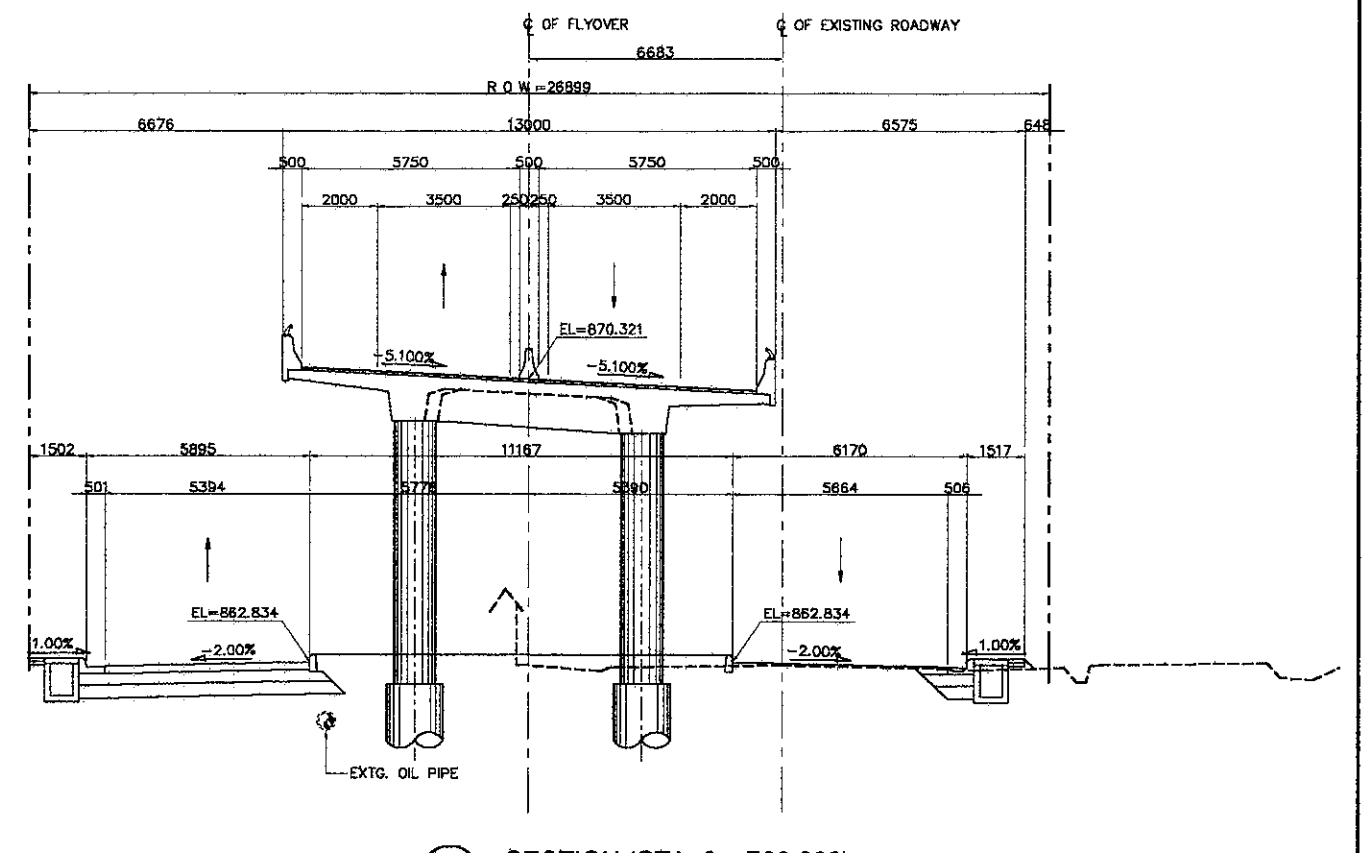


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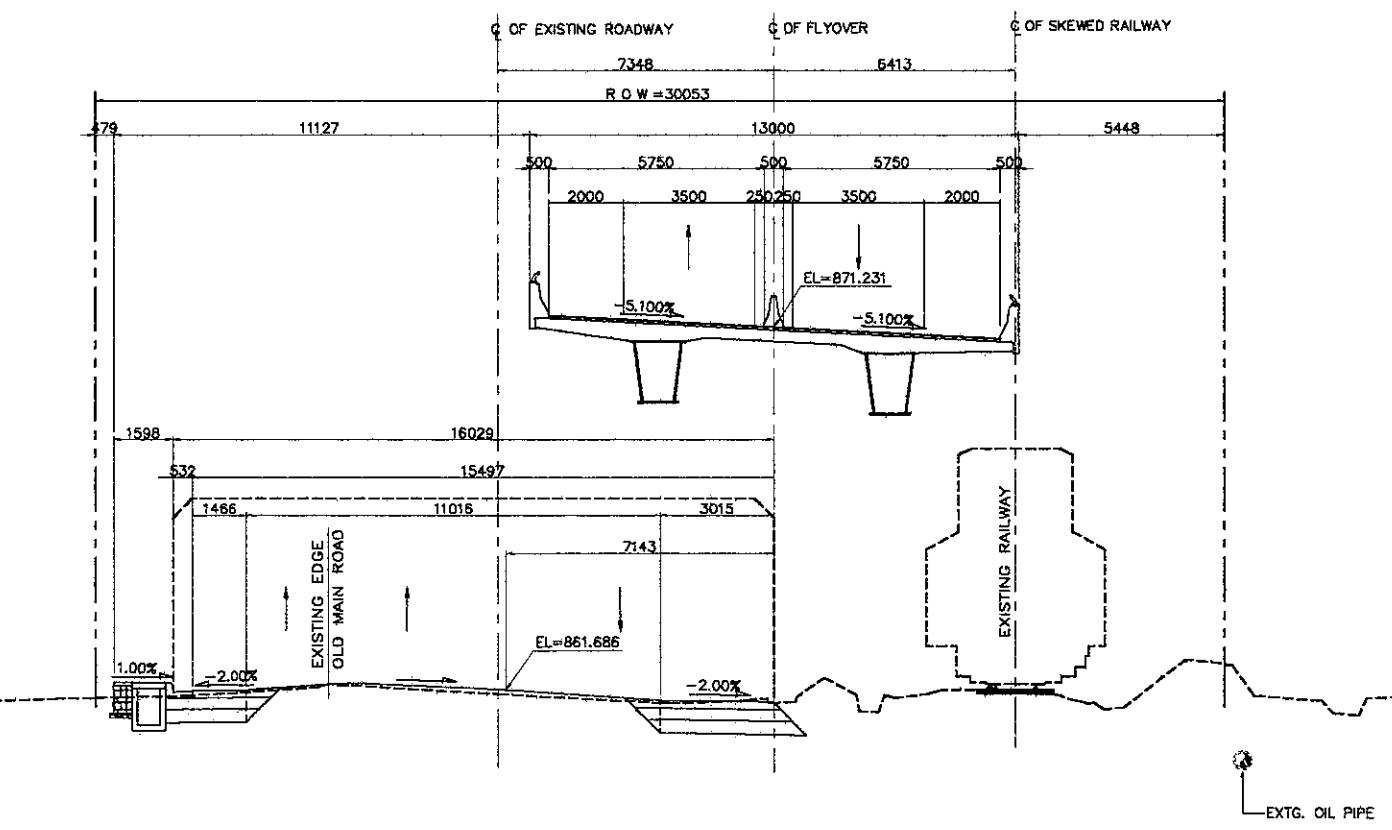
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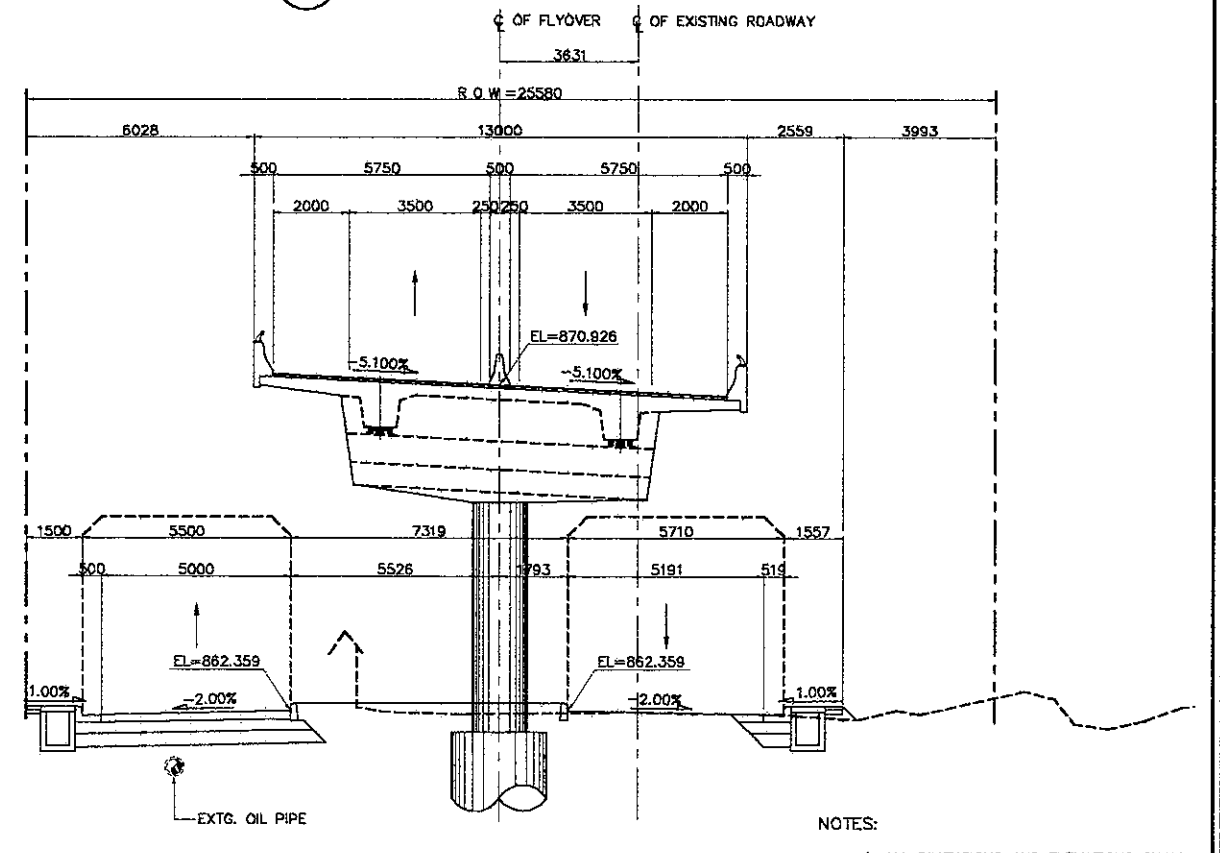
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4 SECTION (STA. 0 + 700.000)
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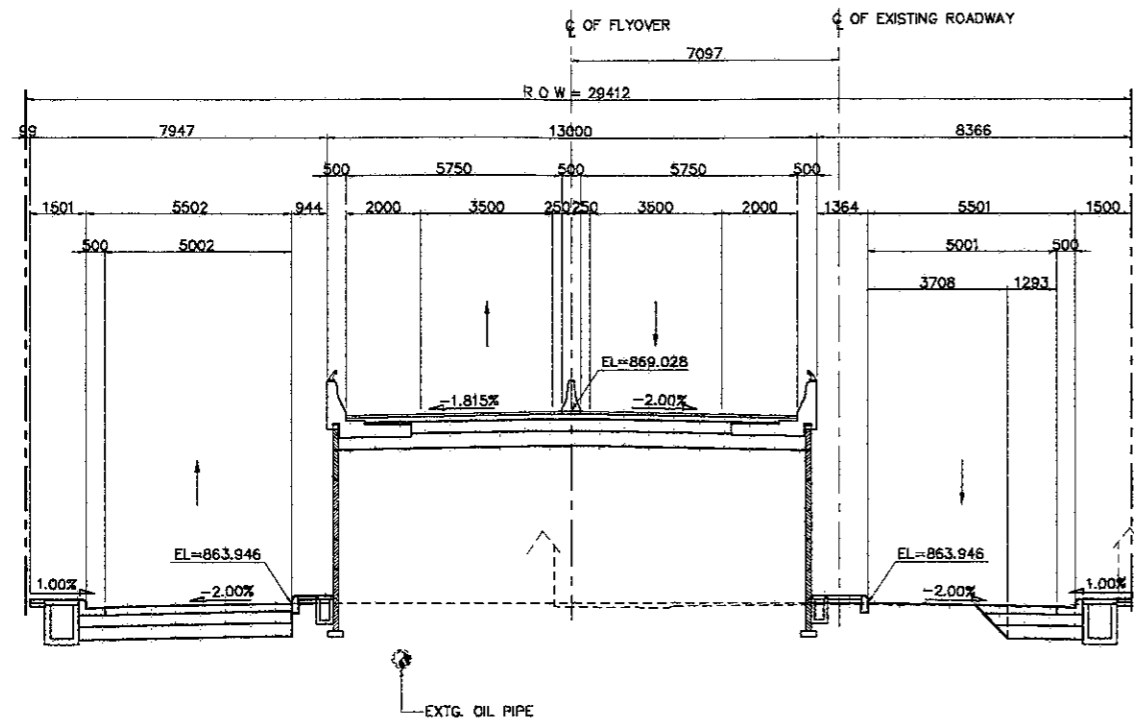


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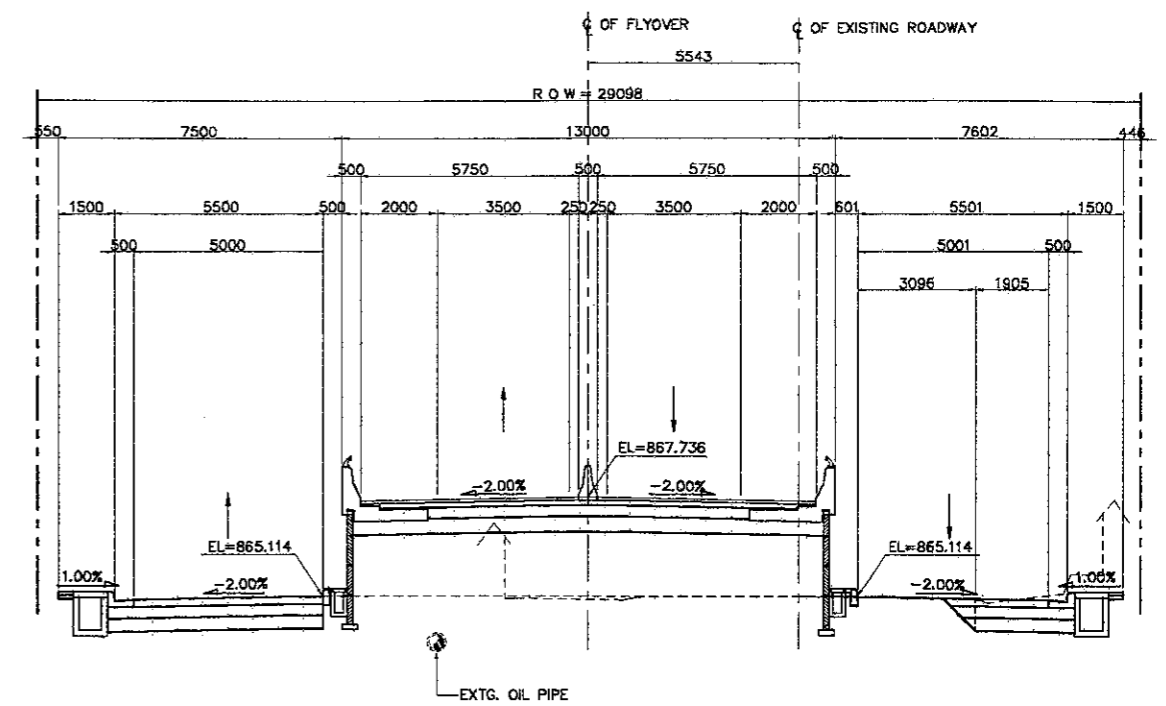


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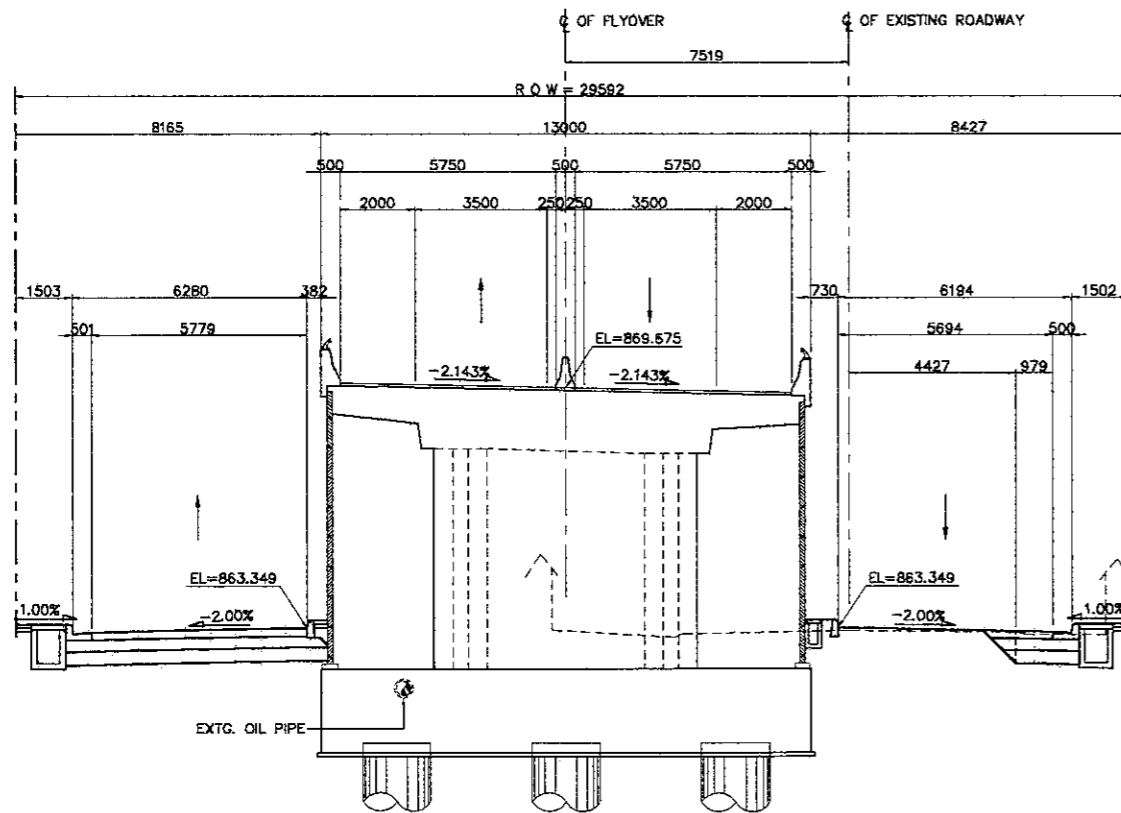
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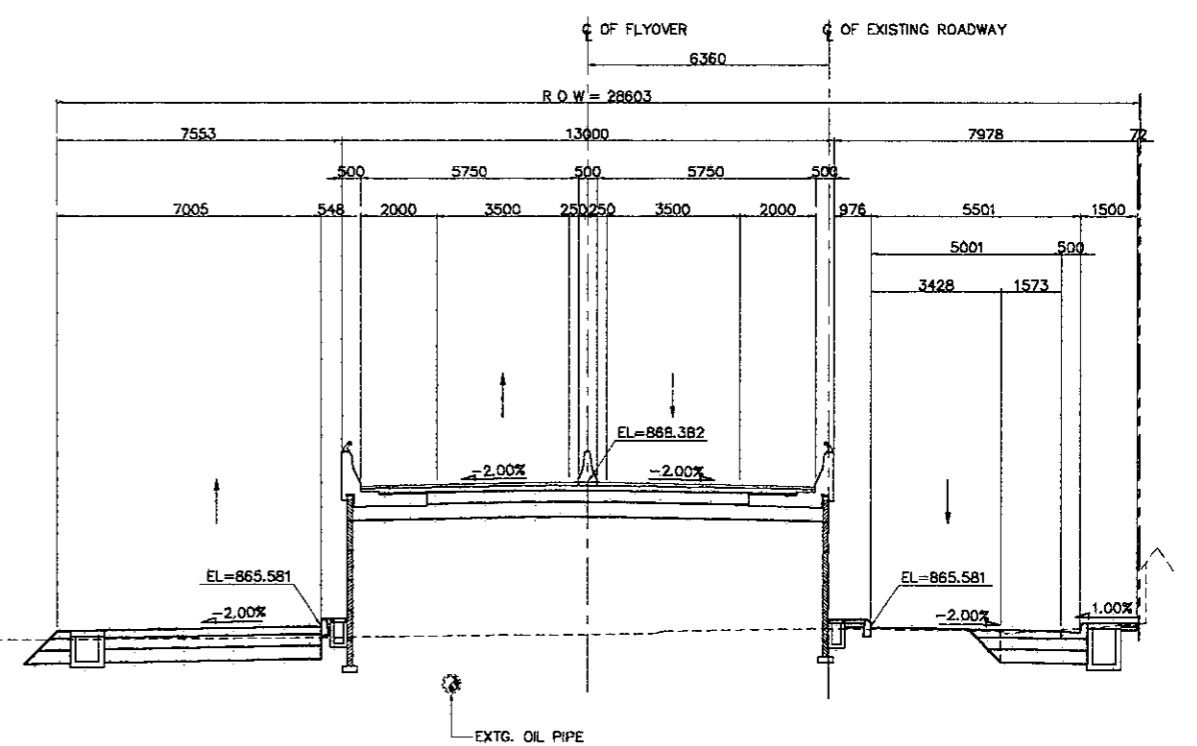
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4 SECTION (STA. 0 + 780.000)
 SCALE 1:200



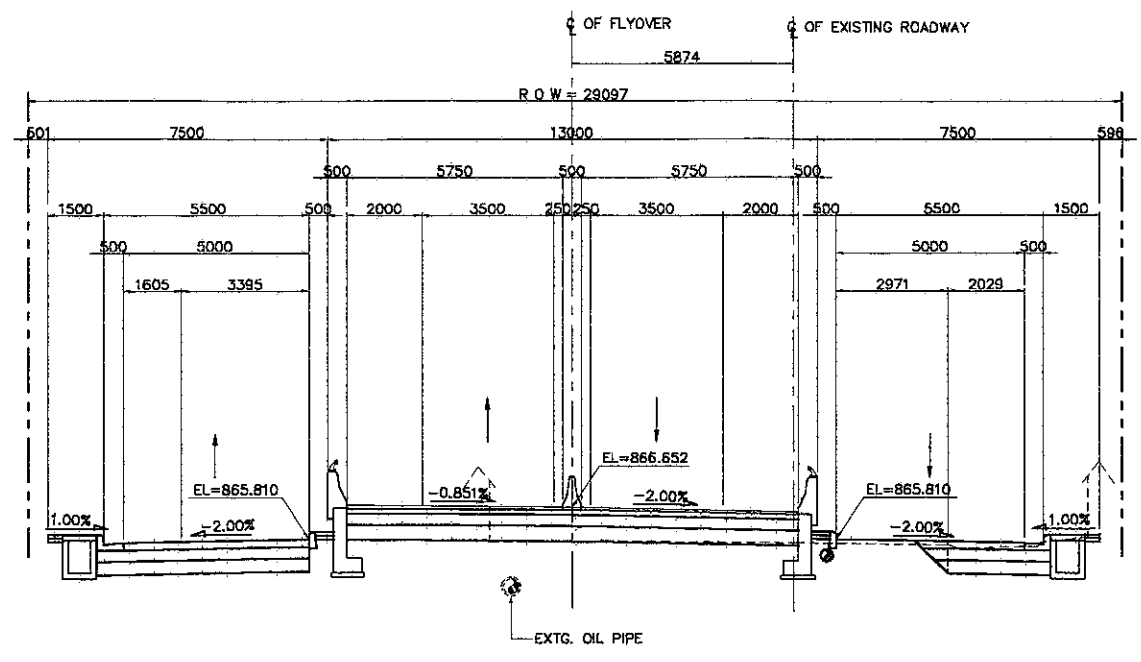
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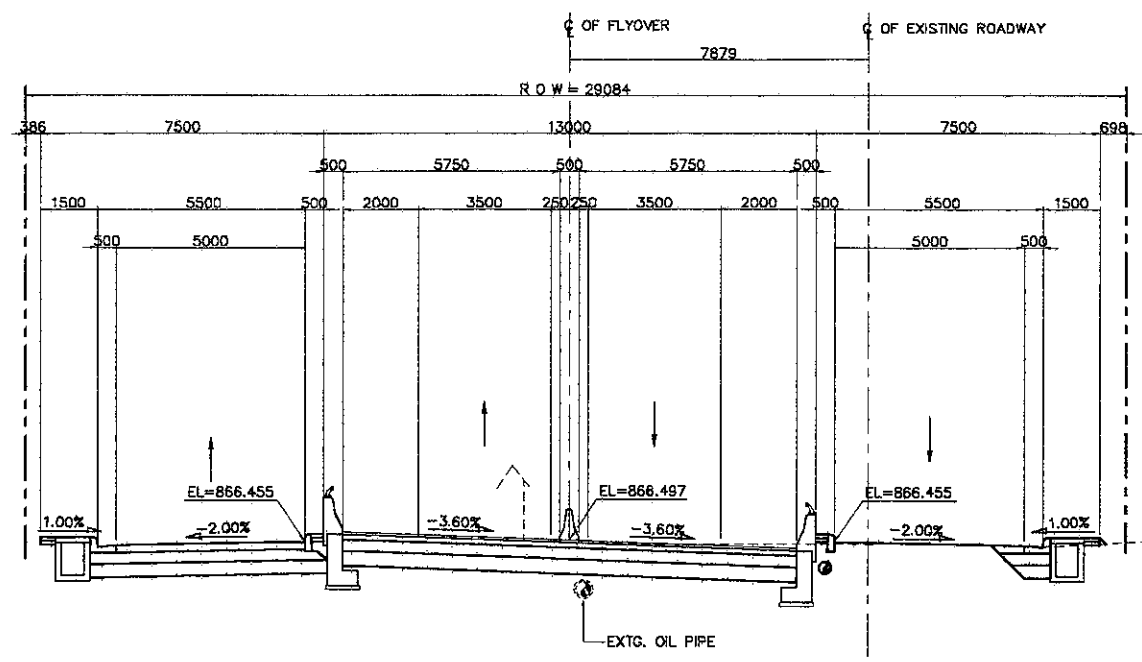
3 SECTION (STA. 0 + 760.000)
 SCALE 1:200

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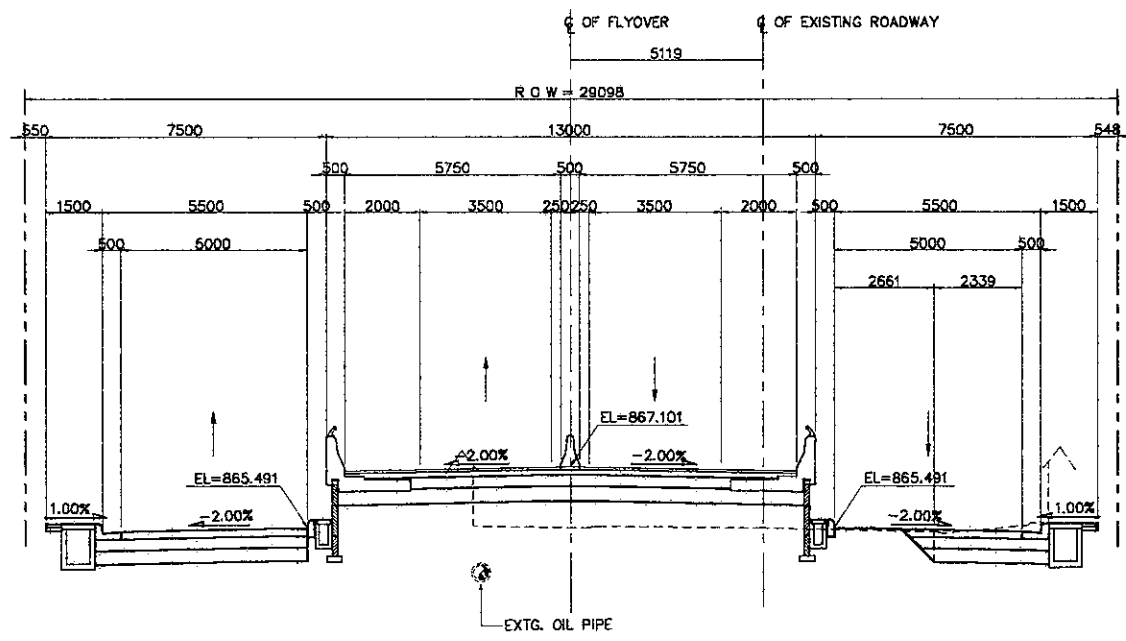
DESIGNED BY	CHECKED BY	SUBMITTED BY
Name: R. UENO	Name: T. OKUMURA	Name: M. KIUCHI
Sign	Sign	Sign
Date	Date	Date



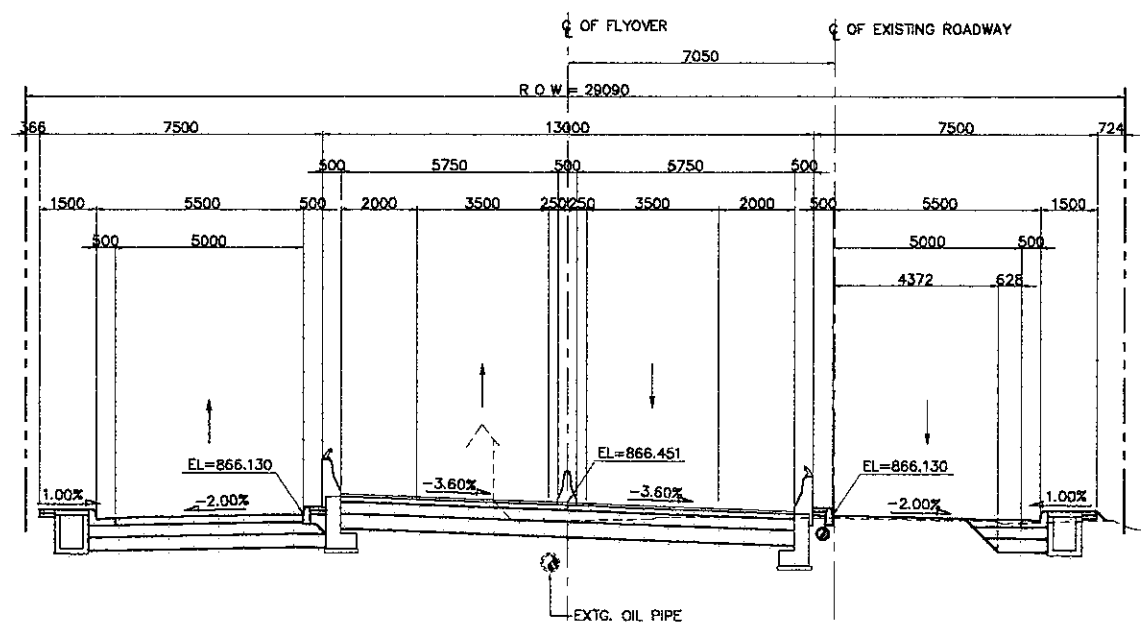
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4 SECTION (STA. 0 + 860.000)
 SCALE 1:200



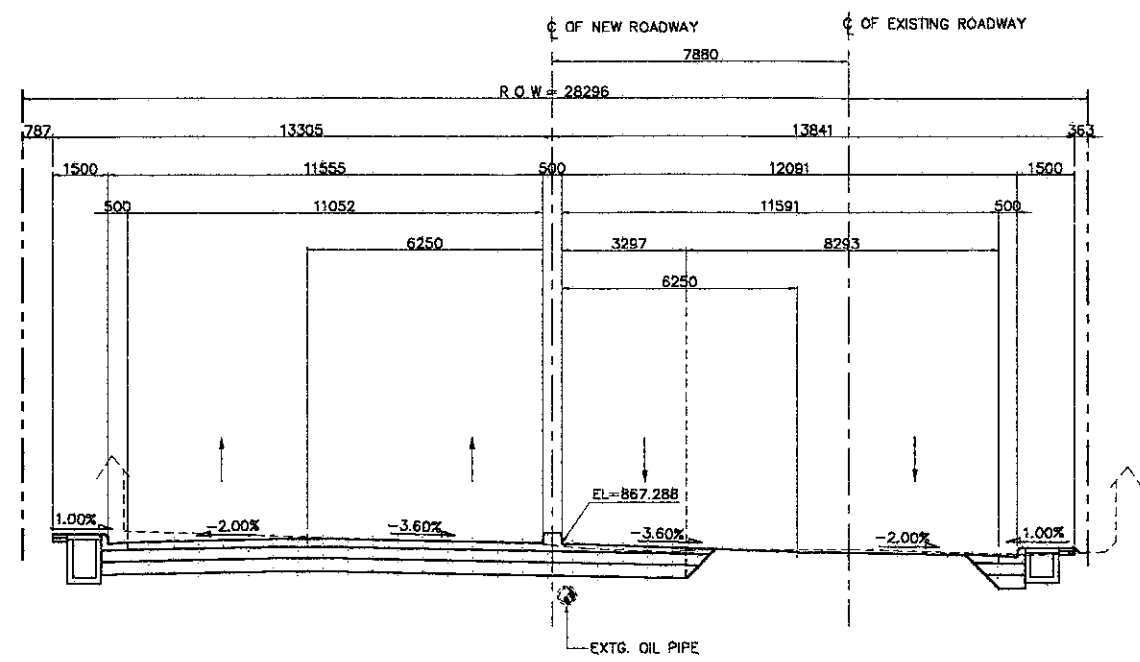
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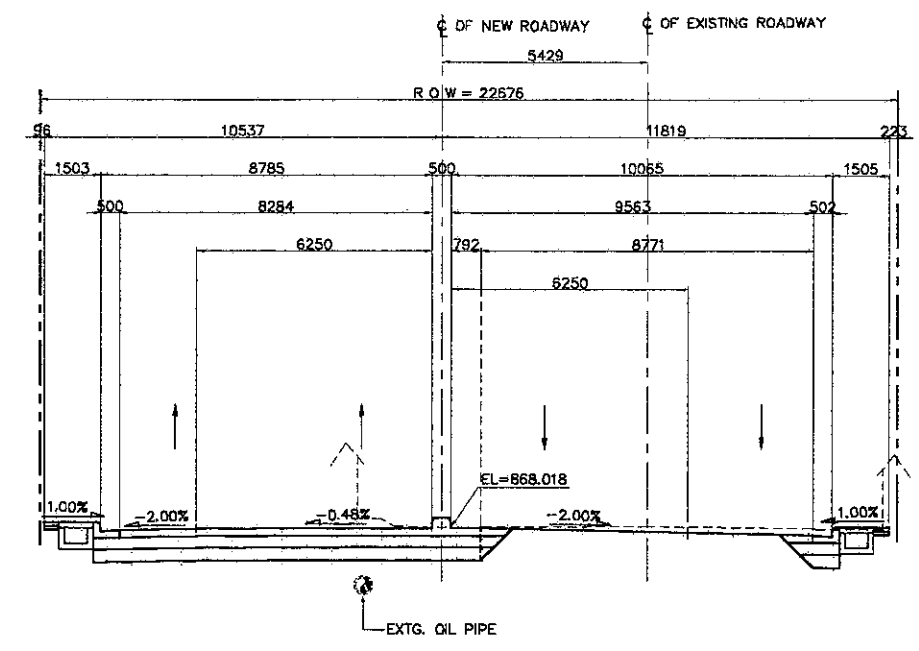
3 SECTION (STA. 0 + 840.000)
 SCALE 1:200

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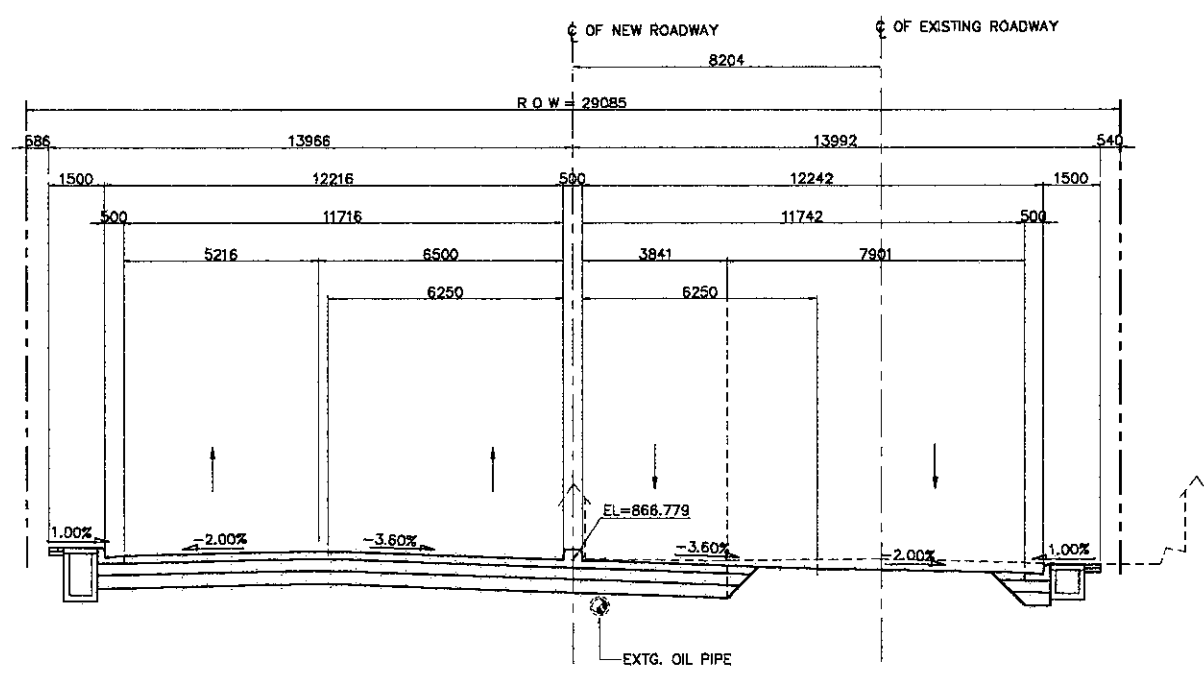
DESIGNED BY		CHECKED BY		SUBMITTED BY	
Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	



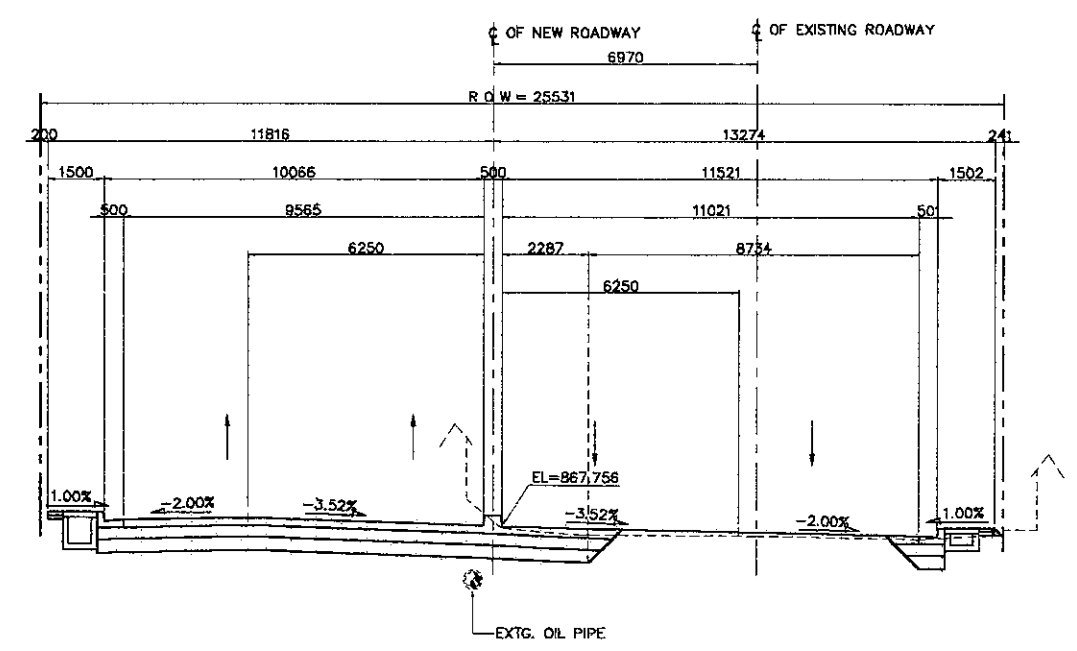
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 SCALE 1:200



4 SECTION (STA. 0 + 940.000)
 SCALE 1:200

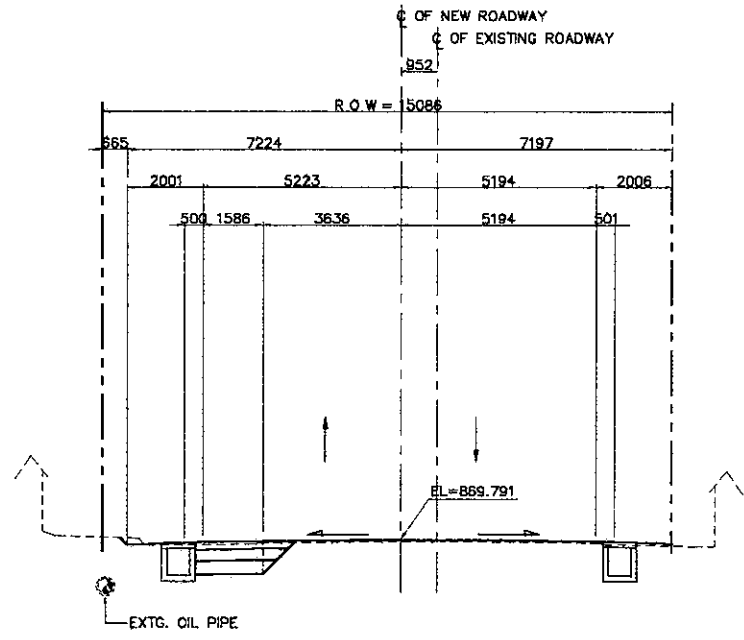
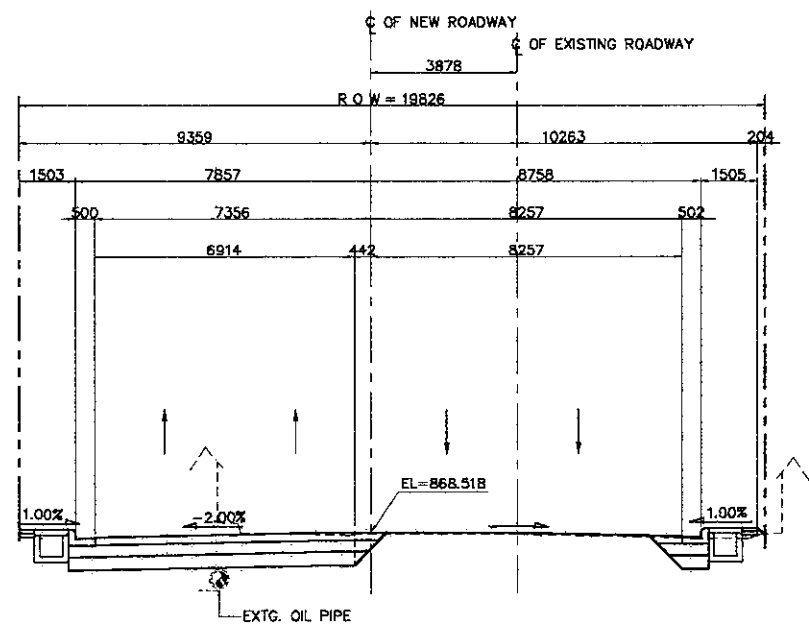
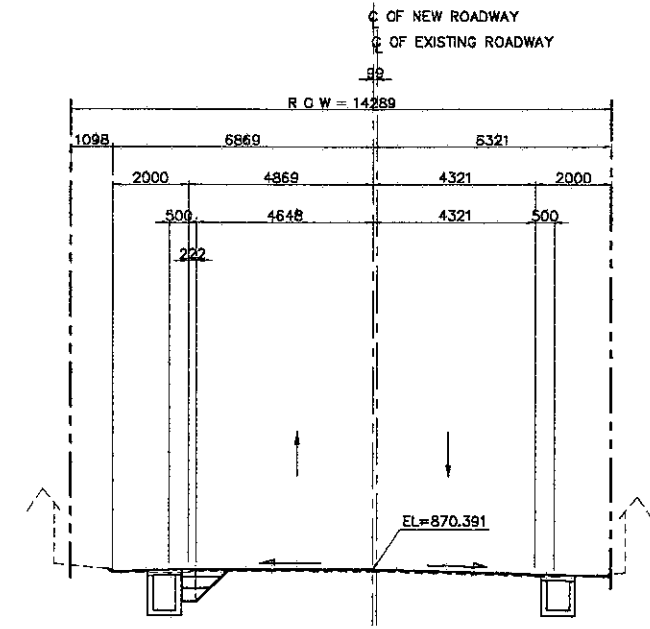
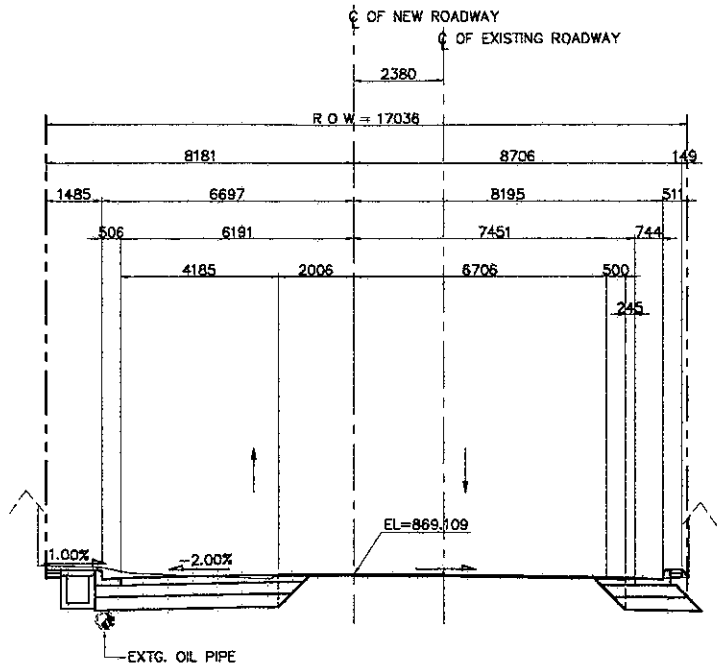


1 SECTION (STA. 0 + 880.000)
 SCALE 1:200



3 SECTION (STA. 0 + 920.000)
 SCALE 1:200

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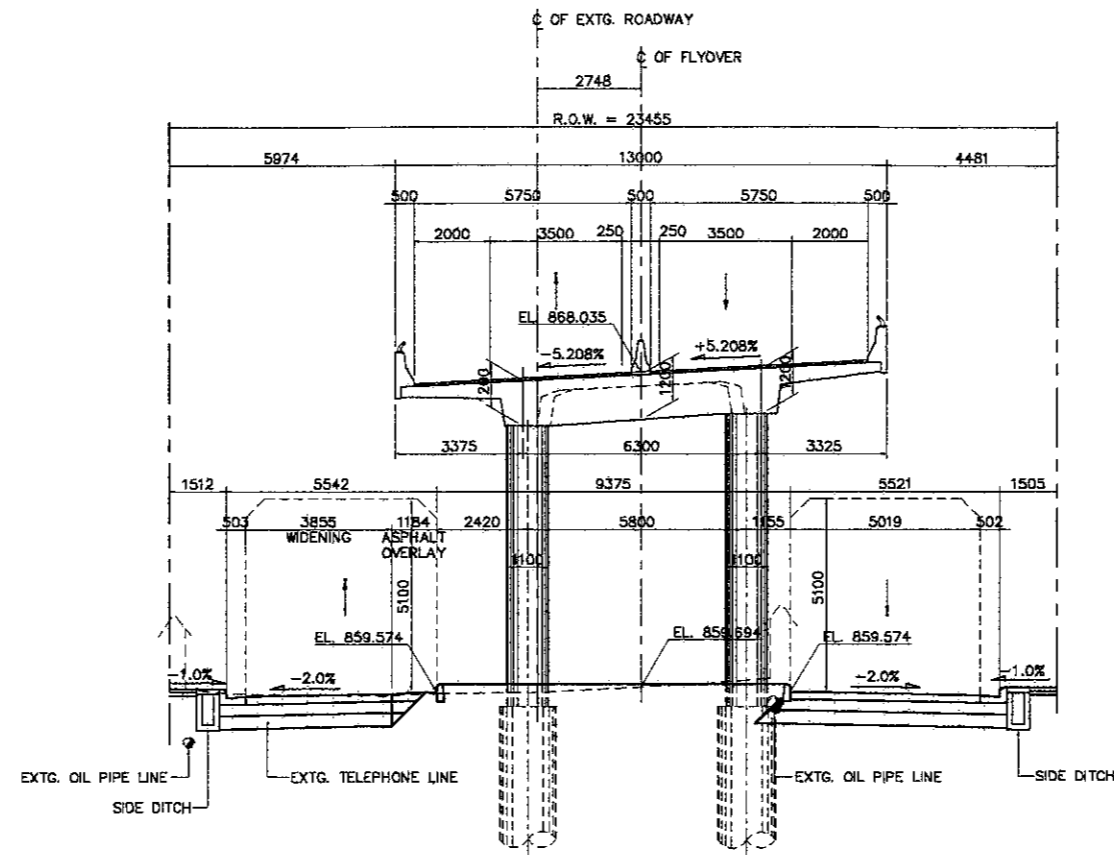
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DESIGNED BY		CHECKED BY		SUBMITTED BY	
Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	

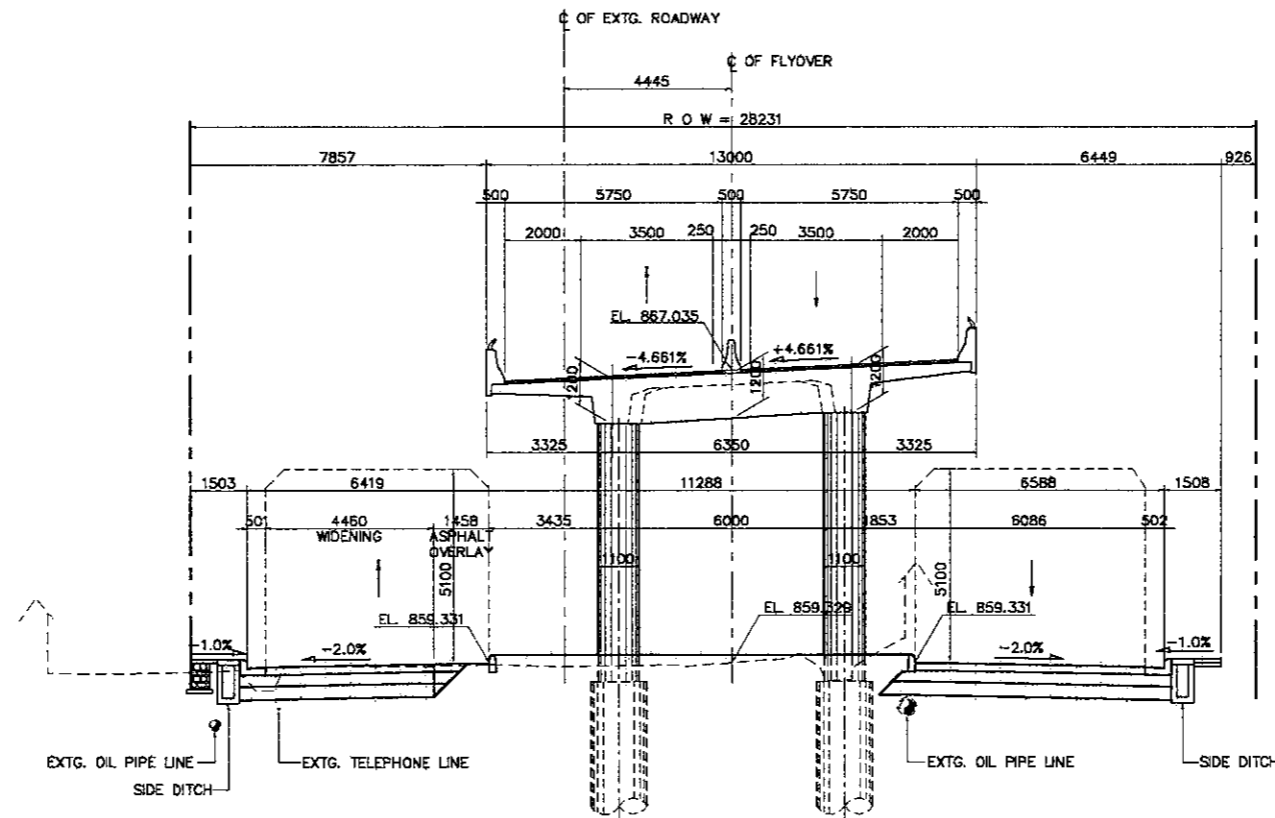
APPROVED BY	Ir. HERRY VAZA M.Eng.Sc	Sign	
	NIP. : 110038400	Date	

SCALE :
1 : 200
FULL SIZE A3

DRAWING NO. :
NRD-043
SHEET NO. :
43 / 65



2 P3 SECTION (STA. 0 + 555.50)
 SCALE 1:200

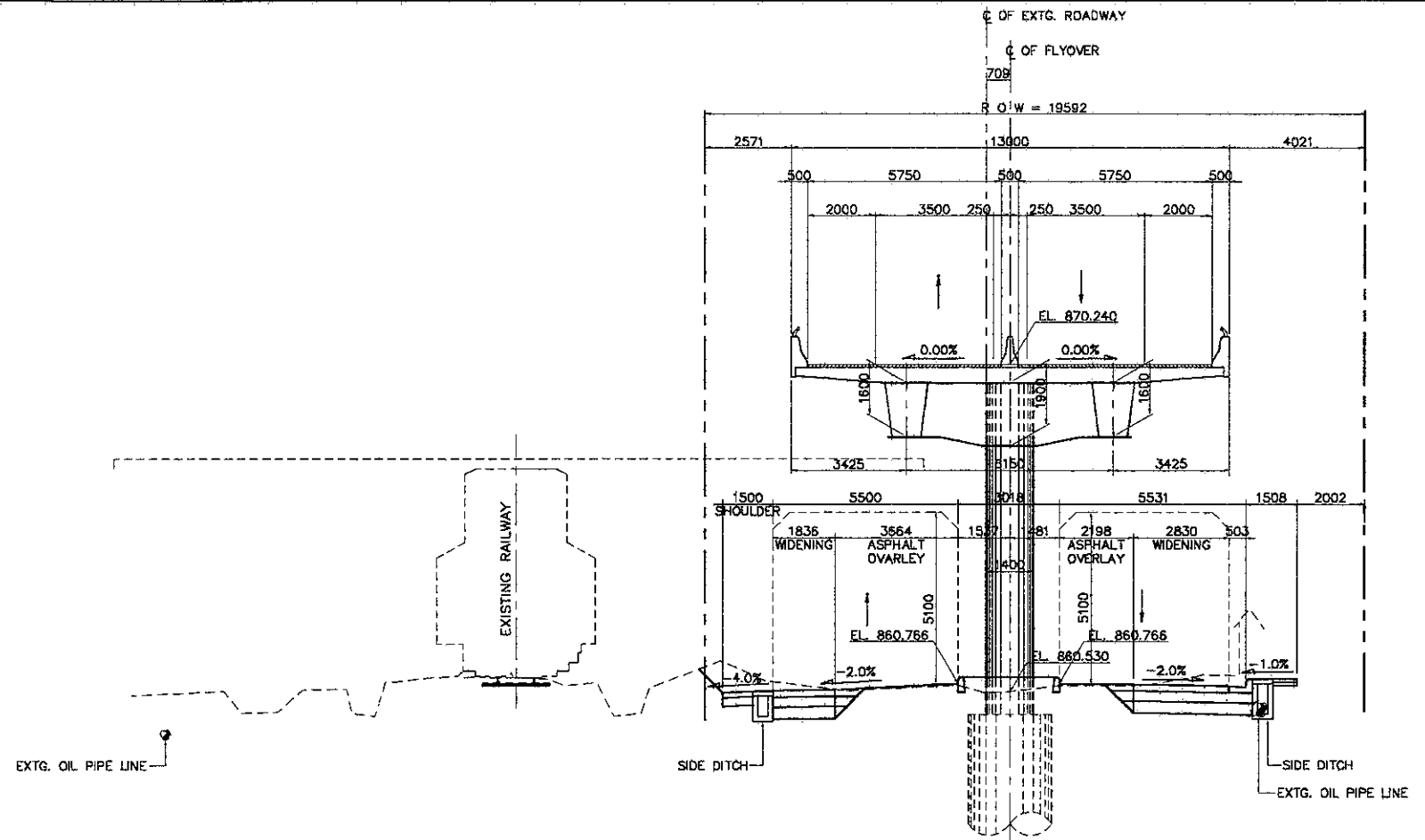


1 P2 SECTION (STA. 0 + 535.50)
 SCALE 1:200

NOTES:

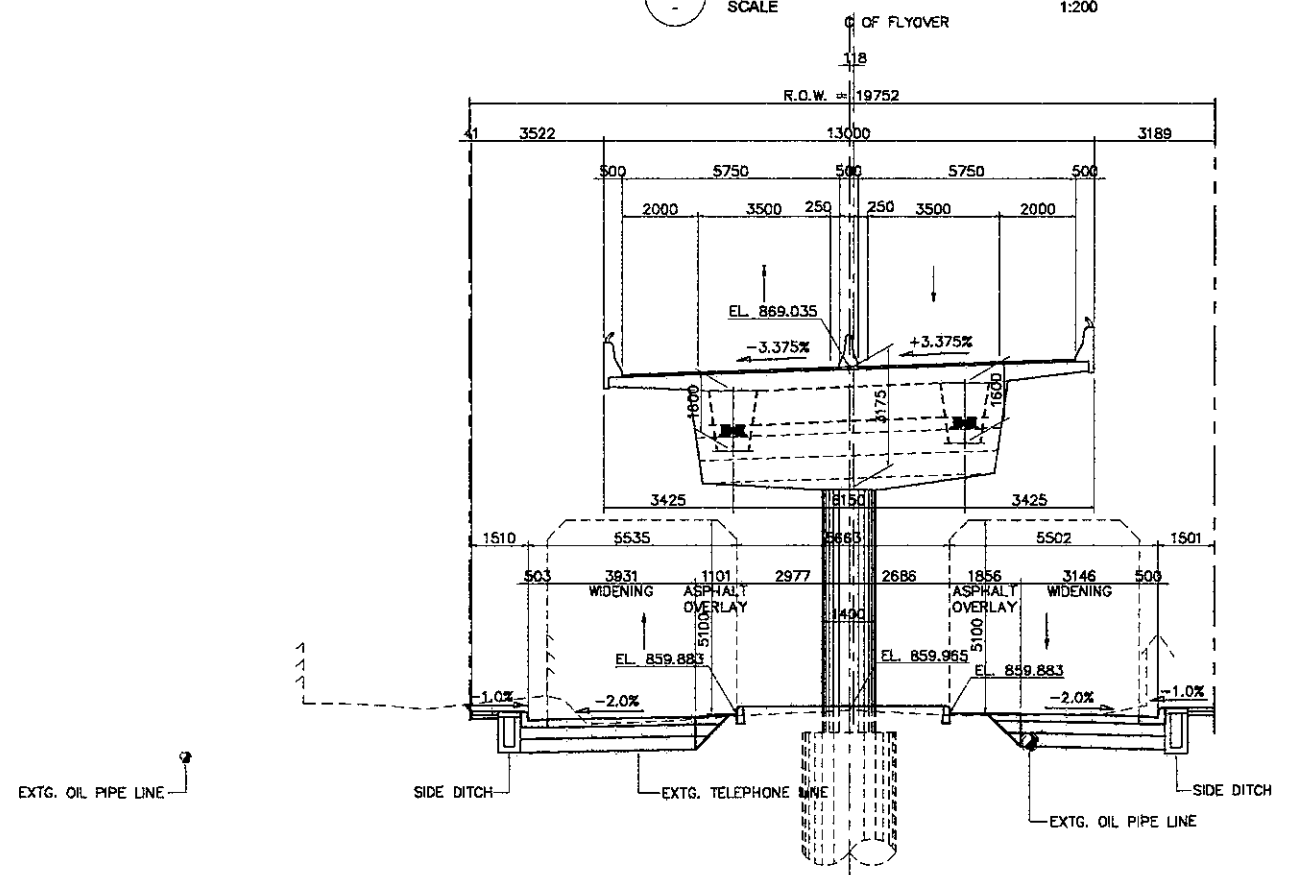
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DESIGNED BY		CHECKED BY		SUBMITTED BY	
Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	



2 P5 SECTION (STA. 0 + 600.50)

 SCALE 1:200

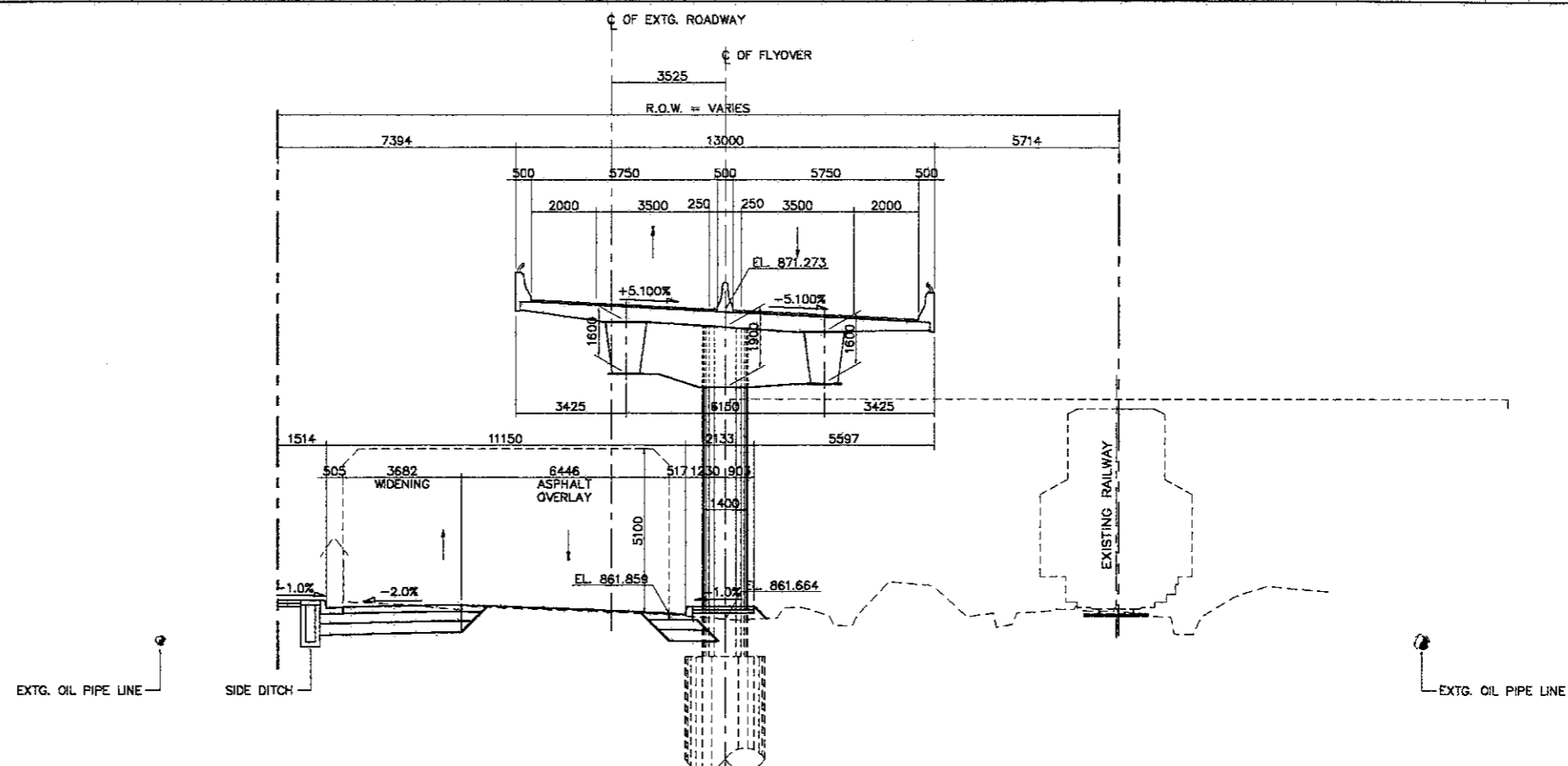


1 P4 SECTION (STA. 0 + 575.50)

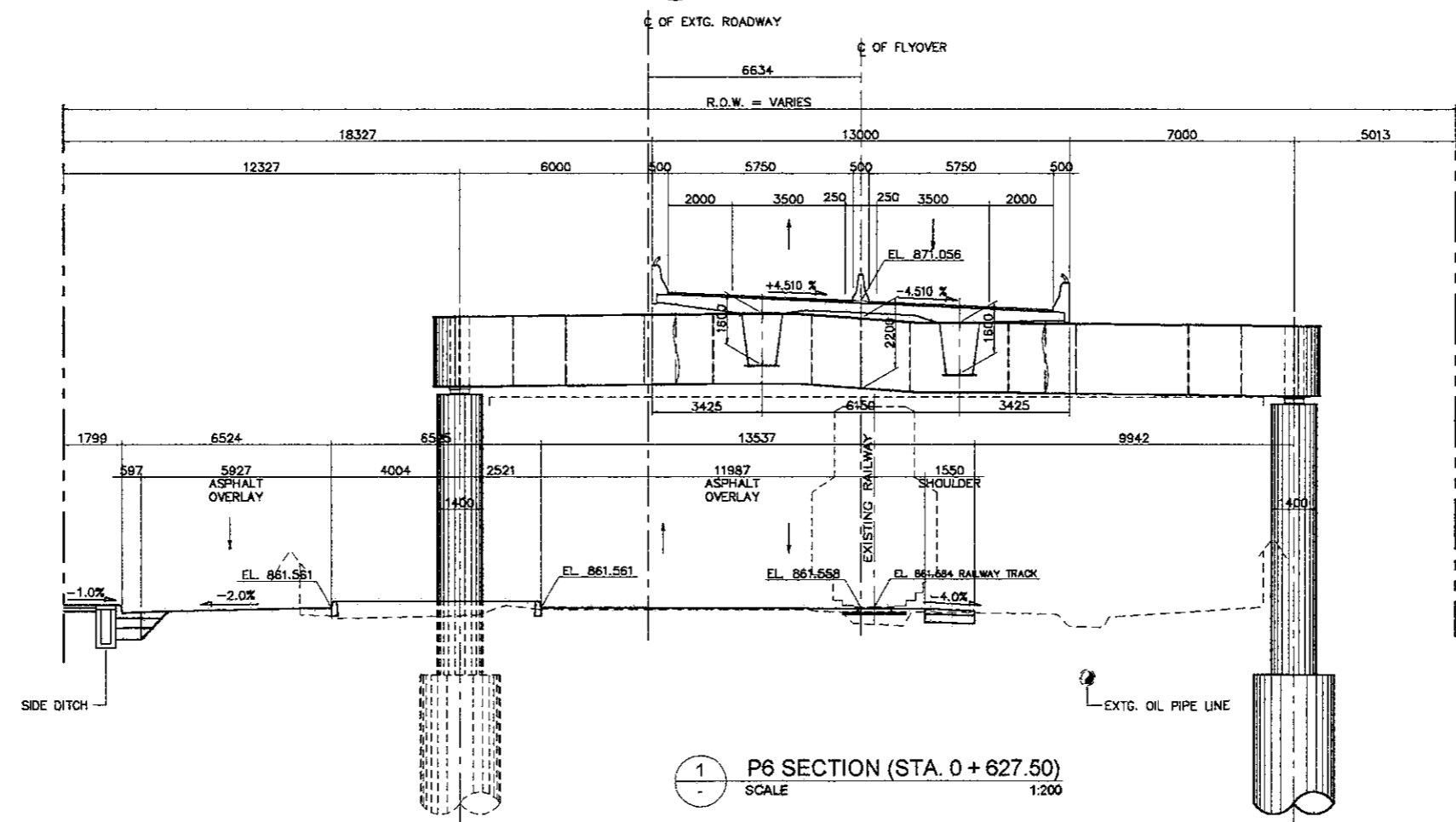
 SCALE 1:200

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Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	



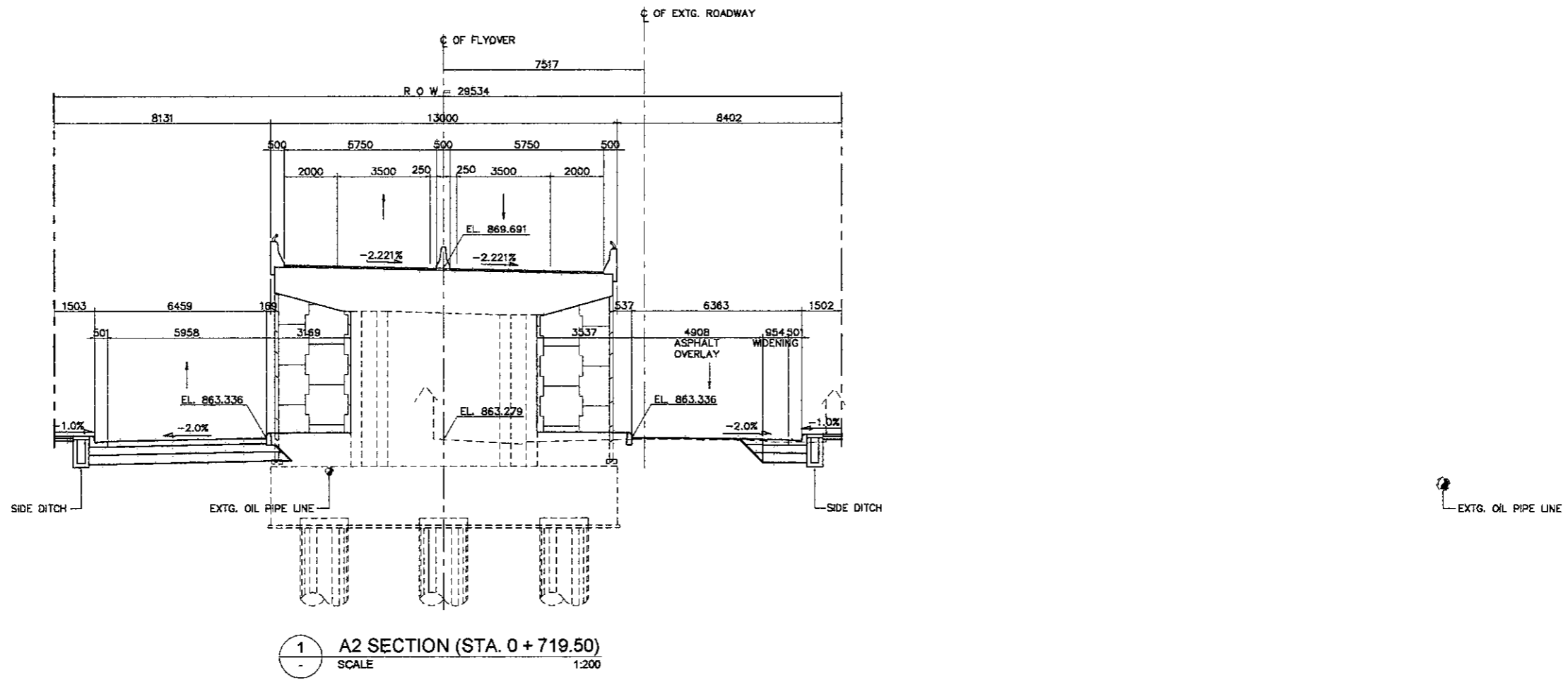
2 P7 SECTION (STA. 0 + 654.50)
 SCALE 1:200



1 P6 SECTION (STA. 0 + 627.50)
 SCALE 1:200

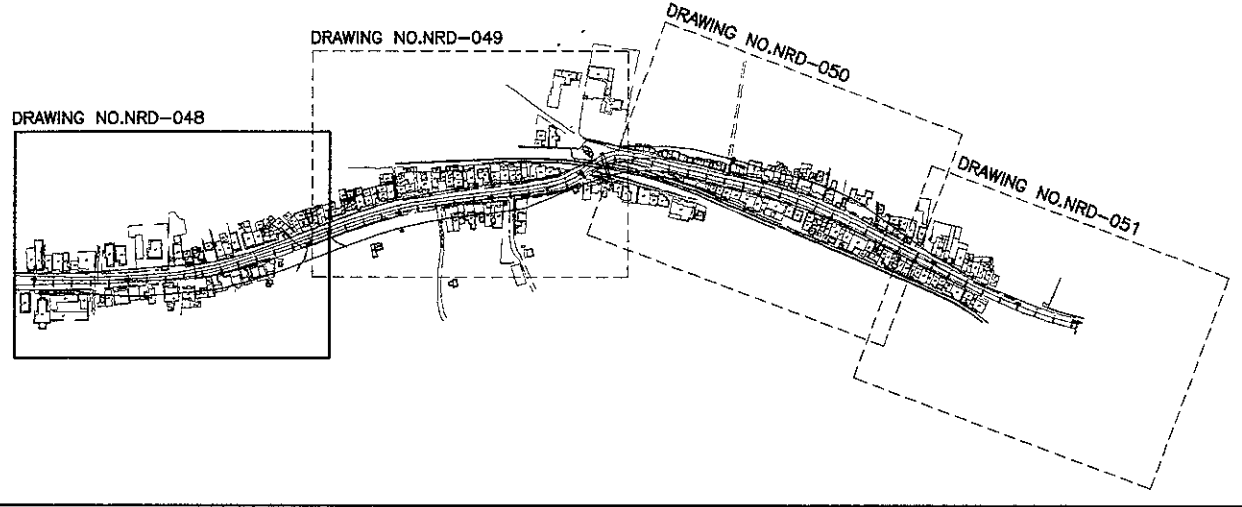
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Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	

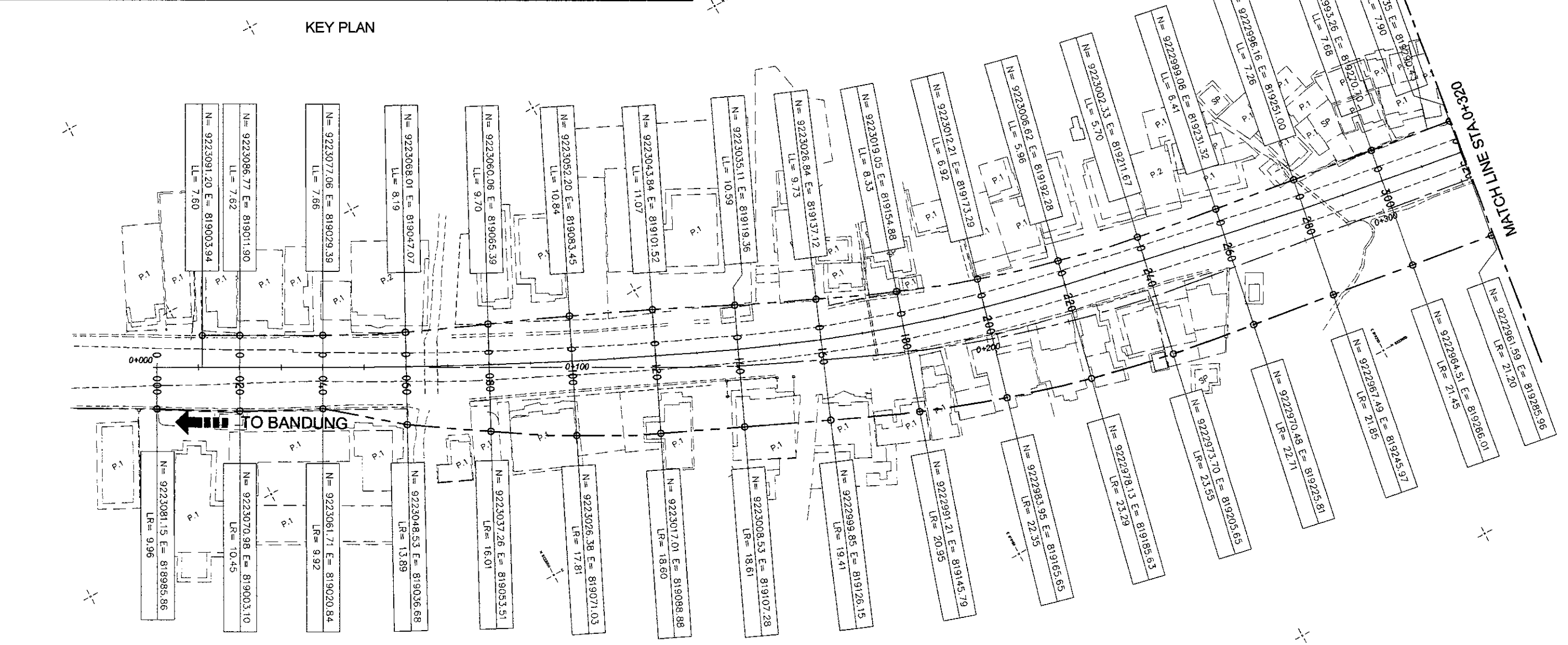


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Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	



KEY PLAN



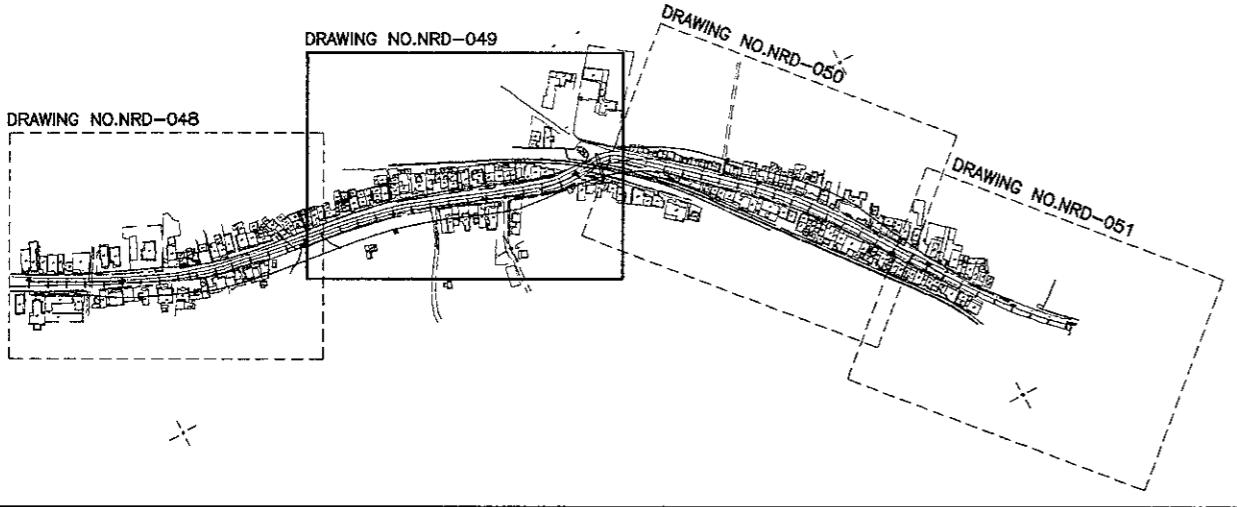
LEGEND :

— 0+500 — EXISTING ALIGNMENT

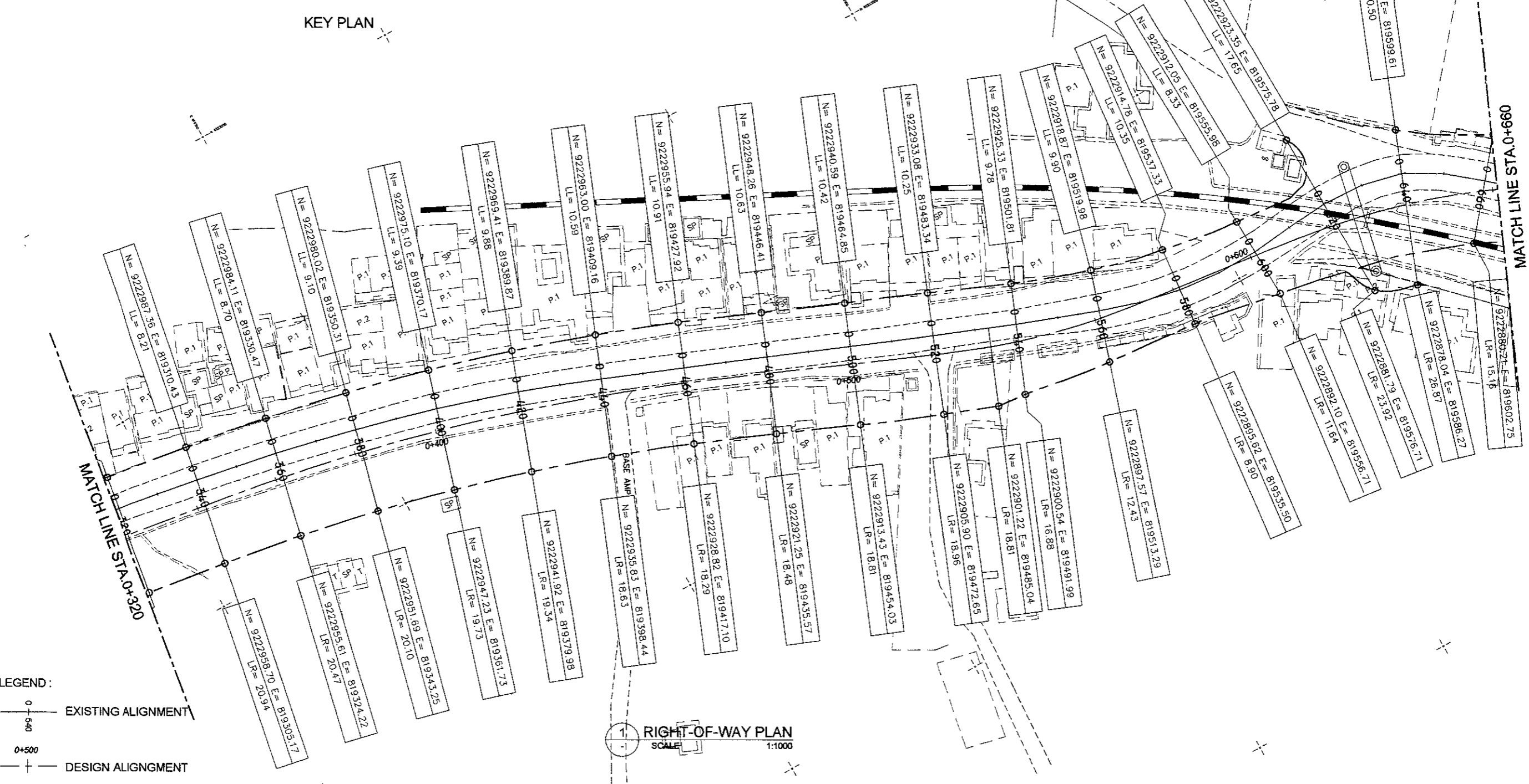
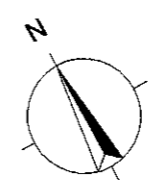
— 0+500 — DESIGN ALIGNMENT

1 RIGHT-OF-WAY PLAN
 SCALE 1:1000

DESIGNED BY		CHECKED BY		SUBMITTED BY	
Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	



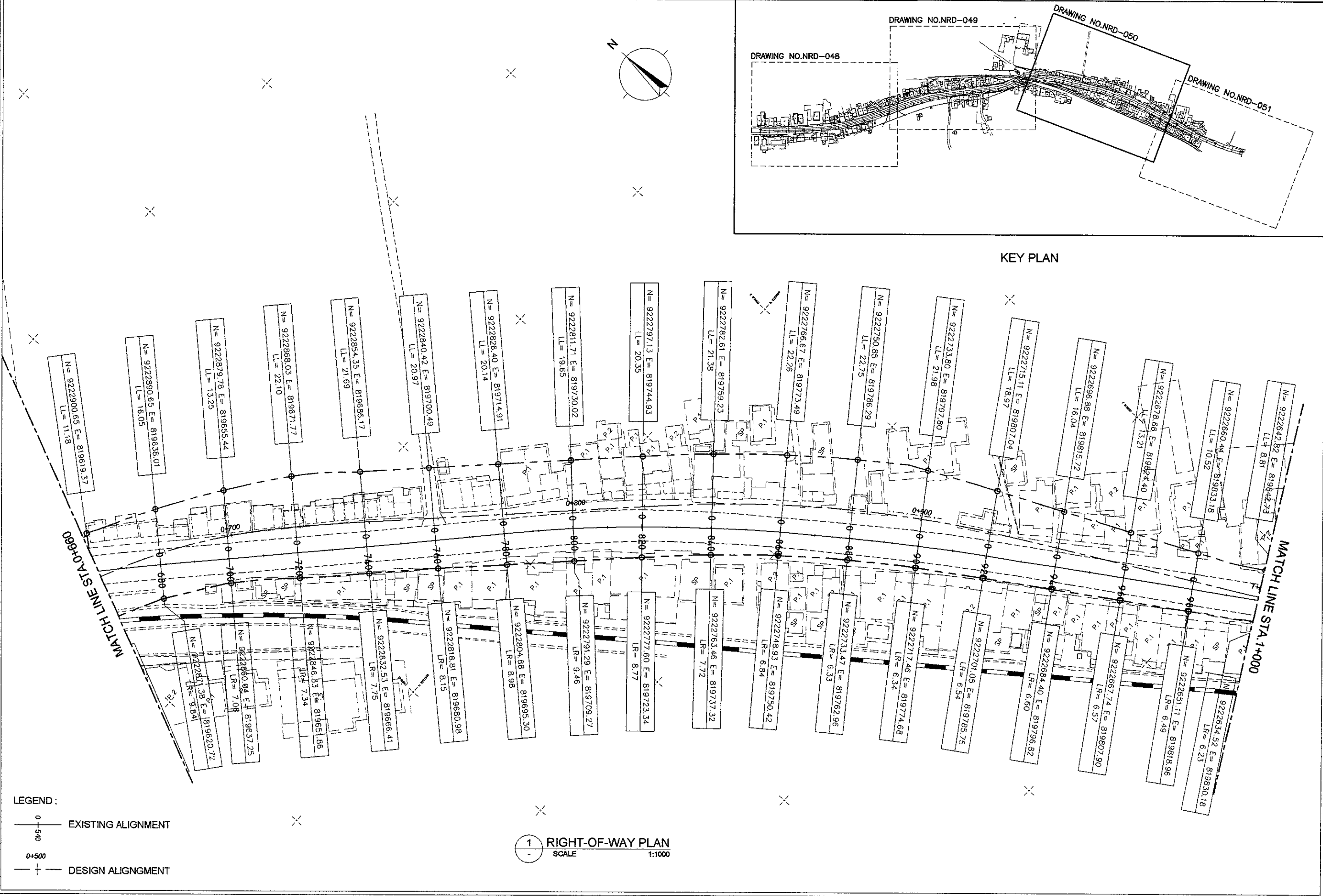
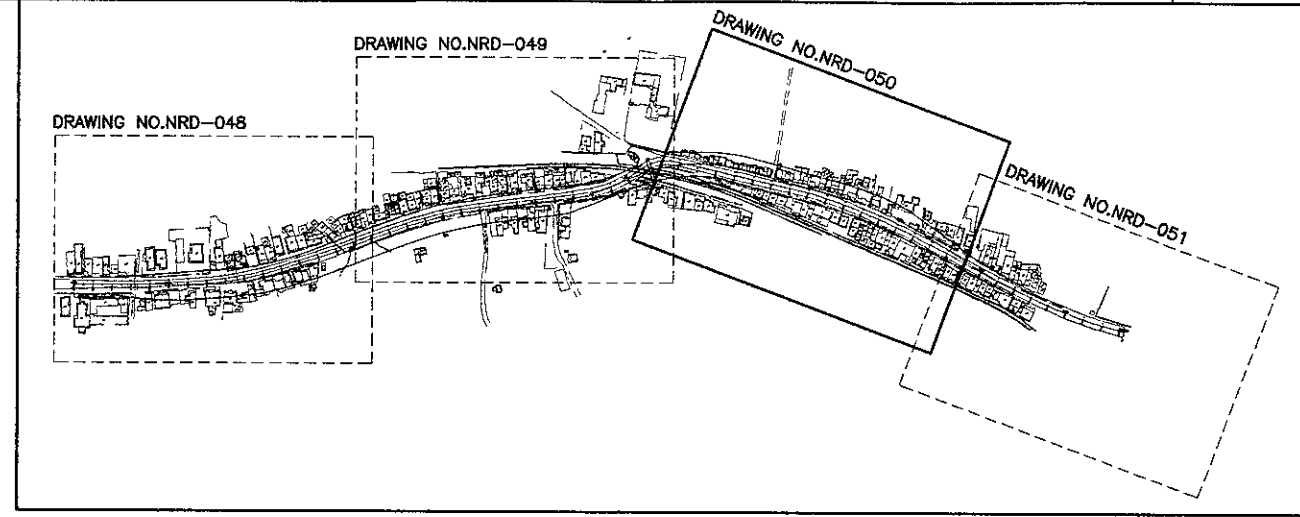
KEY PLAN



LEGEND :

	EXISTING ALIGNMENT
	DESIGN ALIGNMENT

DESIGNED BY		CHECKED BY		SUBMITTED BY	
Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	

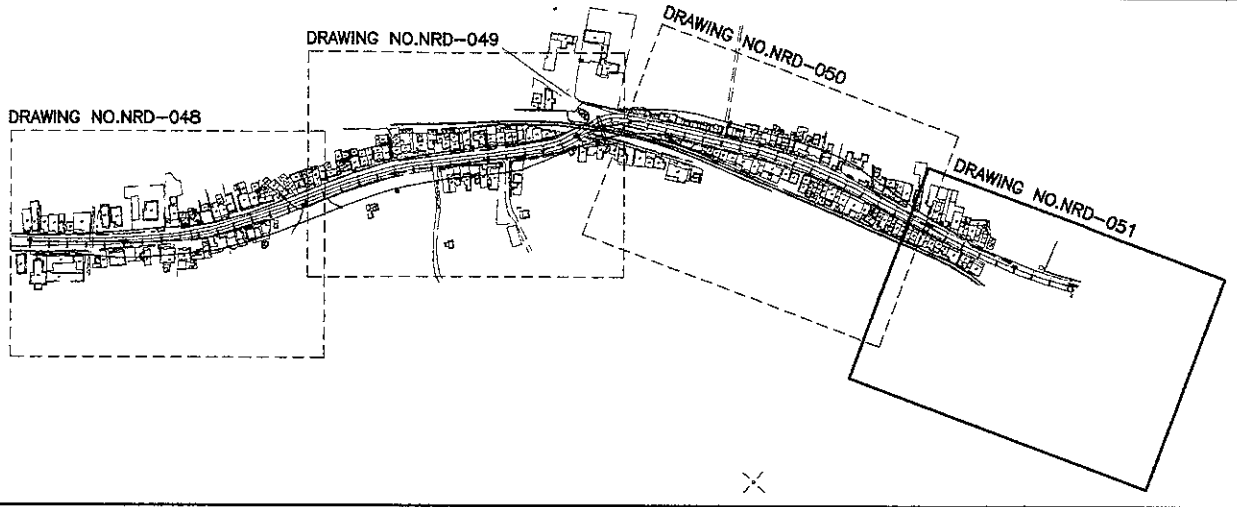


LEGEND :

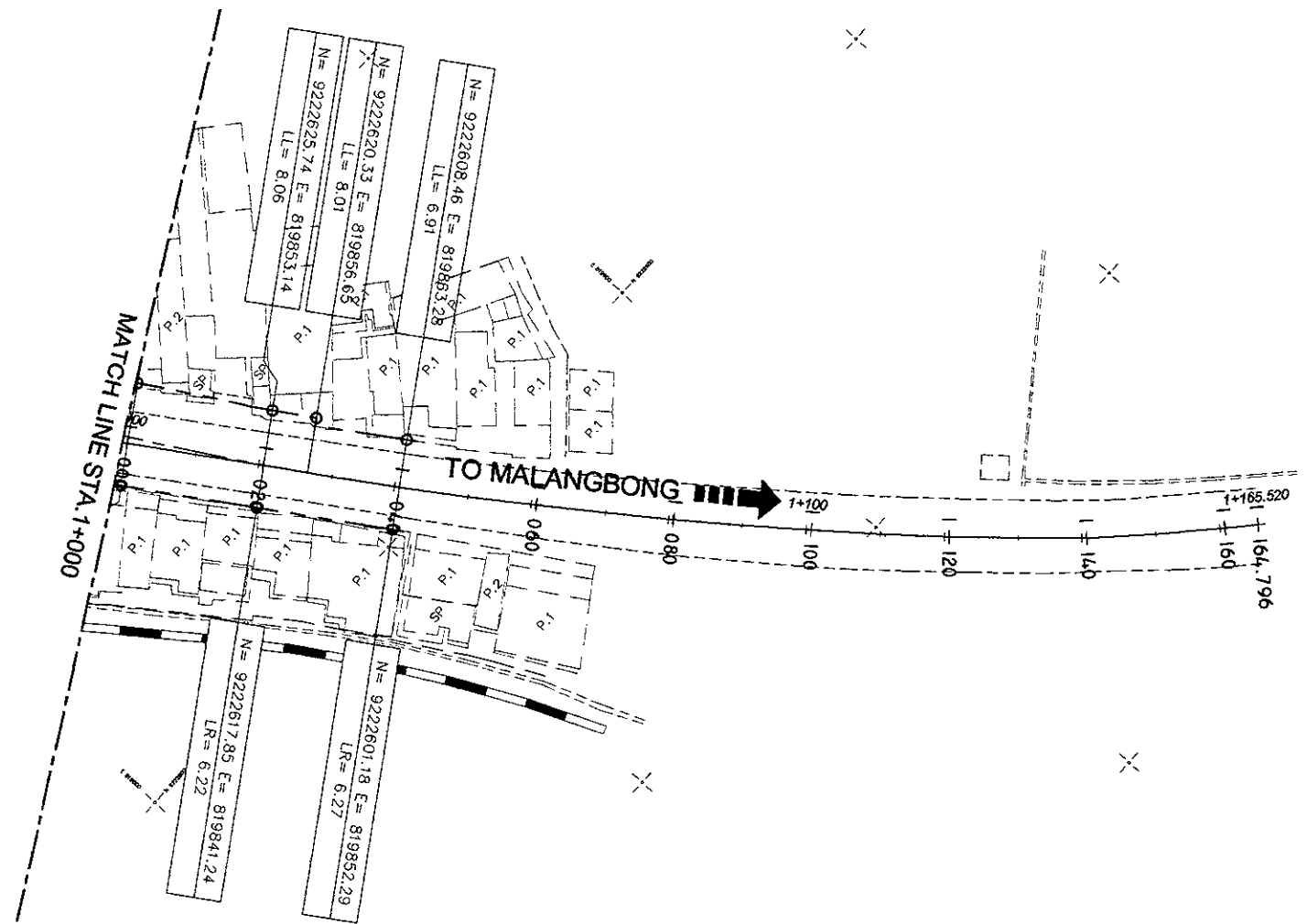
0+500 ——— EXISTING ALIGNMENT

0+500 ——— DESIGN ALIGNMENT


DESIGNED BY		CHECKED BY		SUBMITTED BY	
Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	




KEY PLAN



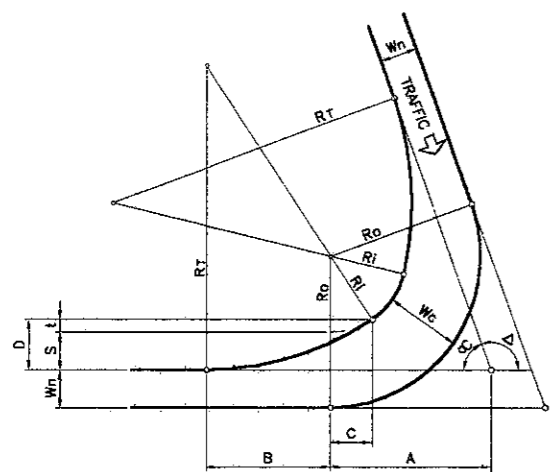
LEGEND :

 EXISTING ALIGNMENT

 DESIGN ALIGNMENT

1 RIGHT-OF-WAY PLAN

 SCALE 1:1000



NOTES

- RELATIVE PATHS OF RIGHT TURNING VEHICLES ARE IMAGINARY ONLY. OVERALL, THESE WILL DETERMINE THE CONFIGURATION OF CHANNELIZATION ISLANDS IN INTERSECTION DESIGN.
- Ro AS DEFINED BY CONDITION OBTAINING AND Wc IN CONFORMANCE WITH DESIGN VEHICLES AND Ro.

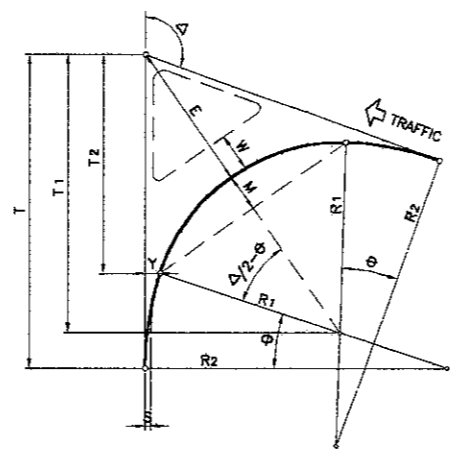
(ADOPTED FROM JAPANESE STANDARDS)
 AND/OR "GEOMETRIC JALAN PERKOTAAN"
 RSNi T-14-2004

WHERE

Wn = LANE WIDTH (NORMAL)
 Wc = LANE WIDTH (TURNING)
 Δ = INTERSECTION ANGLE
 Ro = OUTER RADIUS
 Ri = INNER RADIUS
 RT = TRANSITION RADIUS
 α = 180° - Δ

FORMULAS

Ri = Ro - Wc
 Rt = nRi (n=3)
 S = Wc - Wn
 t = S / (n-1)
 A = (Ri+S) cot αC/2
 B = √[2(R-Ri)S-S²]
 C = B / (n-1)
 D = S + t



NOTES

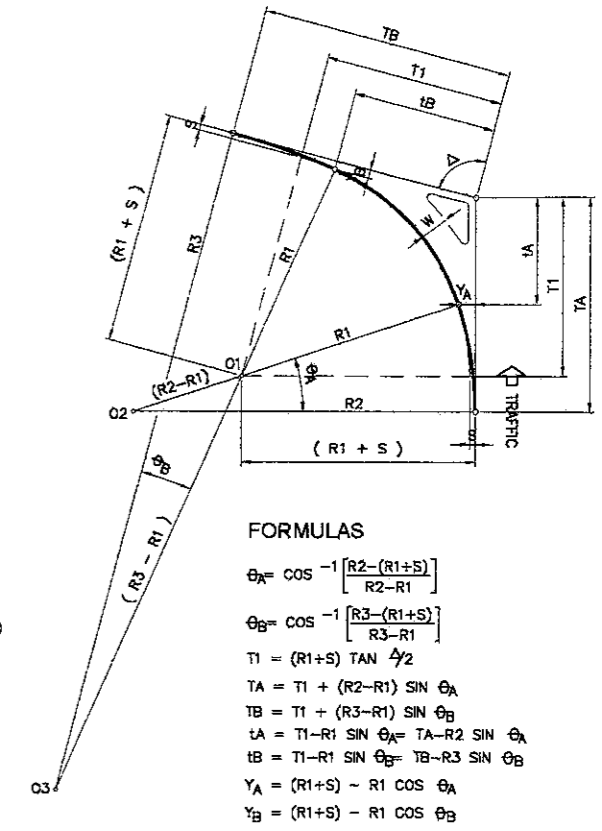
- FORMULAS DERIVED BELOW ARE FOR FIELD LAYOUT PURPOSE (DRAWING LAYOUT BY GRAPHICAL SOLUTION ONLY.)
- DESIGN RADI (R1, R2 & R3) AND OFFSET S AS WELL AS LANE WIDTH W (WHERE CORNER ISLANDS ARE REQUIRED UNDER CONDITIONS OBTAINING)

WHERE

Δ = INTERSECTION ANGLE
 R1 = INNER RADIUS
 R2 = TRANSITION RADIUS
 S = OFFSET OF INNER CIRCULAR CURVE FROM TANGENTS

FORMULAS

T1 = (R1+S) tan Δ/2
 T = T1 + (R2-R1) sin θ
 T2 = T1 - R1 sin θ
 Y = (R1+S) - R1 cos θ
 E = (R1+S) / cos Δ/2 - R1
 M = R1 - R1 cos (Δ/2 - θ)
 θ = cos⁻¹ [(R2-R1-S) / (R2-R1)]



WHERE

R1 = RADIUS OF INTERMEDIATE CIRCULAR ARC
 R2 = RADIUS OF CIRCULAR ARC ON APPROACH LEG (1.5 x R1)
 R3 = RADIUS OF CIRCULAR ARC ON DEPARTURE LEG (3 x R1)
 S = OFFSET OF INNER CIRCULAR CURVE FROM TANGENTS
 Δ = INTERSECTION ANGLE

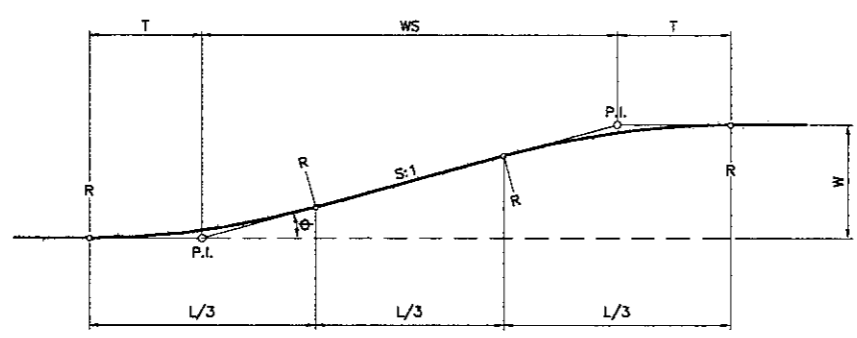
FORMULAS

θA = cos⁻¹ [(R2-(R1+S)) / (R2-R1)]
 θB = cos⁻¹ [(R3-(R1+S)) / (R3-R1)]
 T1 = (R1+S) tan Δ/2
 TA = T1 + (R2-R1) sin θA
 TB = T1 + (R3-R1) sin θB
 YA = T1 - R1 sin θA = TA - R2 sin θA
 YB = T1 - R1 sin θB = TB - R3 sin θB

1 RIGHT TURN LANE/S ELEMENTS THREE CENTERED CURVE-SYMMETRICAL
 NOT TO SCALE

2 LEFT TURN/S ELEMENTS THREE CENTERED CURVE-SYMMETRICAL
 NOT TO SCALE

3 LEFT TURN/S ELEMENTS THREE CENTERED CURVE-ASYMMETRICAL
 NOT TO SCALE



FORMULAS

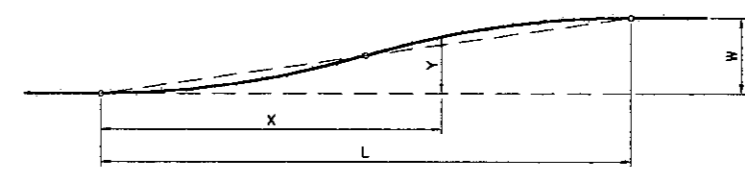
φ = tan⁻¹ 1/S (TAPER RATE S:1)
 T = WS / (3 cos φ + 1)
 L/3 = T (cos φ + 1)
 R = T / tan φ/2

APPROX.
 T = L/6
 φ = tan⁻¹ W/4T

OPERATING SPEED	S VALUE
40 KPH	8
50 KPH	(10)
60 KPH	(12.5)
PARKING TURNOUT (ENTRANCE / EXIT)	2
BUS TURNOUT (DESIRABLE MIN)	4

(S VALUE SHOWN IN PARENTHESIS WERE INTERPOLATED FROM AASHTO)

4 ROADWAY TAPERING - L/3 TAN SECTION (CIRCULAR CURVE ROUNDING)
 NOT TO SCALE



FORMULAS

L = CWS
 (C=1 MINIMUM)
 (C=2 DESIRABLE)
 Y = KW

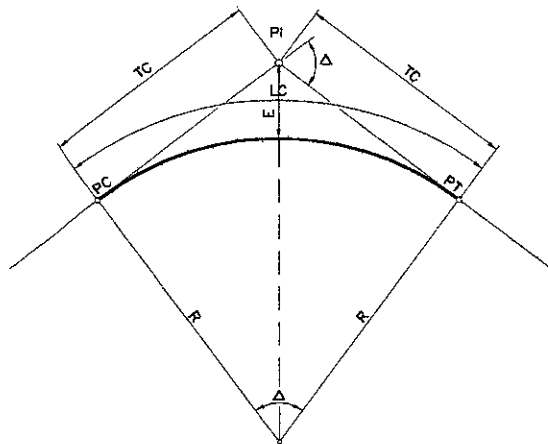
WHERE

L = LENGTH OF FLARE
 W = WIDENING (MAX. OFFSET)
 S = TAPER RATE (HOR:VER)
 X = DISTANCE ALONG BASELINE
 Y = OFFSET FROM BASELINE

LAYOUT BY OFFSET

X/L	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
K	0.000	0.005	0.020	0.045	0.080	0.125	0.180	0.245	0.320	0.405	0.500	0.595	0.680	0.755	0.820	0.875	0.920	0.955	0.980	0.995	1.000

5 ROADWAY TAPERING - REVERSED PARABOLIC CURVE FLARES - SYMMETRICAL
 NOT TO SCALE



WHERE

PI = POINT OF INTERSECTION
 Δ = INTERSECTION ANGLE
 R = CURVE RADIUS
 T = TANGENT LENGTH
 LC = CURVE LENGTH
 E = EXTERNAL DISTANCE
 PC = BEGINNING OF CIRCULAR CURVE
 PT = END OF CIRCULAR CURVE

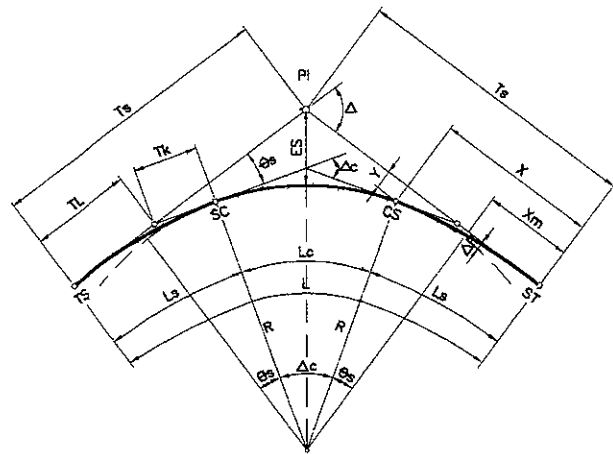
FORMULAS

$T = R (\tan \Delta/2)$
 $LC = \frac{\pi R \Delta}{180}$
 $E = T (\tan \Delta/4)$

1 HORIZONTAL CURVE (CIRCULAR)
 NOT TO SCALE

NOTE

NO HORIZONTAL CURVE IS REQUIRED WHEN THE INTERSECTION ANGLE IS LESS THAN ONE DEGREE (1')

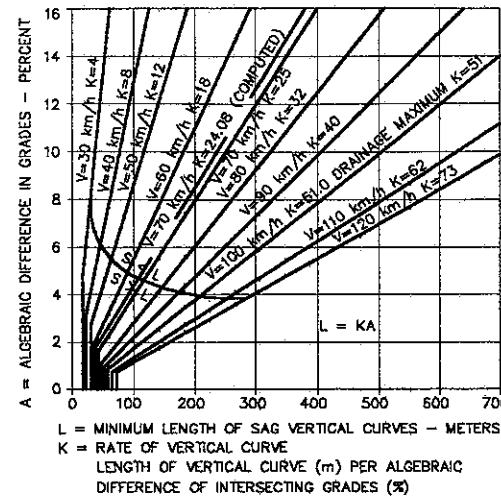


WHERE

PI = POINT OF INTERSECTION
 Δ = INTERSECTION ANGLE
 R = CURVE RADIUS
 Es = EXTERNAL DISTANCE
 Ls = LENGTH OF SPIRAL
 A = PARAMETER OF CLOTHOID
 θs = SPIRAL ANGLE
 X, Y = COORDINATES OF POINTS SC AND CS WITH RESPECT TO MAIN TANGENTS
 ΔR = OFFSET BETWEEN CIRCULAR CURVE AND MAIN TANGENT ("THROW" OF SPIRAL)
 Xm = DISTANCE FROM TS OR ST TO POINT OF "THROW"

Ts = TOTAL TANGENT DISTANCE
 Ls = LONG TANGENT OF SPIRAL
 Tk = SHORT TANGENT OF SPIRAL
 L = TOTAL LENGTH OF CURVE
 Δc = CENTRAL ANGLE OF CIRCULAR CURVE
 Lc = LENGTH OF CIRCULAR CURVE
 TS = BEGINNING OF TRANSITION CURVE
 SC = BEGINNING OF CIRCULAR CURVE
 CS = END OF CIRCULAR CURVE
 ST = END OF TRANSITION CURVE

2 HORIZONTAL CURVE WITH TRANSITION (CLOTHOID SPIRAL)
 NOT TO SCALE



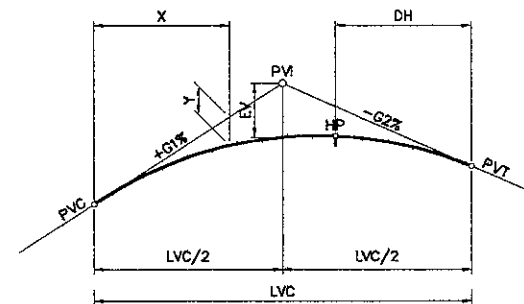
FORMULA

$L = \frac{AS^2}{120 + 3.5S}$ $L = 25 - \frac{120 + 3.5S}{A}$

WHEN $S < L$ WHEN $S > L$

S = STOPPING SIGN DISTANCE (m)
 A = ALGEBRAIC DIFFERENCE IN GRADE (%)

3 DESIGN CONTROLS FOR VERTICAL CURVES
 NOT TO SCALE



WHERE

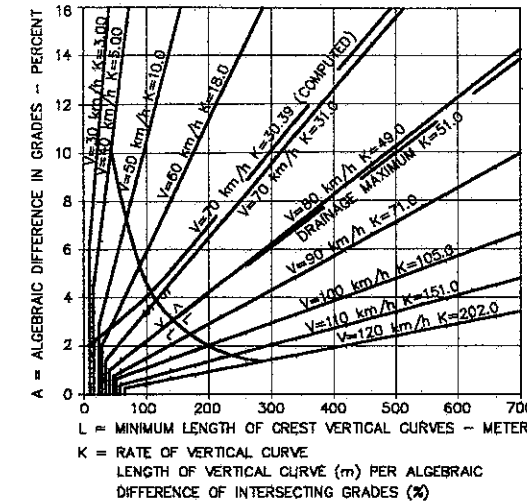
PVI = VERTICAL POINT OF INTERSECTION
 AD = ALGEBRAIC DIFFERENCE OF INTERSECTING GRADES
 K = RATE OF VERTICAL CURVE
 LVC = LENGTH OF VERTICAL CURVE
 EV = VERTICAL OFFSET
 PVC = VERTICAL POINT OF CURVATURE
 PVT = VERTICAL POINT OF TANGENCY
 G1, G2 = TANGENT GRADES IN PERCENT
 MO = MIDDLE ORDINATE
 X = DISTANCE FROM PVC TO PVT TO ANY POINT OF CURVE
 Y = VERTICAL OFFSET AT SAID DISTANCE "X"
 HP = HIGH POINT OF CURVE
 DH = DISTANCE OF "HP" FROM CURVE END RECKONED FROM FLATTER GRADE

FOR SYMMETRICAL VERTICAL PARABOLIC CURVES

$EV = \frac{(G1-G2)}{100} \cdot \frac{L}{8}$
 $Yx = \frac{(G1-G2)}{100} \cdot \frac{x^2}{2LVC}$
 $DH = \frac{GLVC}{(G1-G2)}$

(WHERE G IS THE LESSER GRADE)

4 VERTICAL PARABOLIC CURVE (SYMMETRICAL)
 NOT TO SCALE

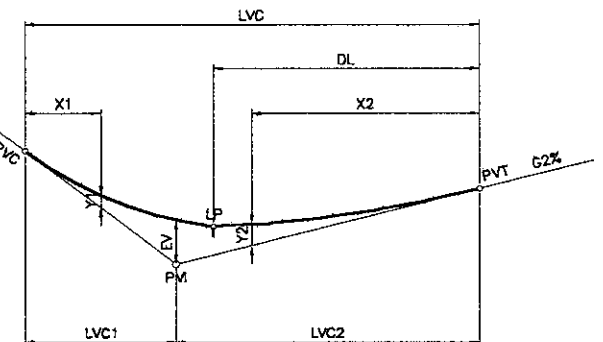


FORMULA

$L = \frac{AS^2}{65S}$ $L = 25 - \frac{65S}{A}$

WHEN

S = $S < L$: $S > L$



WHERE :

LVC1 = SHORT SIDE OF VERTICAL CURVE LENGTH
 LVC2 = LONG SIDE OF VERTICAL CURVE LENGTH
 LP = LOW POINT OF CURVE
 DL = DISTANCE OF LP FROM CURVE END RECKONED FROM FLATTER GRADE
 ALL OTHER NOMENCLATURE SAME AS SYMMETRICAL PARABOLIC CURVE

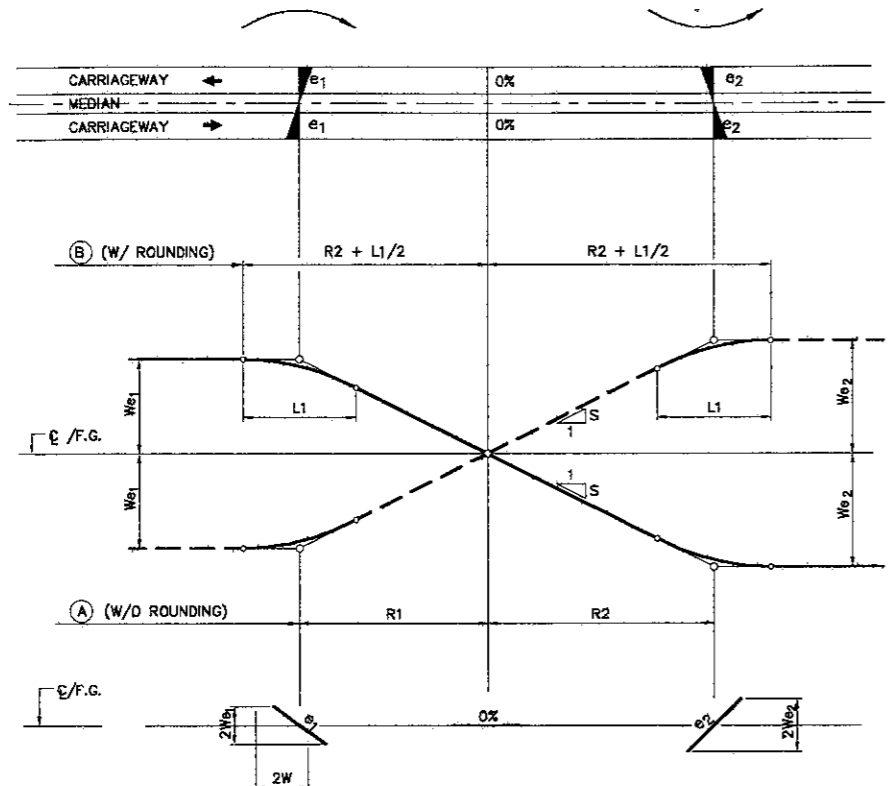
FOR ASYMMETRICAL VERTICAL PARABOLIC CURVES

$EV = \frac{(G1-G2)}{100} \cdot \frac{L1 \cdot L2}{2L}$ $Y2 = \frac{x2^2}{L2^2} \cdot EV$
 $Y1 = \frac{x1^2}{L1^2} \cdot EV$
 $DL = \frac{G2 \cdot L2}{L1} \cdot K$
 $K = \frac{L}{G1+G2}$

NOTES :

- SIMILARLY APPLIES TO LP (LOW POINT) OF CREST VERTICAL CURVES
- NO VERTICAL CURVE IS REQUIRED WHERE THE ALGEBRAIC DIFFERENCE IN GRADE IS 0.50% OR LESS

5 VERTICAL PARABOLIC CURVE (ASYMMETRICAL)
 NOT TO SCALE



$$R1 = \frac{W e_1}{S}$$

$$R2 = \frac{W e_2}{S}$$

$$L1 = \frac{W n_c}{S}$$

WHERE
 R1 = LENGTH OF SUPERELEV. RUNOFF (1st CURVE)
 R2 = LENGTH OF SUPERELEV. RUNOFF (2nd CURVE)
 L1 = LENGTH OF ROUNDING
 ALL OTHER NOMENCLATURE THE SAME

NAGREG FLYOVER PIER		
STATION	SUPERELEVATION	
	LEFT	RIGHT
A1	0+485.50	0.000
P1	0+515.50	-2.532
P2	0+535.50	-4.661
P3	0+555.50	-5.208
P4	0+575.50	-3.375
P5	0+600.00	0.000
P6	0+627.50	4.510
P7	0+654.50	5.100
P8	0+679.50	5.100
P9	0+699.50	5.100
A2	0+719.50	2.221

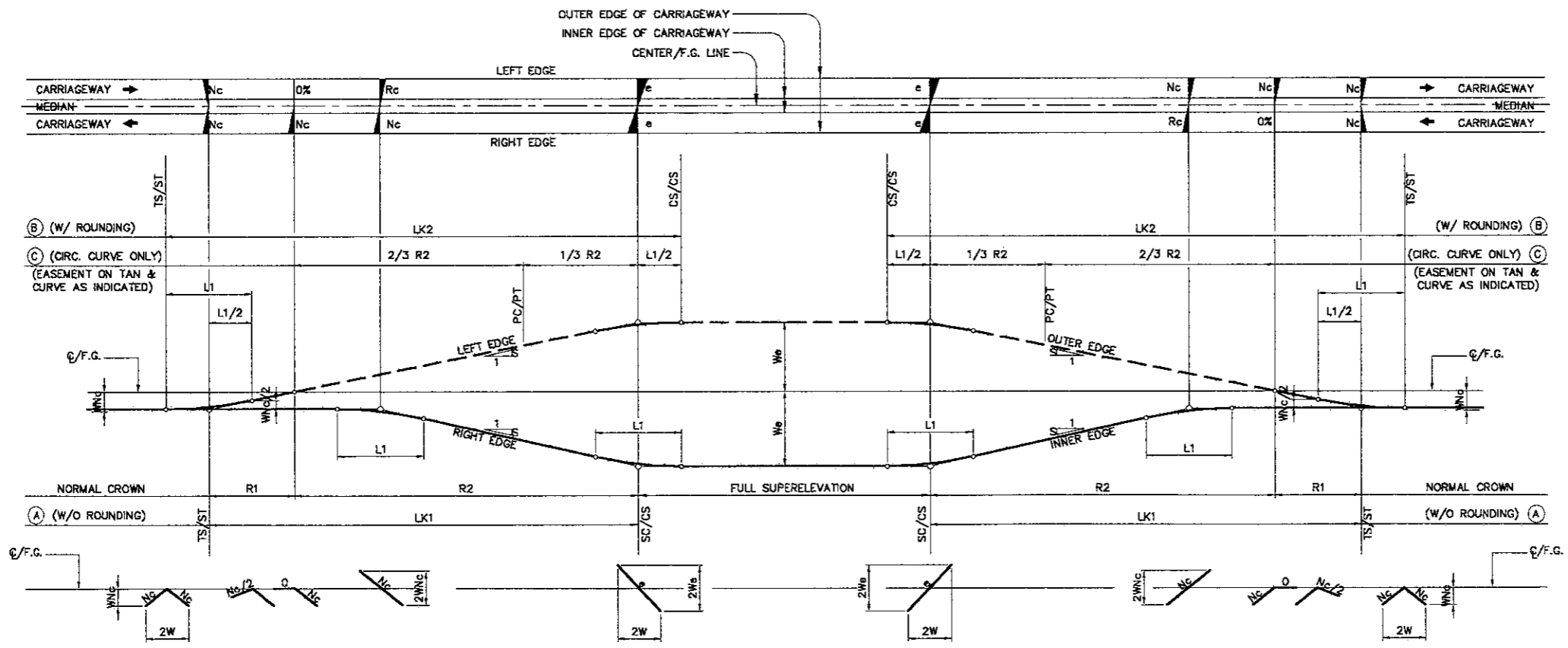
S VALUE (INTERPOLATED FROM AASHTO)									
DESIGN SPEED Km/h	40	50	60	70	80	90	100	110	120
100 S	0.70	0.65	0.60	0.55	0.50	0.48	0.45	0.42	0.40

- NOTES
- RATE OF SUPERELEVATION "e" IS AS SHOWN IN TABLE.
 - ROUNDING "L1" IS OPTIONAL AND NECESSARY ONLY IF "S" IS GREATER THAN THAT SHOWN IN TABLE FOR "S" VALUE.
 - SIDEWALKS SHALL ALWAYS SLOPE TOWARDS THE TRAVELWAY.
 - SHOULDERS OF THE MAIN ROADS ALWAYS SLOPE AWAY FROM THE TRAVELWAY IRRESPECTIVE OF THE RATE OF SUPERELEVATION, "e".

WHERE

LK1 = MIN. LENGTH OF EASEMENT/CLOTHOID (W/O ROUNDING)
 LK2 = MIN. LENGTH OF EASEMENT/CLOTHOID (W/ ROUNDING, L1)
 R1 = SUPERELEVATION RUNOUT LENGTH (WITHIN CLOTHOID) *
 R2 = SUPERELEVATION RUNOFF LENGTH
 L1 = LENGTH OF ROUNDING
 W = CARRIAGEWAY WIDTH = 7.00m (2 LANES EACH DIRECTION)
 e = SUPERELEVATION
 Nc = NORMAL CROWN SLOPE
 S = RELATIVE SLOPE OF EDGES TO CENTERLINE

* OTHER AUTHORITIES PLACE R1 WITHIN THE TANGENT



$$A^2 = R \times LK$$

A = CLOTHOID PARAMETER

$$R1 = \frac{W N_c}{S}$$

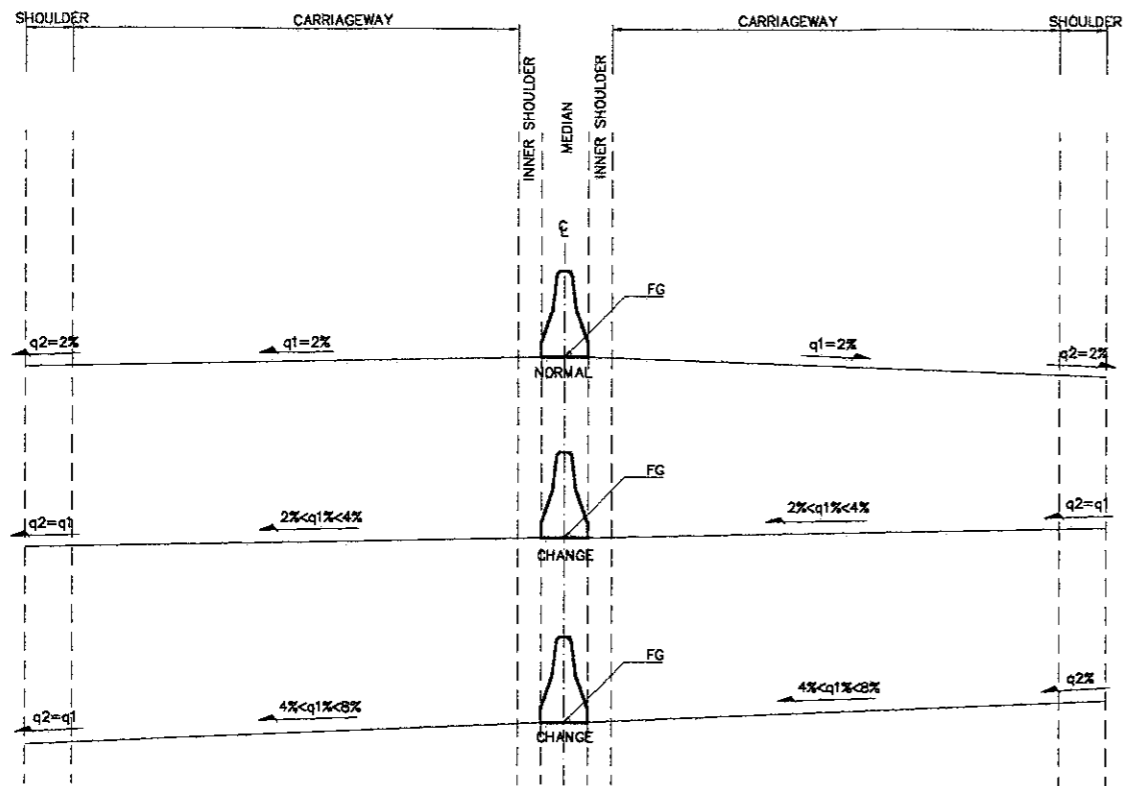
$$R2 = \frac{W e}{S}$$

$$L1 = \frac{W n_c}{S}$$

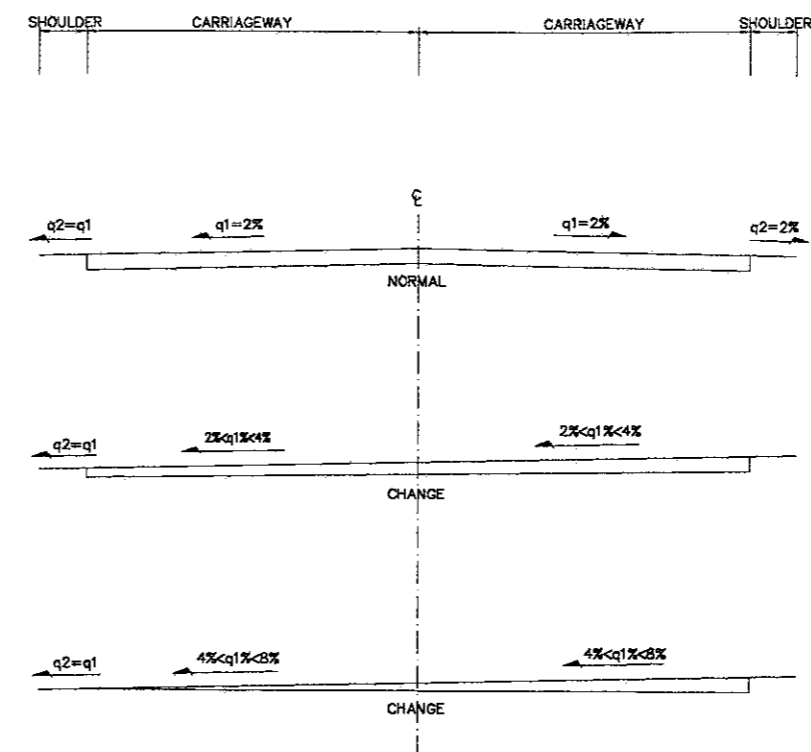
$$LK1 = R1 + R2 = \frac{W}{S} (N_c + e) \quad \text{A}$$

$$LK2 = L1 + LK1 = \frac{W}{S} (2N_c + e) \quad \text{B}$$

1 SUPERELEVATION TRANSITION FLYOVER
 NOT TO SCALE

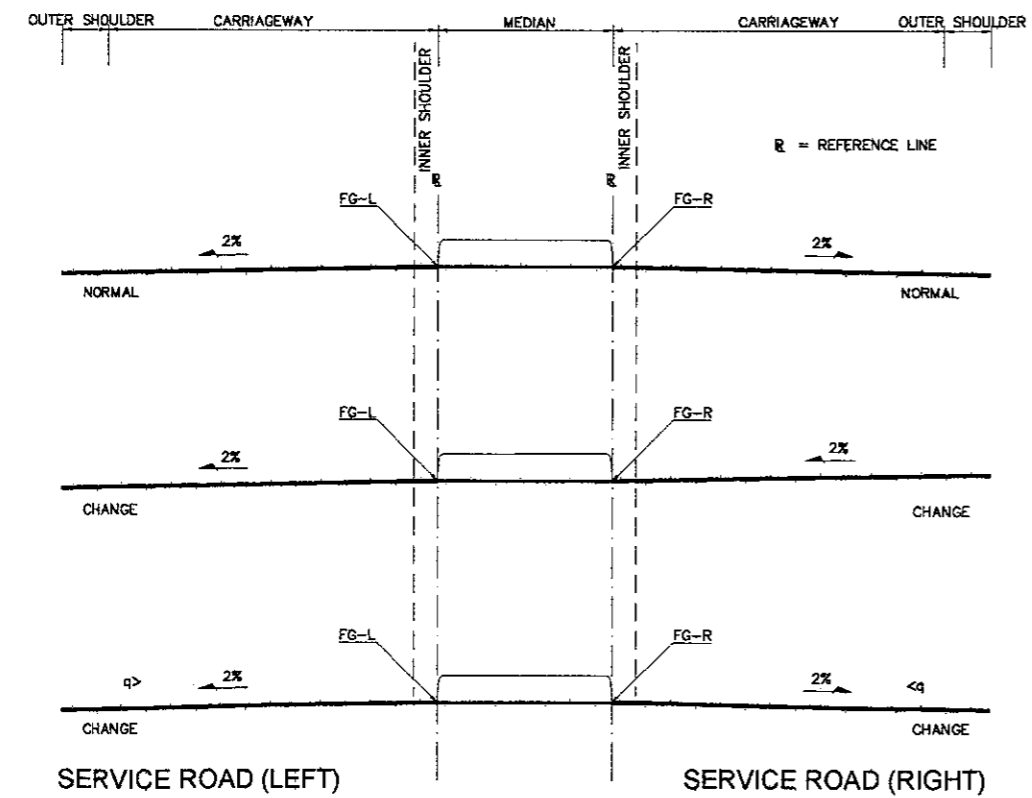


1 MAIN ROAD / FLYOVER
 NOT TO SCALE



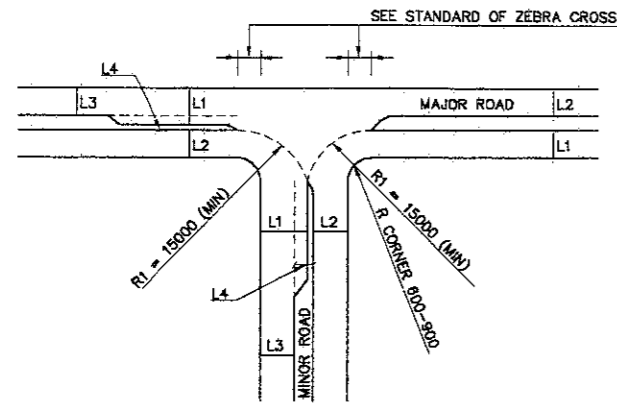
2 SUPERELEVATED (EXISTING 2-LANE, 2-WAY)
 NOT TO SCALE

NAGREG FLYOVER				
STATION	ELEVATION	SUPER ELEVATION		
		FG	LEFT	RIGHT
A1	0+120.00	849.140	-2.000	0.373
P1	0+200.00	850.380	-3.900	3.900
P2	0+260.00	853.260	-2.000	0.552
P3	0+300.00	855.260	-2.000	-2.000
P4	0+360.00	858.260	2.800	-2.800
P5	0+400.00	860.260	2.800	-2.800
P6	0+500.00	865.260	-0.600	0.600
P7	0+540.00	867.260	-5.140	5.140
P8	0+560.00	868.260	-4.796	4.796
P9	0+600.00	870.219	-0.100	0.100
P10	0+700.00	870.321	5.100	-5.100
P11	0+740.00	869.028	-1.815	-2.000
P12	0+800.00	867.101	-2.000	-2.000
P13	0+820.00	866.652	0.851	-2.000
A2	0+880.00	866.779	3.600	-3.600



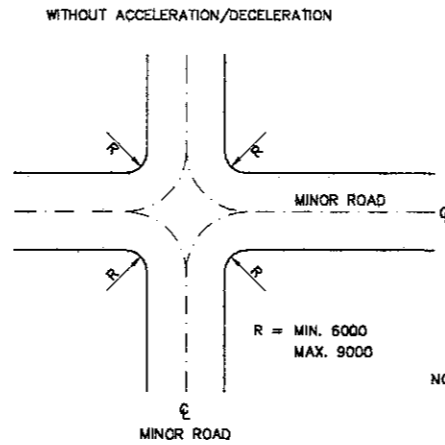
R (m)	Vd = 40 km/hr			Vd = 50 km/hr			Vd = 60 km/hr		
	e	L (m)		e	L (m)		e	L (m)	
	%	2 Lns	4 Lns	%	2 Lns	4 Lns	%	2 Lns	4 Lns
1000	NC	0	0	RC	11	17	2,1	13	19
900	NC	0	0	RC	11	17	2,3	14	21
800	NC	0	0	RC	11	17	2,5	15	23
700	RC	10	15	2,1	12	17	2,8	17	25
600	RC	10	15	2,4	13	22	3,1	19	28
500	2,1	11	18	2,8	15	20	3,5	21	32
400	2,5	13	19	3,3	18	23	4,0	24	36
300	3,1	16	24	3,9	22	27	4,6	28	41
250	3,5	18	27	4,2	23	32	5	30	45
200	3,9	20	30	4,7	26	39	5,5	33	50
175	4,1	21	32	5,0	28	42	5,8	35	52
150	4,4	23	34	5,3	29	44	6,0	36	54
140	4,5	23	35	5,4	30	45	6,0	36	54
130	4,6	24	35	5,6	31	47	Rmin = 135		
120	4,8	25	37	5,7	32	47			
110	5,0	26	39	5,8	32	48			
100	5,2	27	40	6,0	33	50			
90	5,4	28	42	6,0	33	50			
80	5,6	29	43	Rmin = 90					
70	5,8	30	45						
60	6,0	31	46						
			Rmin = 55						

WHERE :
 $e_{max} = 6\%$
 R = RADIUS OF CURVE
 Vd = DESIGN SPEED
 e = RATE OF SUPERELEVATION
 L = MINIMUM LENGTH OF RUNOFF (DOES NOT INCLUDE TANGENT RUNOUT)
 AS DISCUSSED IN TANGENT TO CURVE TRANSITION SECTION
 NC = NORMAL CROWN SECTION
 RC = REMOVE CROWN SECTION, SUPERELEVATED AT NORMAL CROWN SLOPE

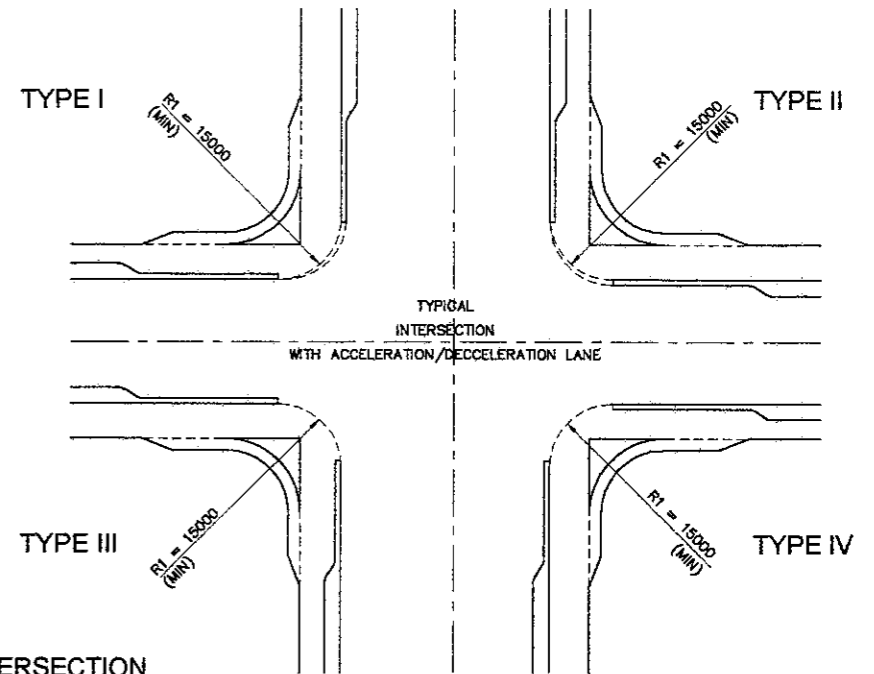


NOTES: - L1 (WITHOUT TRAFFIC LIGHT) BASED FROM CAPACITY OF INTERSECTION
 L1 (WITH TRAFFIC LIGHT) BASED FROM CAPACITY OF TRAFFIC LIGHT ANALYSIS
 - MINIMUM ABSOLUTE WIDTH L4 = 2.75 M
 OR: L4 = L1 - L3 >= 2.75 M

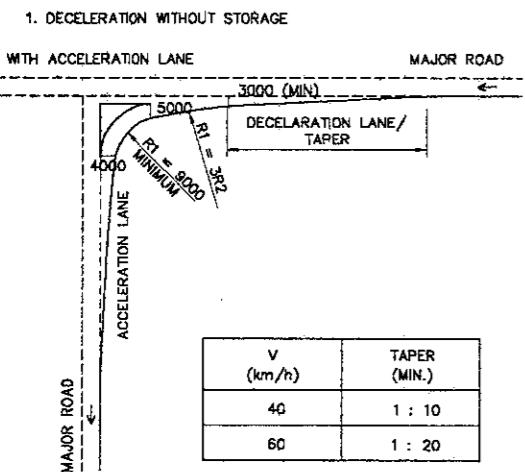
A. TYPICAL OF THREE LEGS INTERSECTION



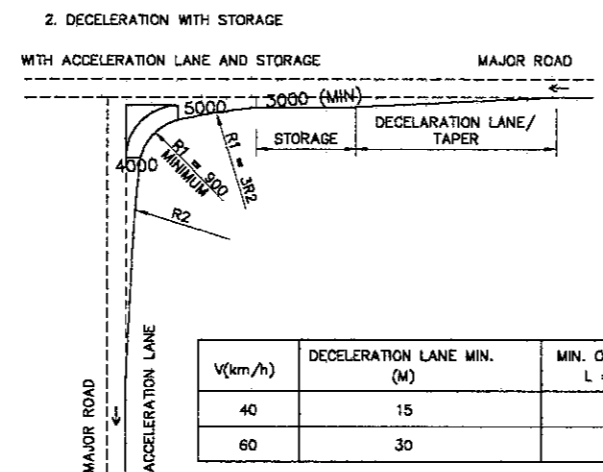
B. TYPICAL OF FOUR LEGS INTERSECTION



NOTES: - SEE STANDARD ROAD MARKING
 - TAPER AND STORAGE NEEDED
 BASED ON TRAFFIC ANALYSIS

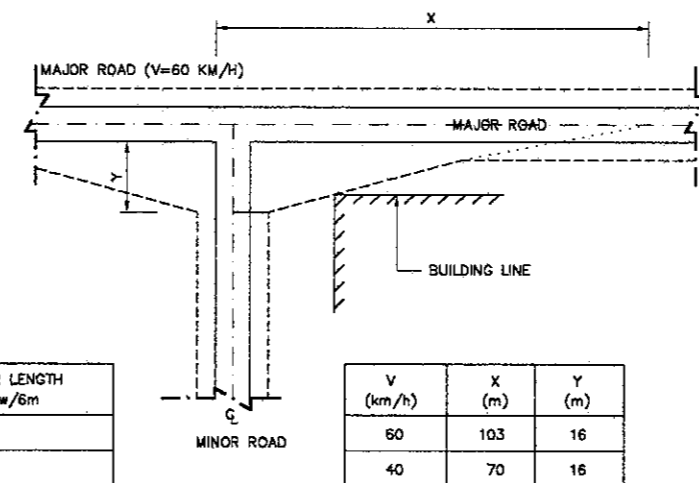


V (km/h)	TAPER (MIN.)
40	1 : 10
60	1 : 20

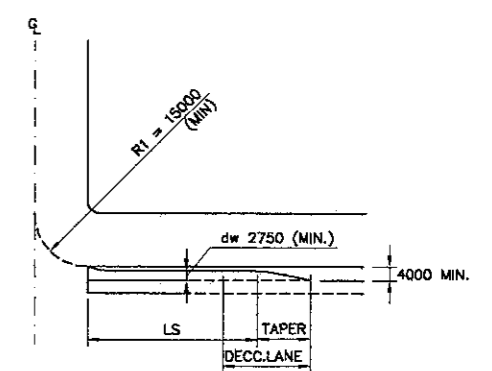


V(km/h)	DECELERATION LANE MIN. (M)	MIN. OF TAPER LENGTH L = V x dw/6m
40	15	20
60	30	30

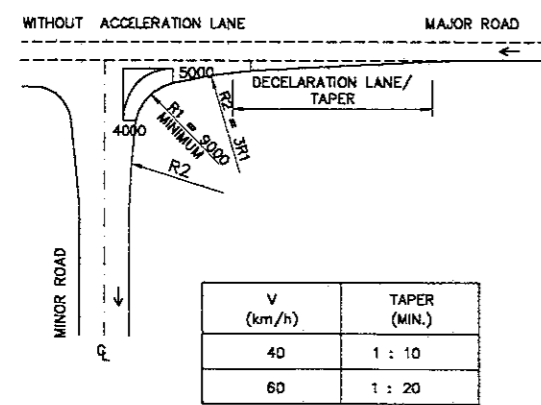
* IF LENGTH OF TAPER > DECELERATION LANE
 TAPER ASSUMED AS DECELERATION LANE



V (km/h)	X (m)	Y (m)
60	103	16
40	70	16

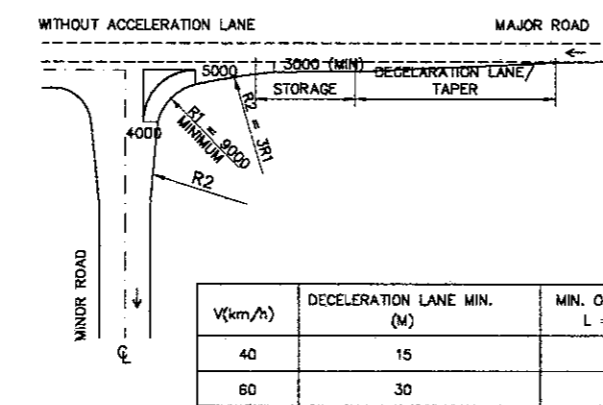


D. TYPICAL RIGHT TURN FROM MAJOR ROAD TO MINOR / MAJOR ROAD



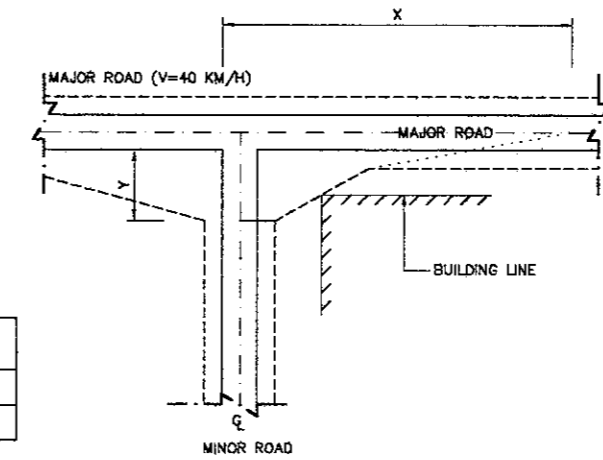
V (km/h)	TAPER (MIN.)
40	1 : 10
60	1 : 20

- R MIN. CALCULATED BASED ON SINGLE UNIT TRUCK
 - FOR SPECIAL DESIGN, SEE STANDARD OF GEOMETRIC DESIGN



V(km/h)	DECELERATION LANE MIN. (M)	MIN. OF TAPER LENGTH L = V x dw/6m
40	15	20
60	30	30

* IF LENGTH OF TAPER > DECELERATION LANE
 TAPER BE ASSUMED AS DECELERATION LANE



F. CLEARANCE SIGHT DISTANCE

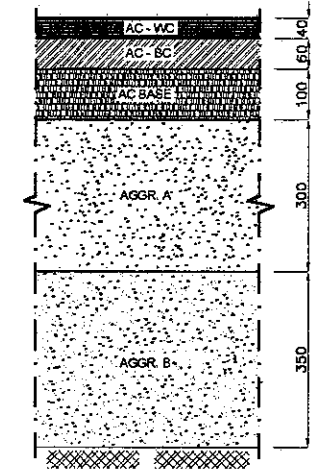
V(km/h)	DECELERATION LANE MIN. (M)	MIN. OF TAPER LENGTH L = V x dw/6m
40	15	20
60	30	30

LENGTH OF STORAGE: LS = 2 x M x S WITHOUT TRAFFIC LIGHT
 LS = 15 x N x S WITH TRAFFIC LIGHT

M - NUMBER OF MEANS OF RIGHT TURN VEHICLE/MINUTES
 N - NUMBER OF MEANS OF LEFT TURN VEHICLE/CIRCLE
 S - DISTANCE TWO VEHICLES (M)

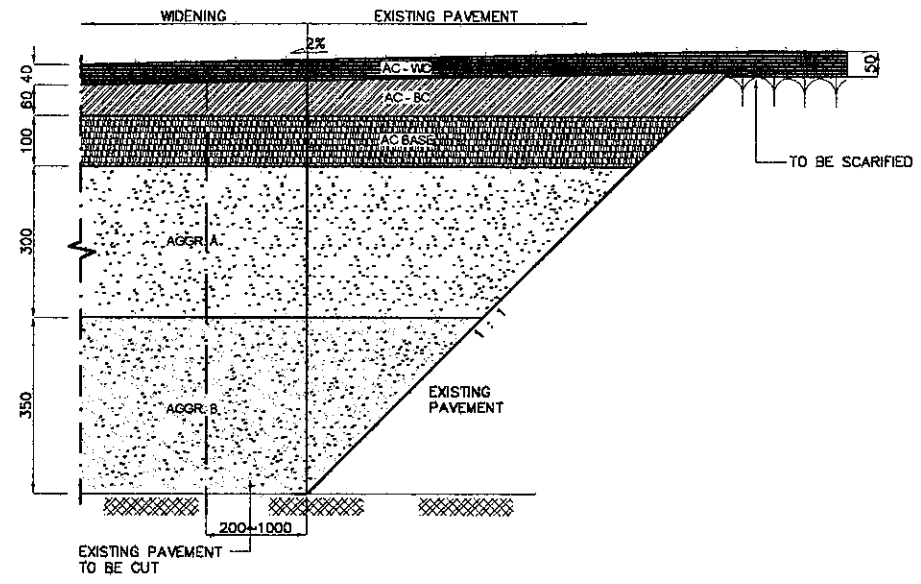
E. LEFT TURN LINE

FLEXIBLE PAVEMENT

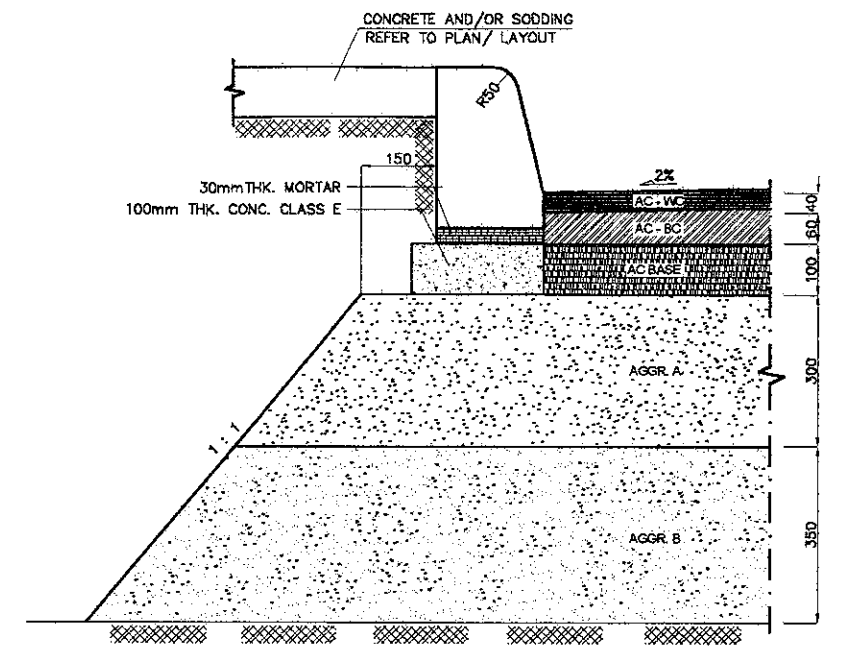


1 SERVICE ROAD
 SCALE 1:150

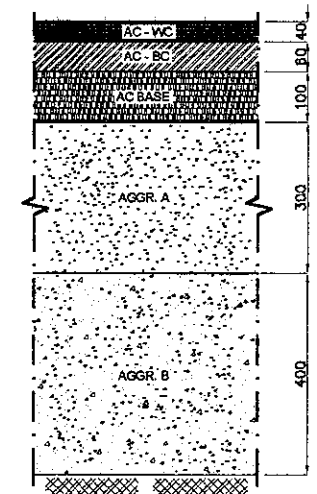
EXISTING & NEW PAVEMENT CONNECTION



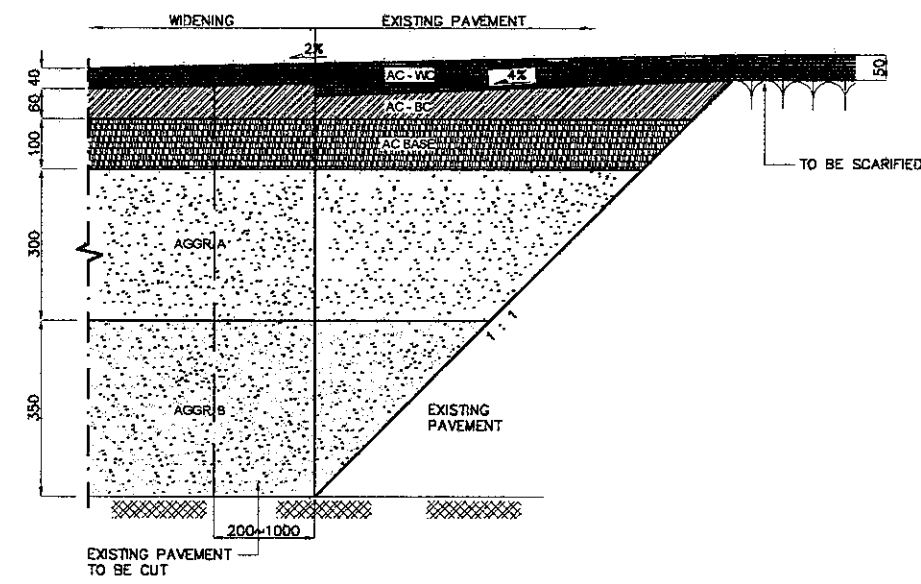
4 WIDENING ≤ 2000mm
 SCALE 1:150



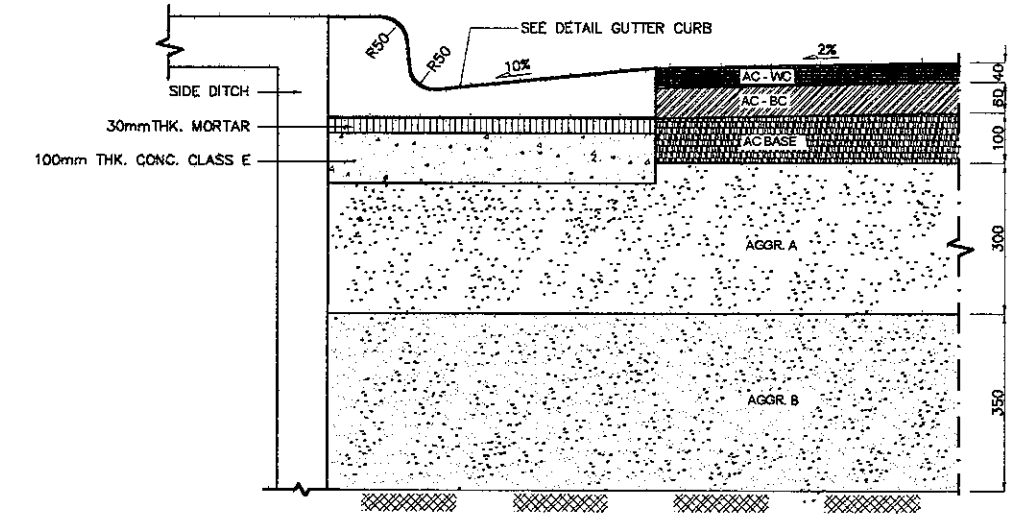
6 MEDIAN CURB CONNECTION
 SCALE 1:150



2 ABUTMENT (APPROACH ROAD)
 SCALE 1:150

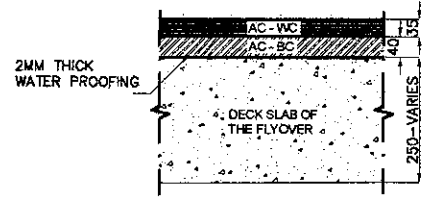


5 WIDENING > 2000mm
 SCALE 1:150

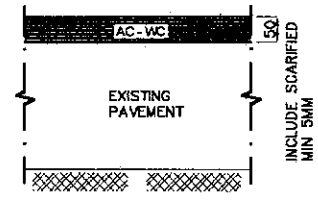


7 CURB AND GUTTER CONNECTION
 SCALE 1:150

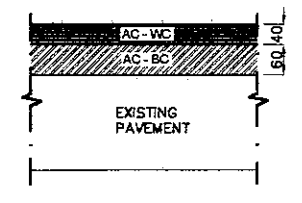
OVERLAY THICKNESS



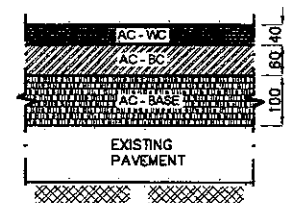
3 VIADUCT
 SCALE 1:150



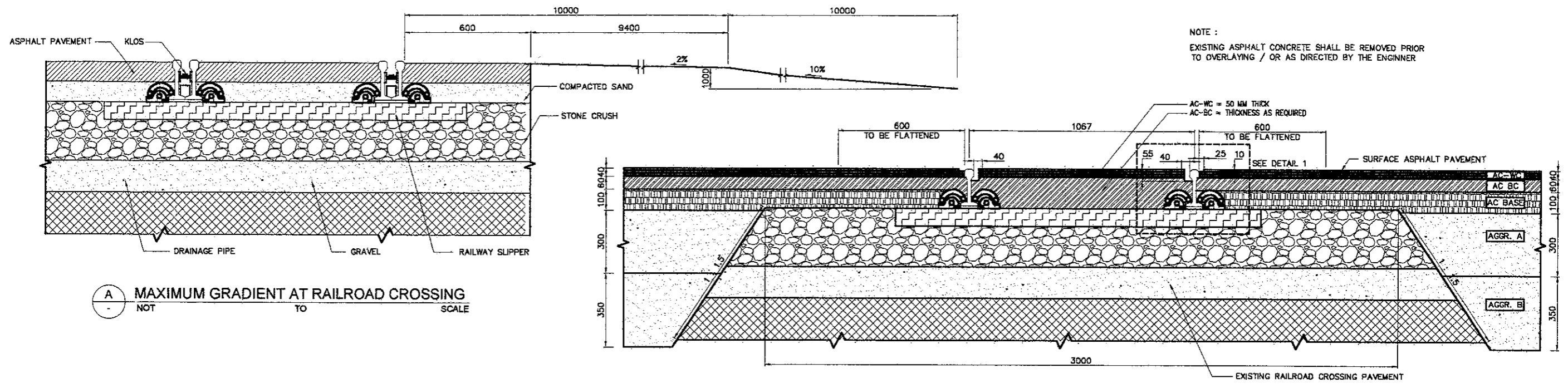
8 NORMAL OVERLAY
 SCALE 1:150



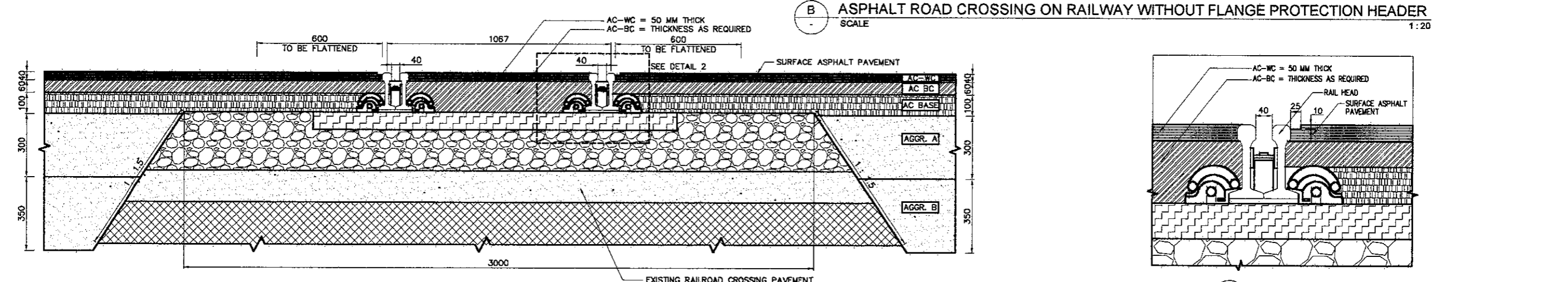
9 OVERLAY THICKNESS < 50 > 100mm
 SCALE 1:150



10 OVERLAY THICKNESS > 100mm
 SCALE 1:150



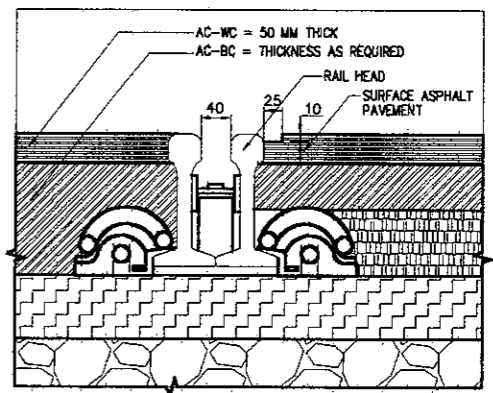
A MAXIMUM GRADIENT AT RAILROAD CROSSING
 NOT TO SCALE



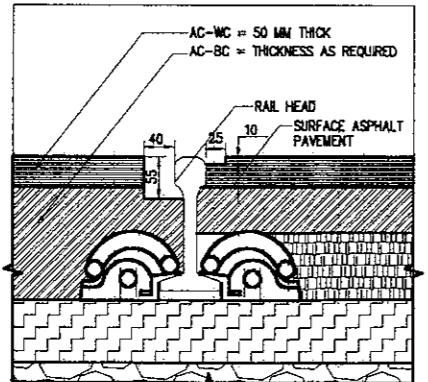
B ASPHALT ROAD CROSSING ON RAILWAY WITHOUT FLANGE PROTECTION HEADER
 SCALE 1:20



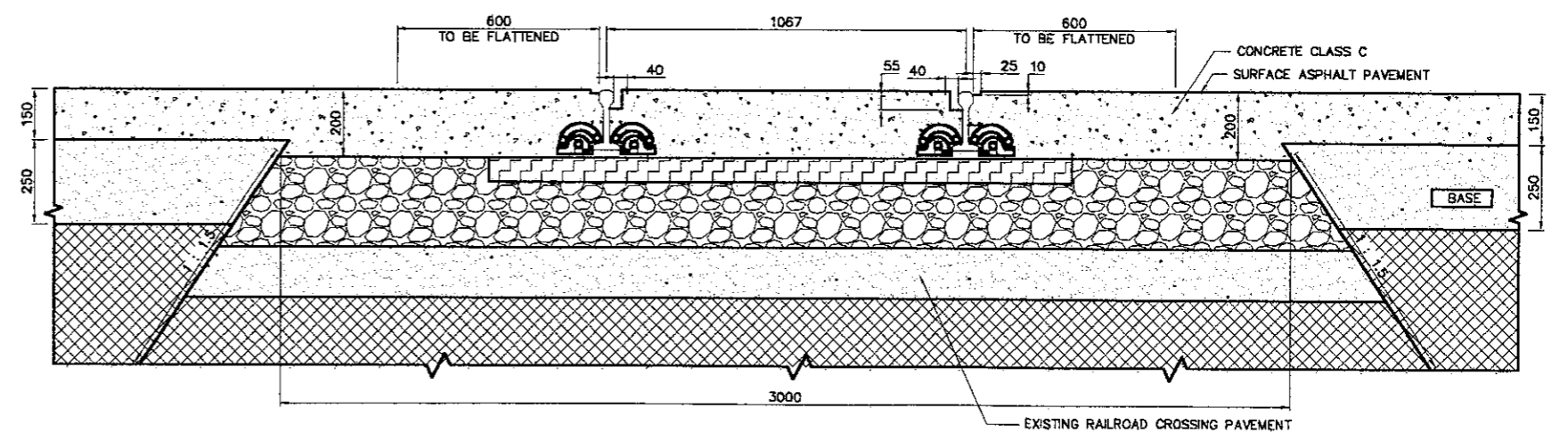
B ASPHALT ROAD CROSSING ON RAILWAY WITH FLANGE PROTECTION HEADER
 SCALE 1:20



2 DETAIL 2
 SCALE 1:10

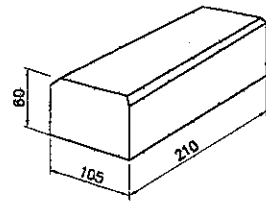


1 DETAIL 1
 SCALE 1:10

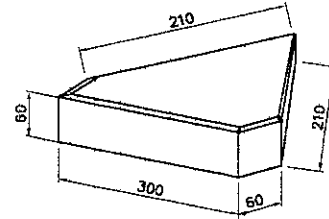


D CONCRETE SHOULDER AT RAILROAD CROSSING
 SCALE 1:20

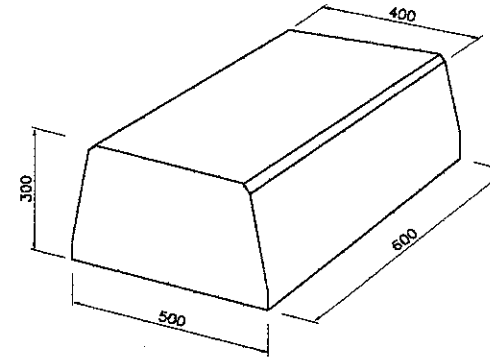
CONCRETE BLOCK



TYPE A

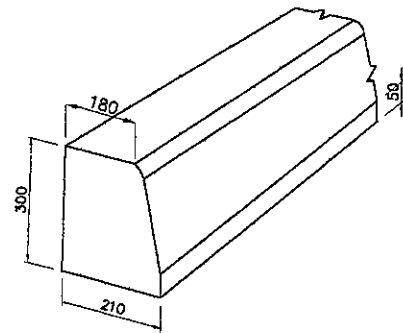


TYPE B

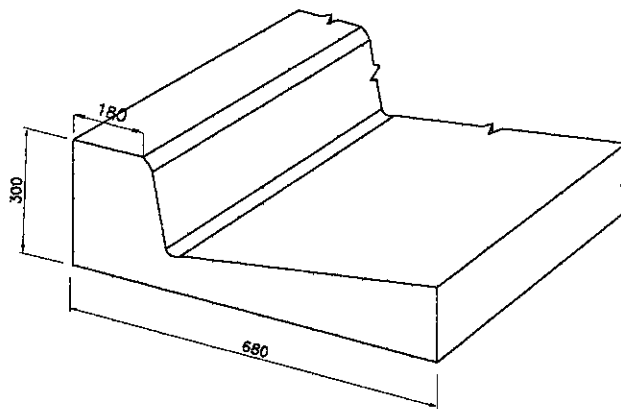


TYPE C

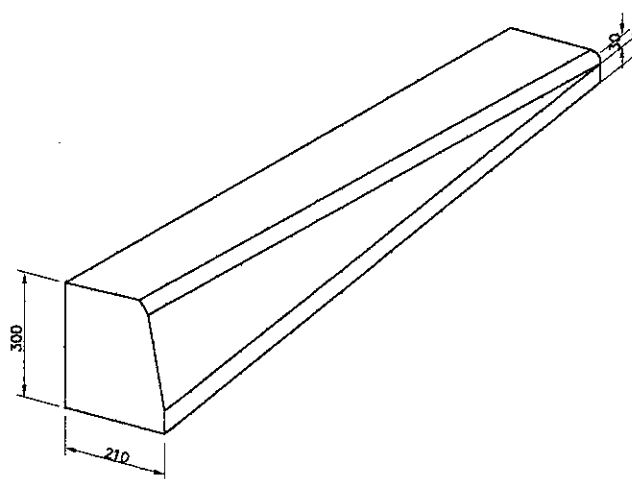
CONCRETE CURB



TYPE A



TYPE B



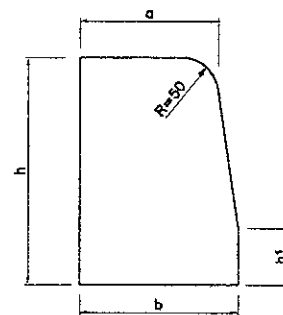
TYPE C

TYPE	DIMENSION (MM)								REMARK
	a	a1	b	b1	h1	h2	h3	h	
A	180	-	210	-	50	-	-	300	CURB
B	180	500	210	-	75	225	100	300	GUTTER CURB

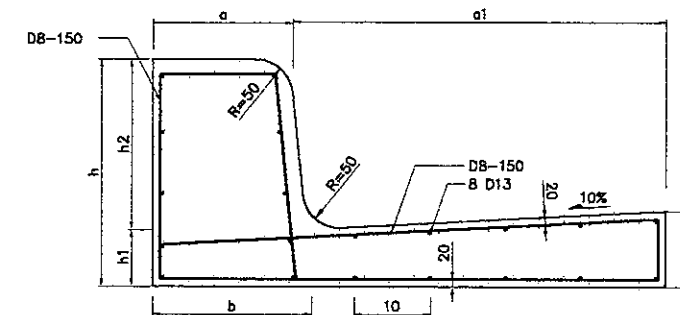
SPECIFICATION :

CONCRETE QUALITY K.300
 - SHALL NOT BE PATCHED
 - PERFORMED DAMAGED < 5%
 - MINIMUM REINFORCED ϕ 6MM

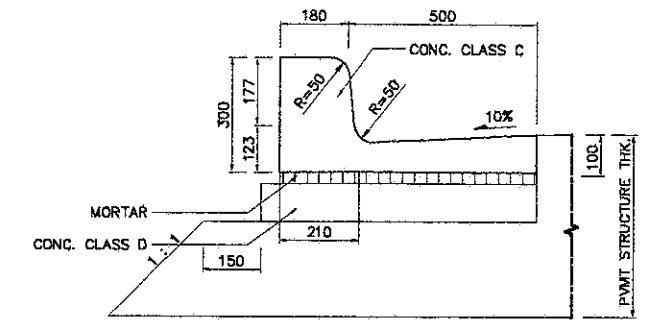
CONCRETE QUALITY K.150
 - COST IN SITE
 - NO REINFORCEMENT



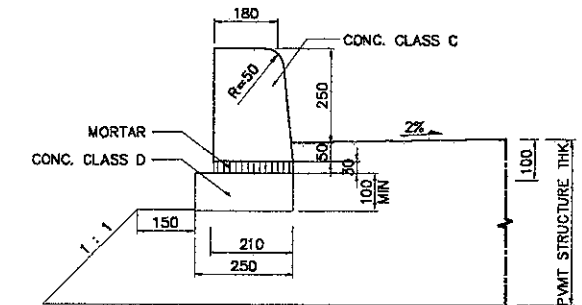
1 CONCRETE CURB
 NOT TO SCALE



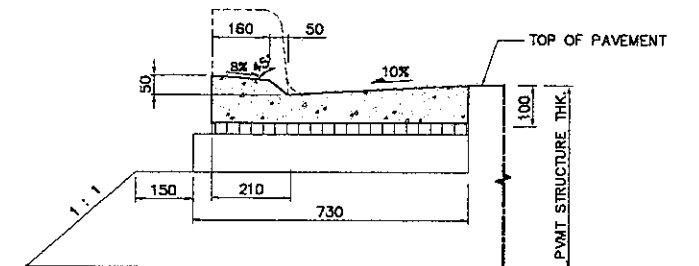
2 REINFORCEMENT OF COMBINATION
 CONCRETE CURB AND GUTTER
 NOT TO SCALE



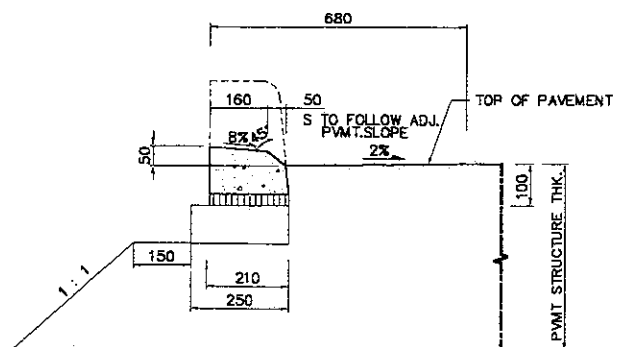
6 COMBINATION
 CONCRETE CURB AND GUTTER
 NOT TO SCALE



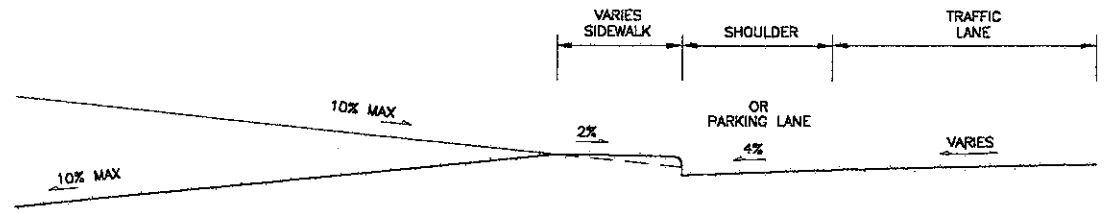
5 CONCRETE CURB
 NOT TO SCALE



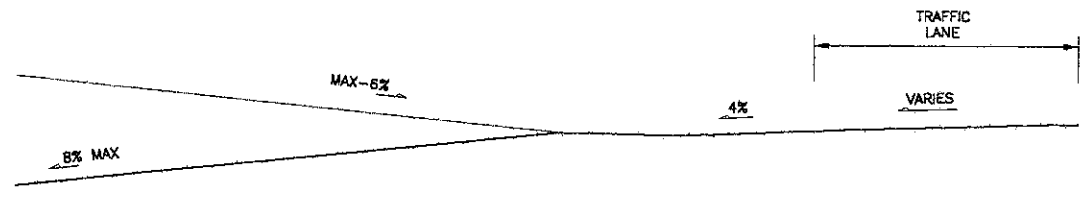
4 CONCRETE DROP
 CURB AND GUTTER (MODIFIED)
 NOT TO SCALE



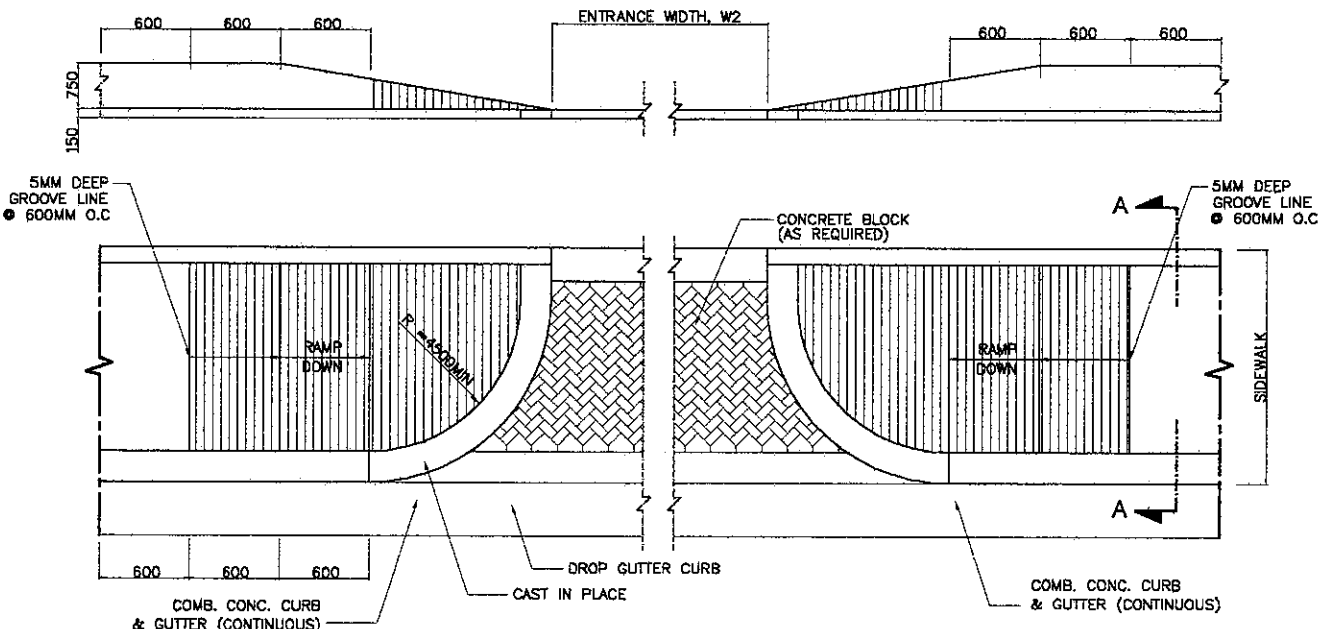
3 CONCRETE DROP CURB (MEDIAN)
 NOT TO SCALE



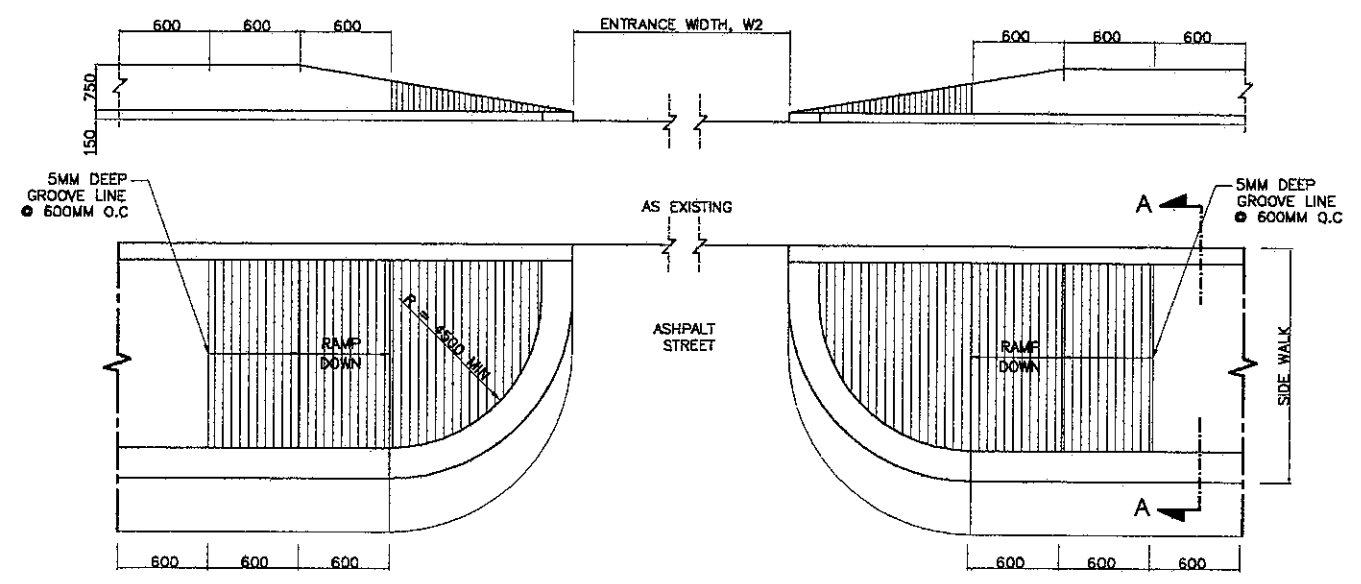
(C) PRIVATE ENTRANCE PROFILE
 NOT TO SCALE



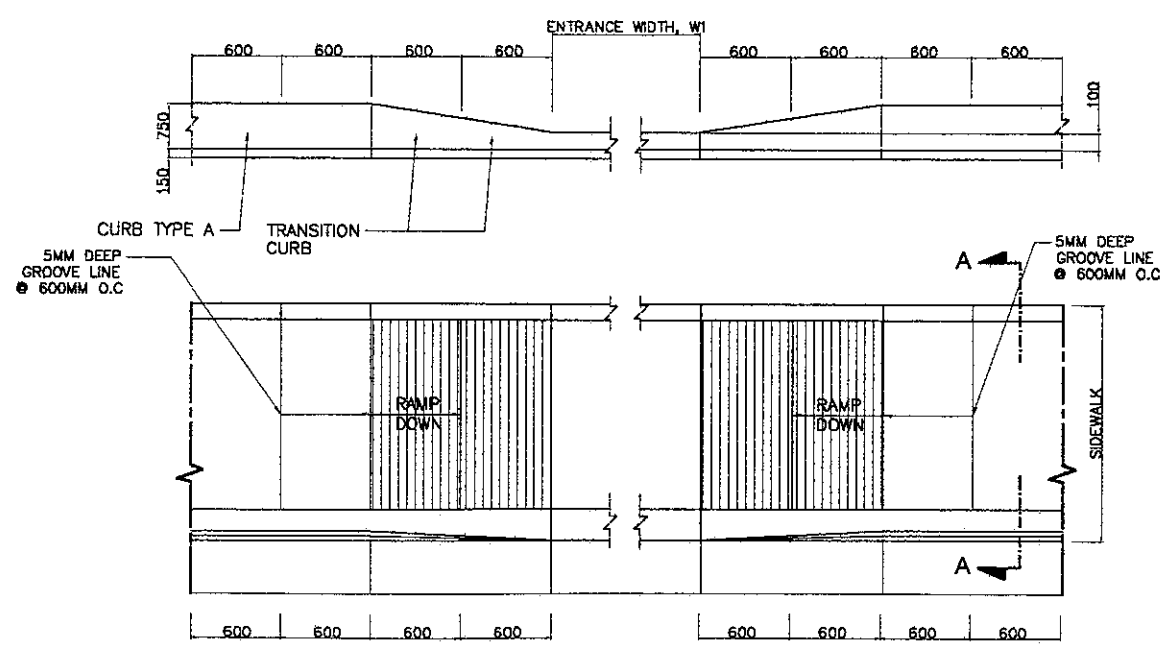
(F) PUBLIC ENTRANCE PROFILE
 NOT TO SCALE



(B) PRIVATE DRIVEWAY ENTRANCE - URBAN
 SCALE 1:50

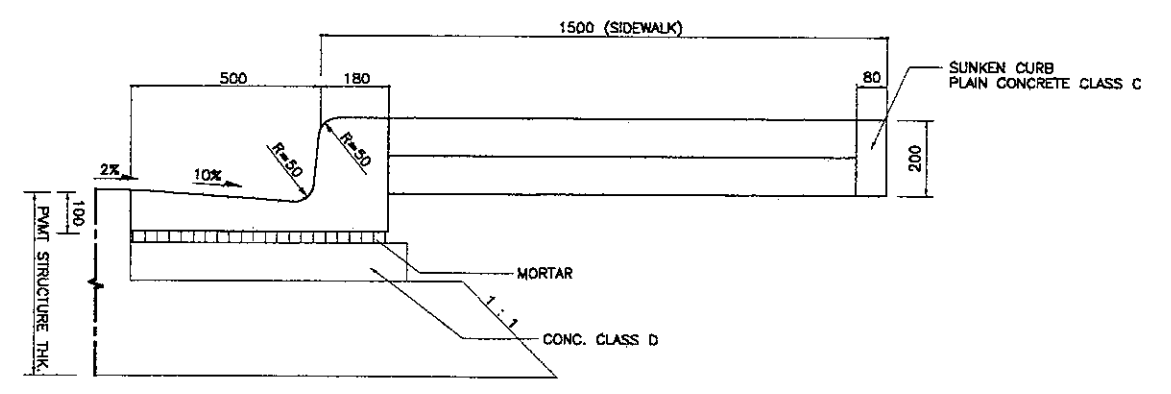


(E) PUBLIC STREET / ALLEY ENTRANCE
 SCALE 1:50



(A) PRIVATE ENTRANCE - URBAN
 SCALE 1:50

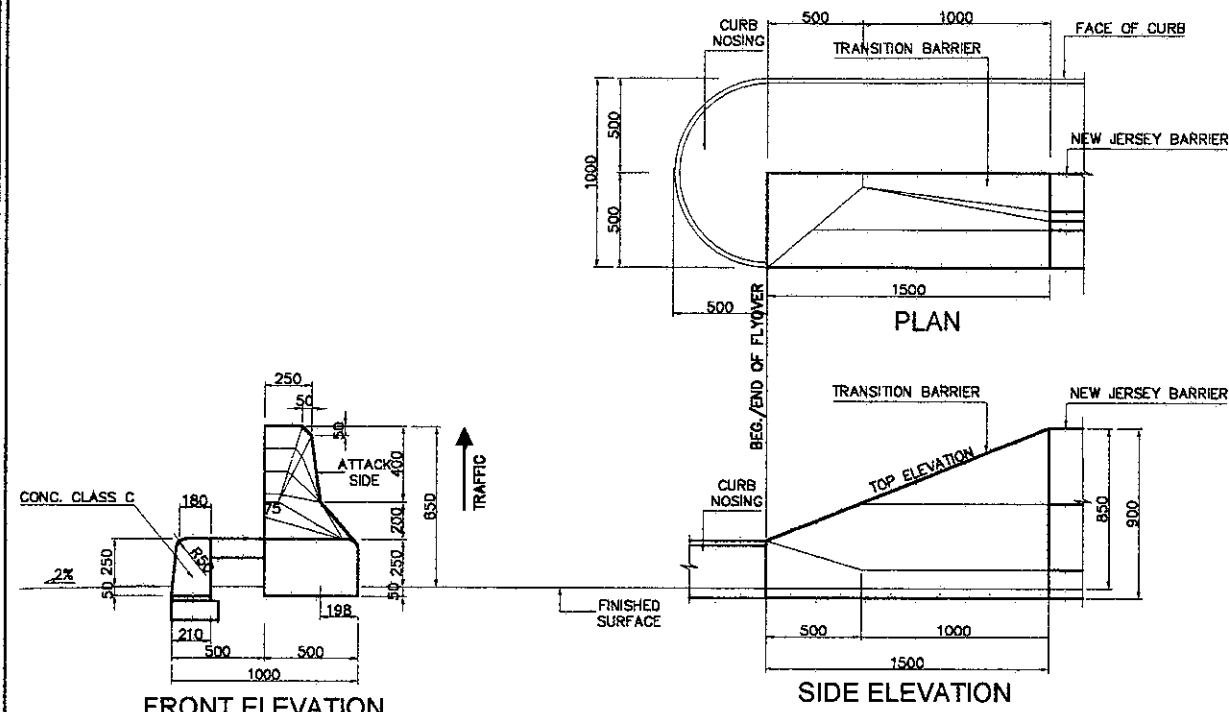
	SINGLE	DOUBLE
W ₁	< 1600	< 3000
W ₂	< 3000	< 9000



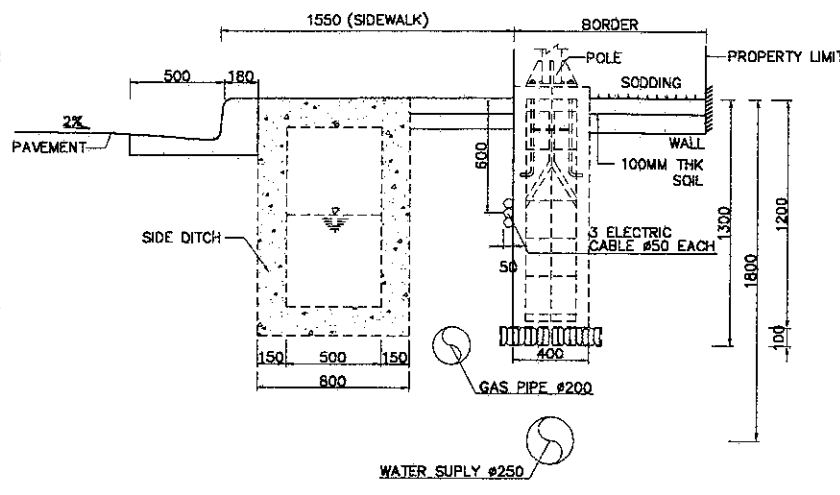
(D) SECTION A-A
 SCALE 1:20

(1) STANDARD PUBLIC AND PRIVATE ACCESS
 SCALE 1:100

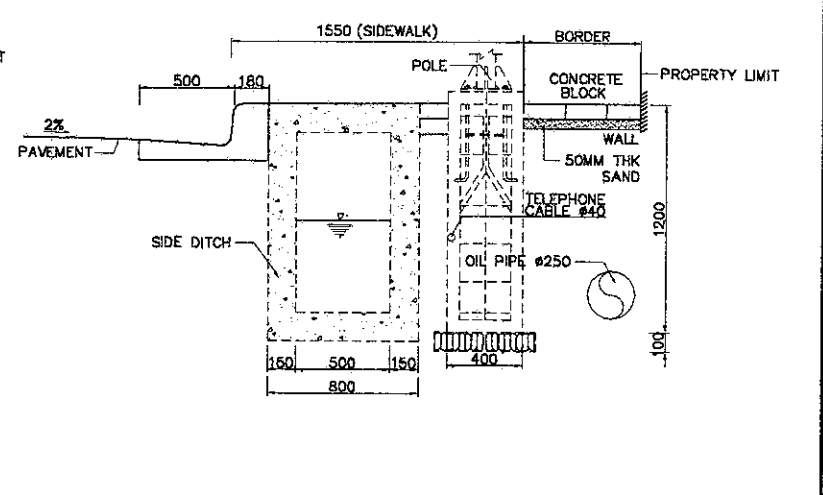
DESIGNED BY	CHECKED BY	SUBMITTED BY
Name: R. UENO	Name: T. OKUMURA	Name: M. KIUCHI
Sign: _____	Sign: _____	Sign: _____
Date: _____	Date: _____	Date: _____



1 TRANSITION PARAPET
 SCALE 1:40

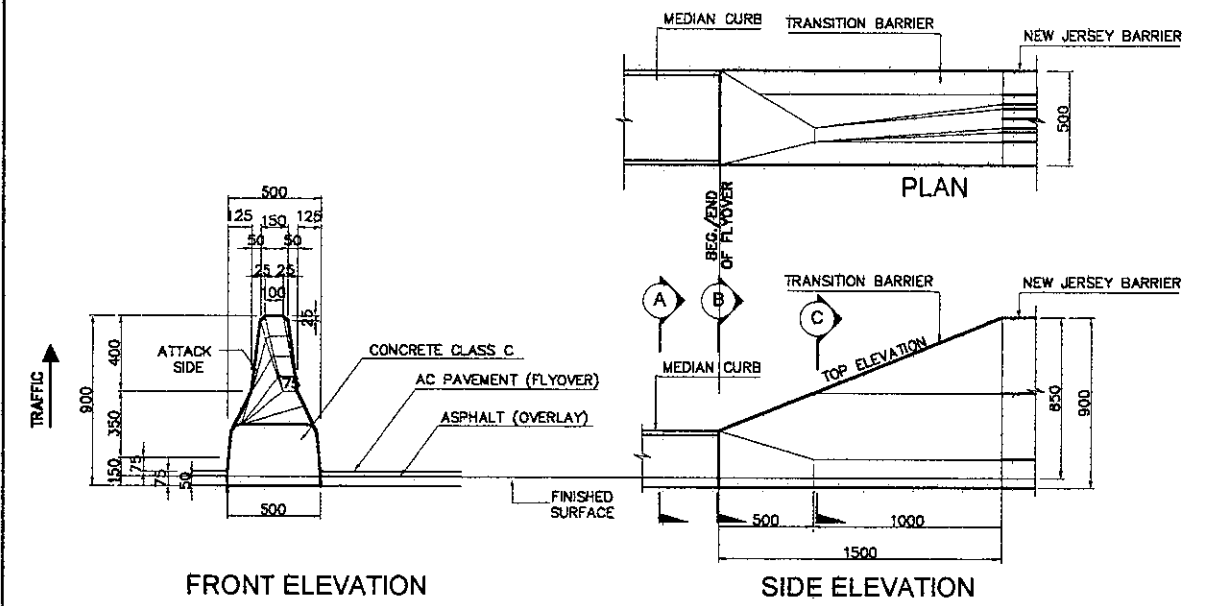


TYPE 1

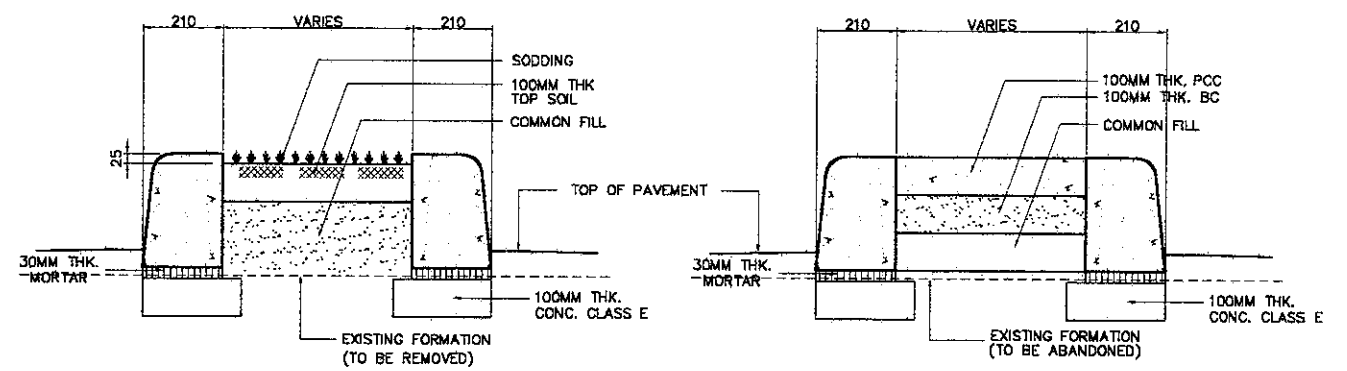


TYPE 2

3 SIDEWALK TO BORDER INFILL DETAILS
 SCALE 1:40



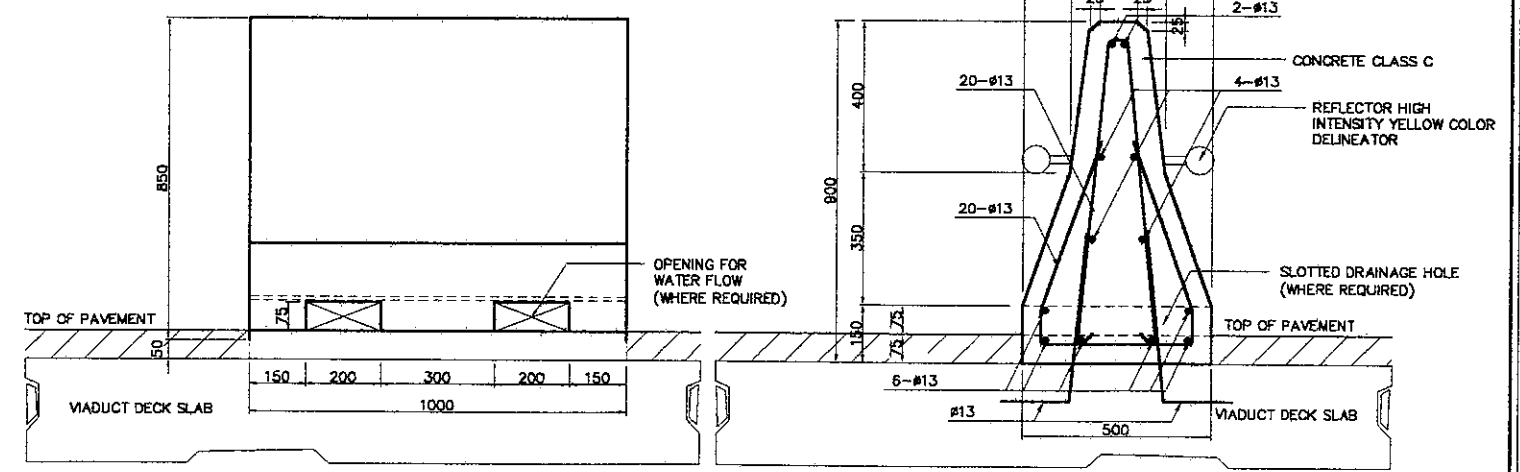
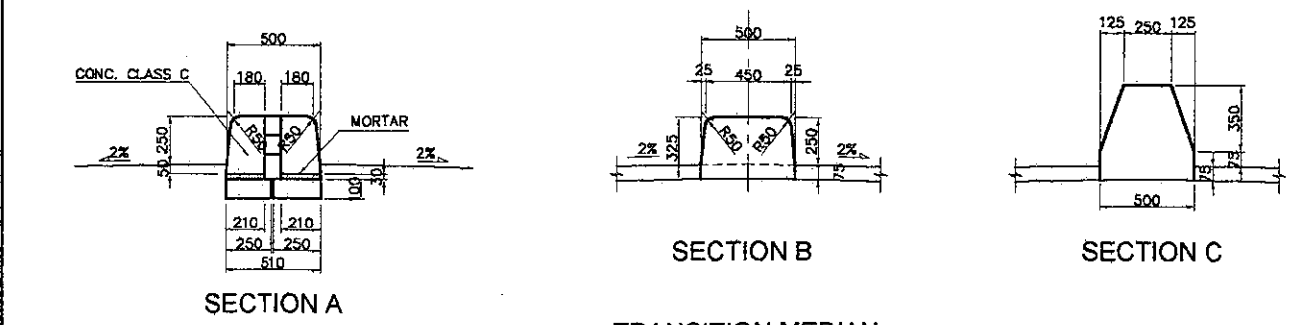
2 TRANSITION BARRIER
 SCALE 1:40



TYPE 1

TYPE 2

5 MEDIAN INFILL DETAILS
 SCALE 1:20



SLOTTED NEW JERSEY BARRIER

4 NEW JERSEY BARRIER
 SCALE 1:20

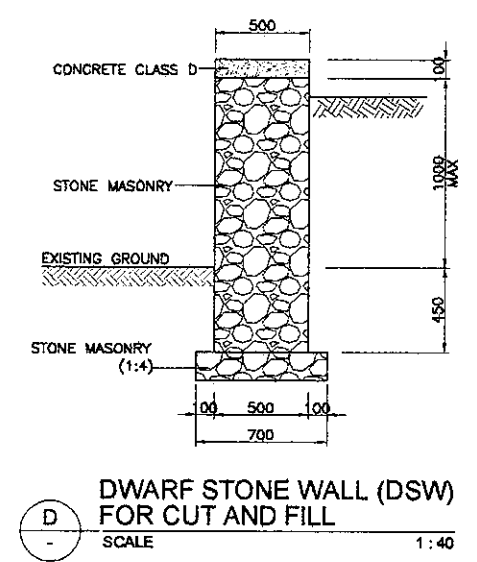
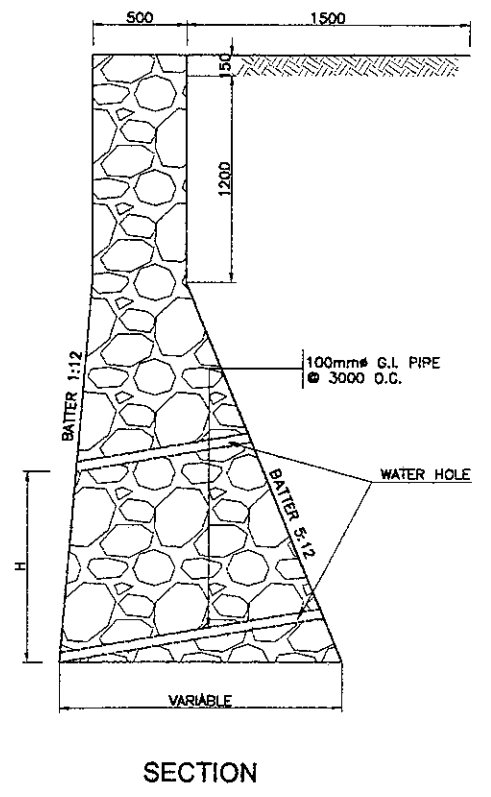
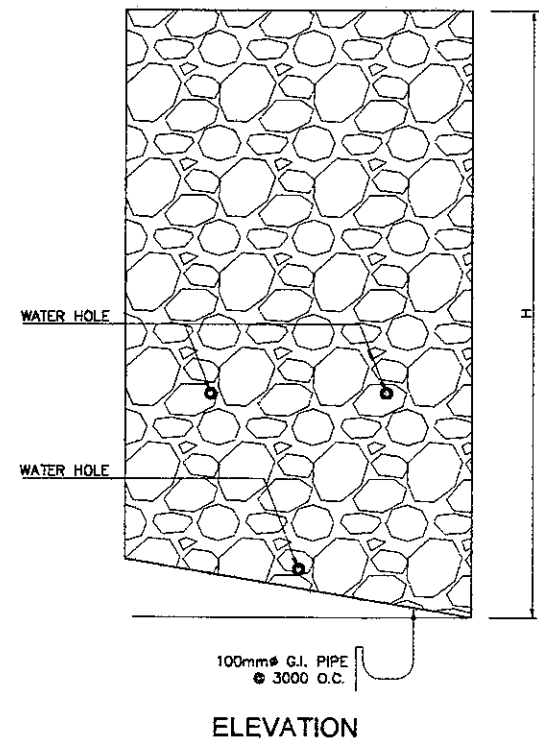
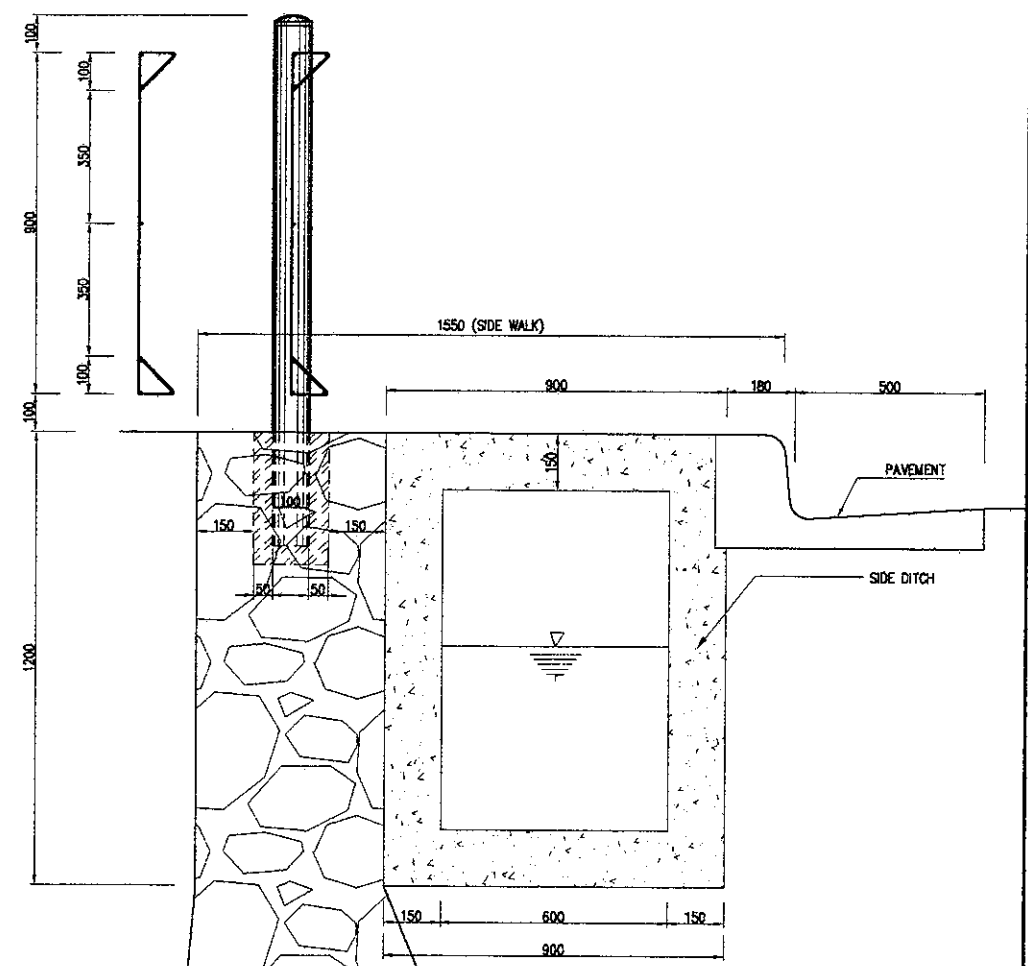
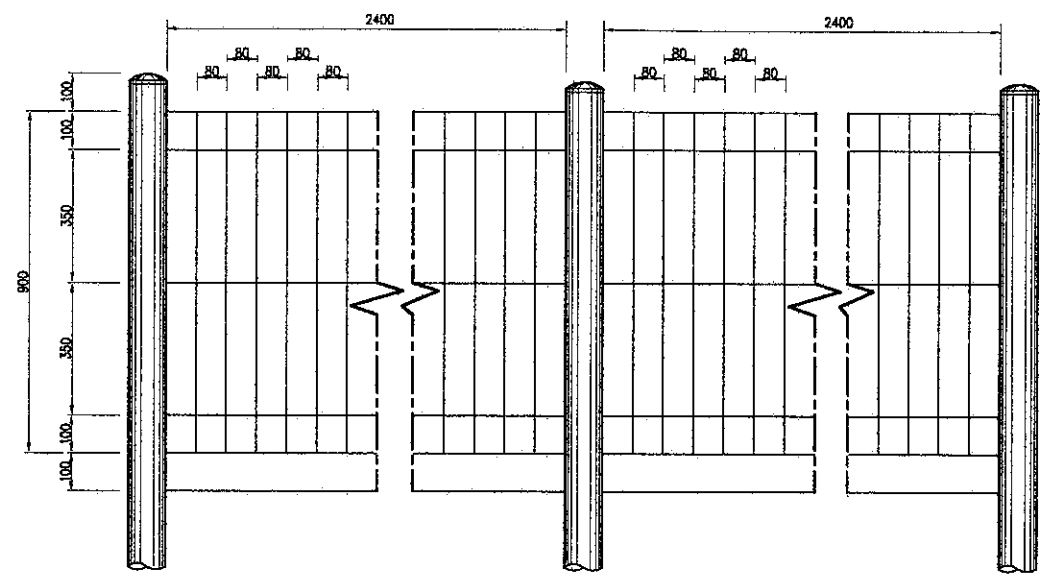
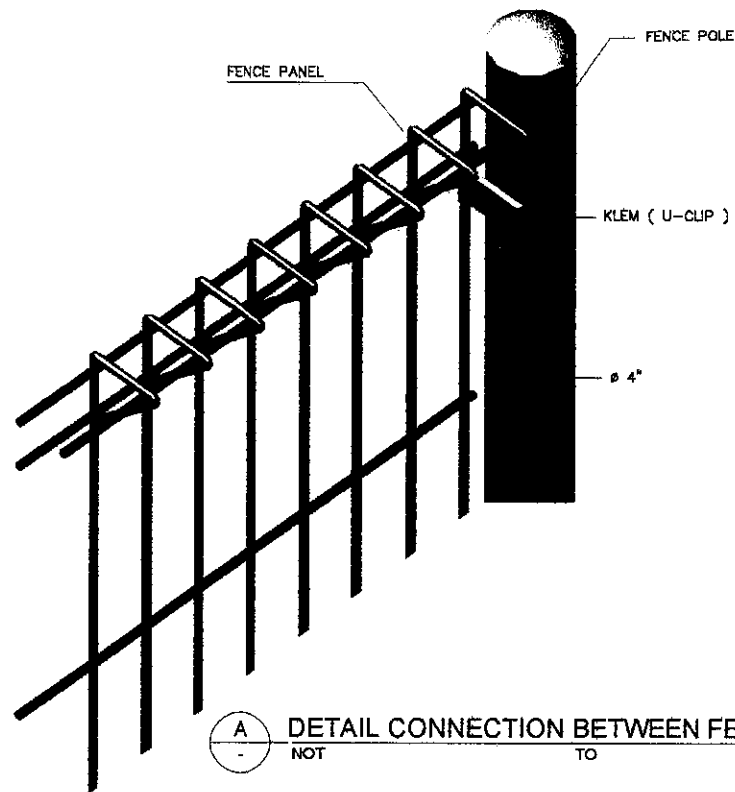
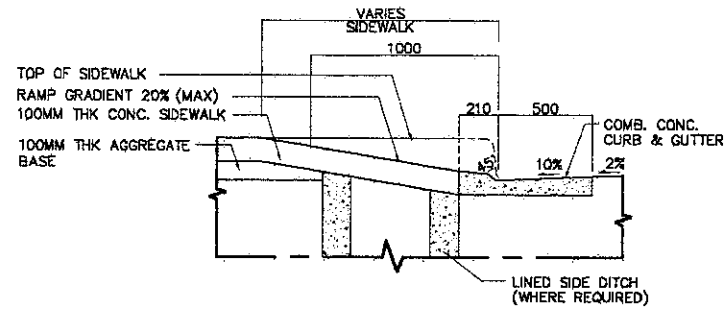


TABLE		TABLE	
HEIGHT IN METERS	QUANTITIES PER LINEAR M OF WALL IN CU. METER	HEIGHT IN METERS	QUANTITIES PER LINEAR M OF WALL IN CU. METER
0.90	0.15	3.60	1.15
1.20	0.23	3.90	1.30
1.50	0.31	4.20	1.45
1.90	0.38	4.50	1.68
2.10	0.46	4.80	1.91
2.40	0.54	5.10	2.14
2.70	0.69	5.40	2.37
3.00	0.77	5.60	2.68
3.30	0.92	6.00	2.91

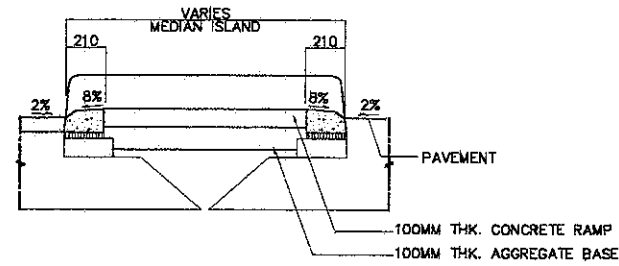
MIN. BULGE 2.50 CMS., MAX. BULGE 10 CMS.
 FEATHERED TO WORKING LINE AT JOINTS TO BE RAKED TO A DEPTH OF 2.50 TO 5 CMS.

DESIGNED BY		CHECKED BY		SUBMITTED BY	
Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	

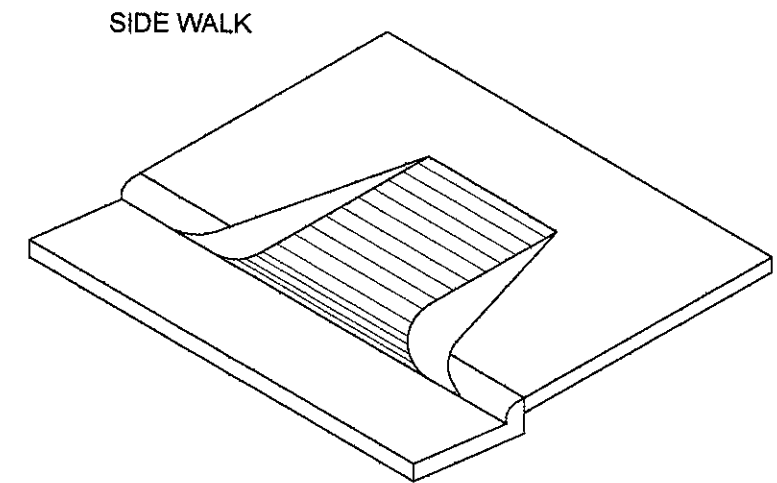
PROJECT AND LOCATION :	SCALE :	DRAWING TITLE :	DRAWING NO. :
DETAILED DESIGN STUDY OF NORTH JAVA CORRIDOR FLYOVER PROJECT NAGREG FLYOVER - CONTRACT PACKAGE 2 (NAGREG - GEBANG) WEST JAVA PROVINCE	1 : 20 FULL SIZE A3	STANDARD CURB - CUT RAMP DETAILS	NRD-063 SHEET NO. : 63 / 65



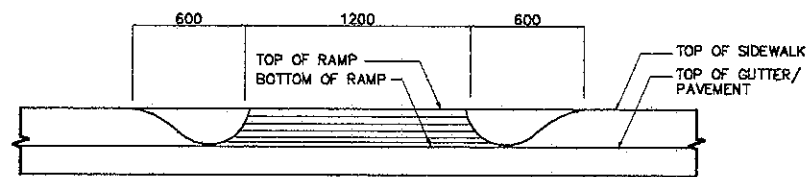
3 SECTION 1-1
 SCALE 1 : 20



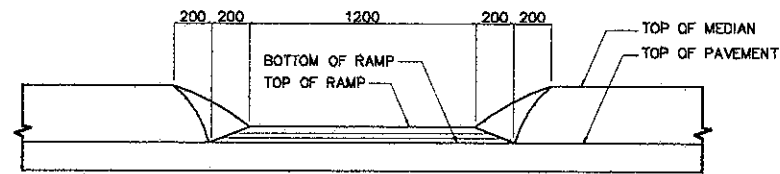
6 SECTION 2-2
 SCALE 1 : 20



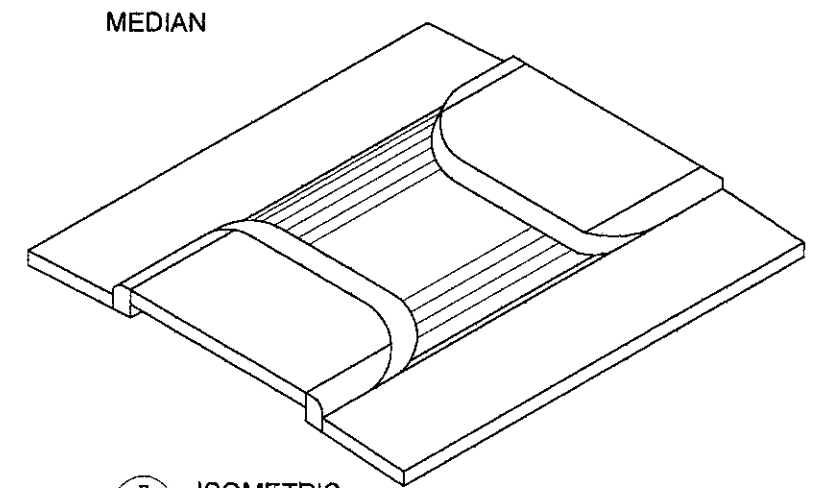
8 ISOMETRIC
 NOT TO SCALE



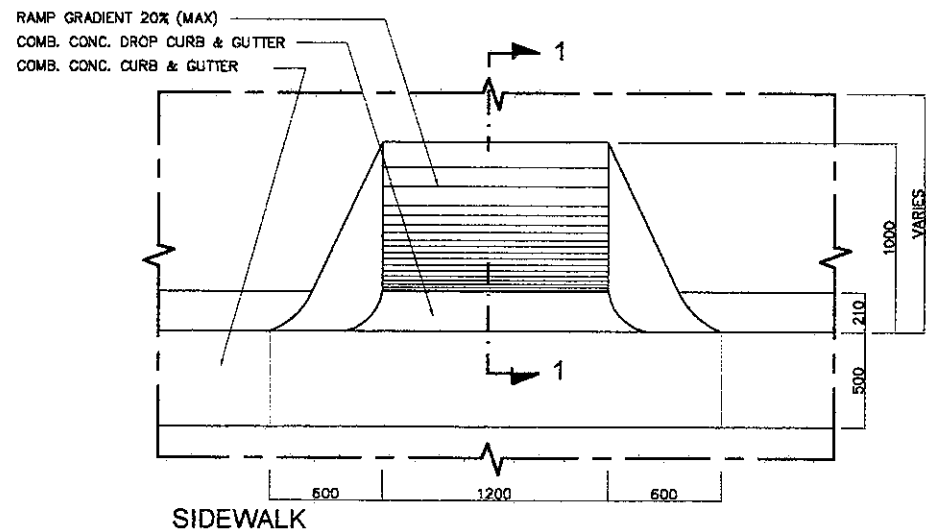
2 ELEVATION
 SCALE 1 : 20



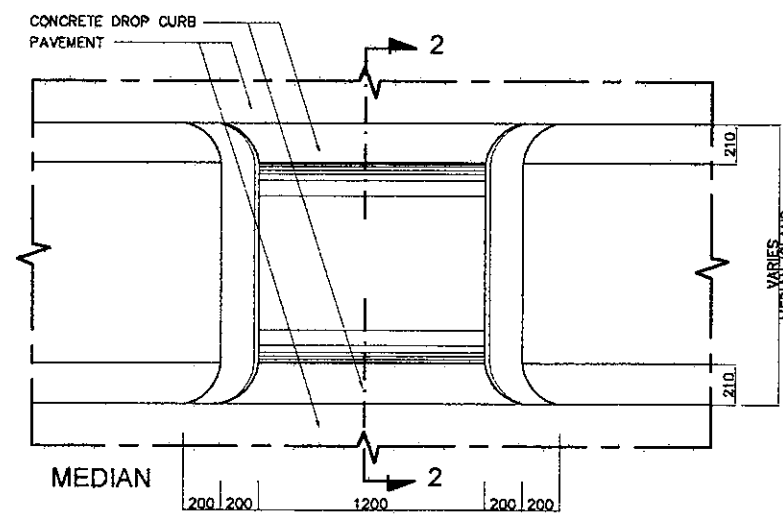
5 ELEVATION
 SCALE 1 : 20



7 ISOMETRIC
 NOT TO SCALE



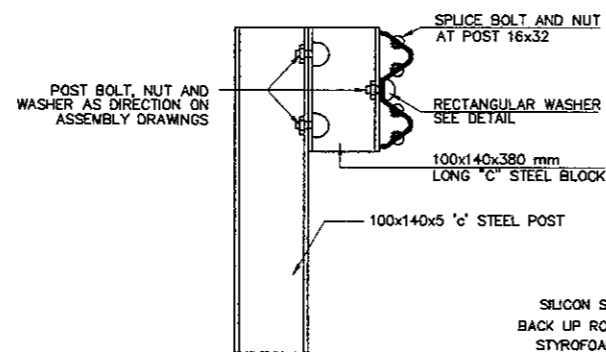
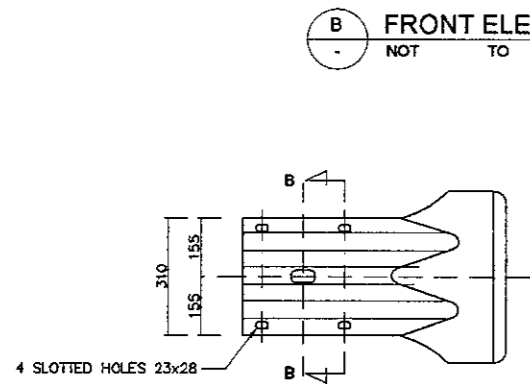
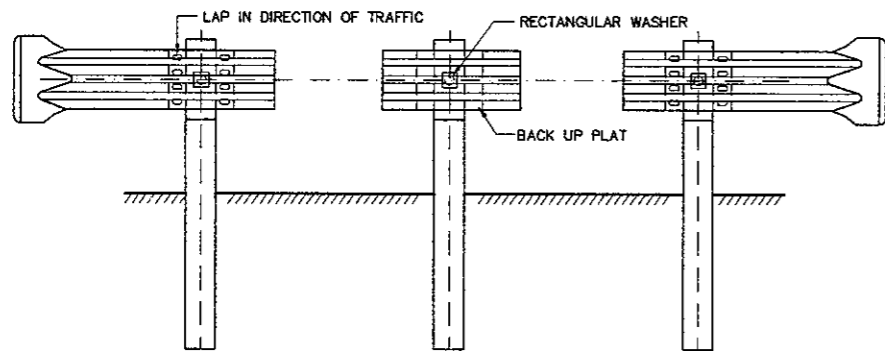
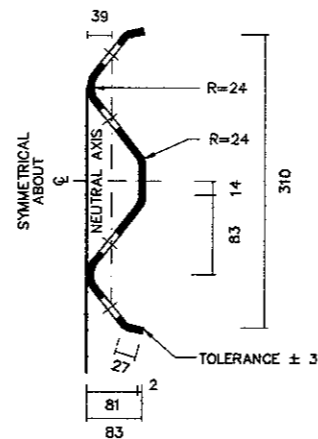
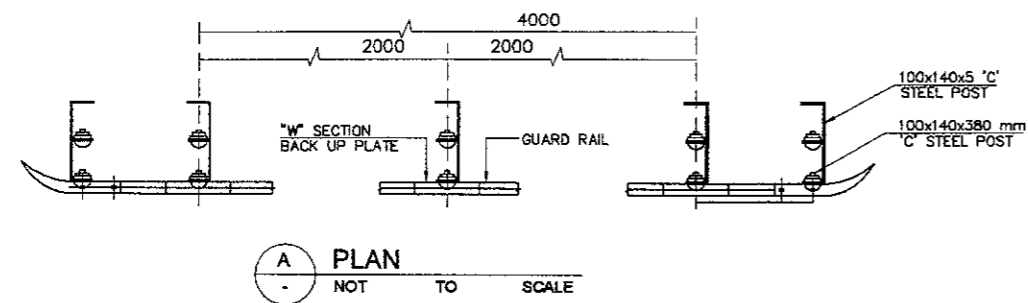
1 PLAN
 SCALE 1 : 20



4 PLAN
 SCALE 1 : 20

A STANDARD CURB-CUT RAMP (FOR PHYSICALLY HANDICAPPED)

DESIGNED BY	CHECKED BY	SUBMITTED BY
Name: R. UENO	Name: T. OKUMURA	Name: M. KIUCHI
Sign: _____	Sign: _____	Sign: _____
Date: _____	Date: _____	Date: _____

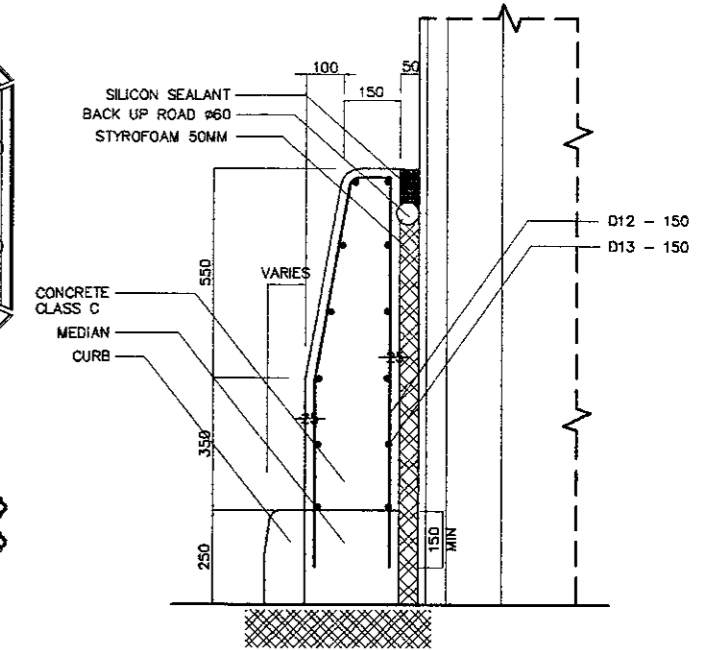
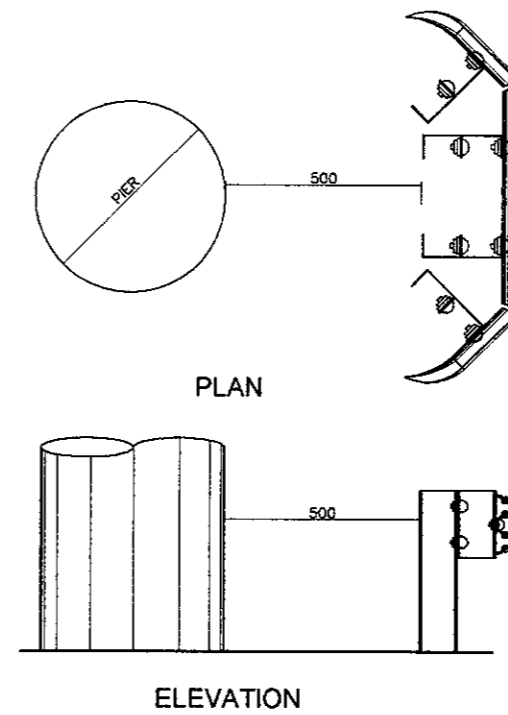


D RAIL WASHER
 NOT TO SCALE

POST BOLTS AND HOLES		
HOLE DIA. (mm)	POST BOLTS AND NUTS (mm)	WASHER
18	16x45	RECT PLATE

E DOWN STREAM END TREATMENT
 NOT TO SCALE

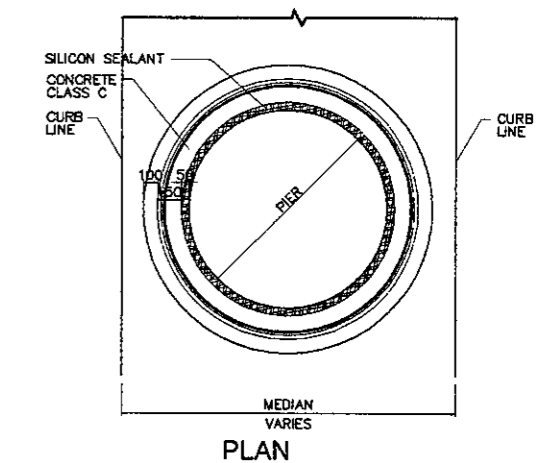
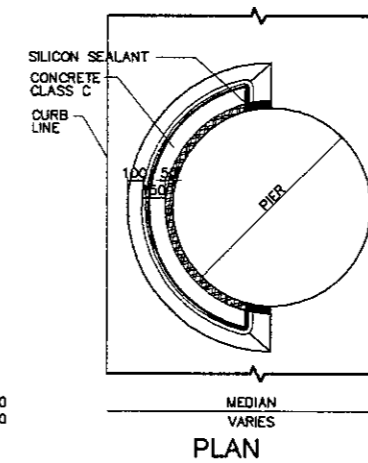
1 STEEL BEAM GUARD RAIL & RAIL DETAILS TYPE 2
 NOT TO SCALE



A DETAIL 1
 SCALE 1:20

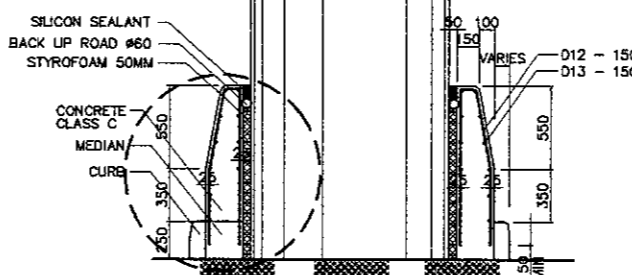
F ENLARGED SECTION A-A (SECTION B-B, SIMILAR)
 NOT TO SCALE

ELEVATION

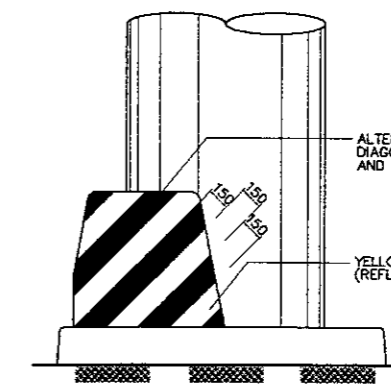


PLAN

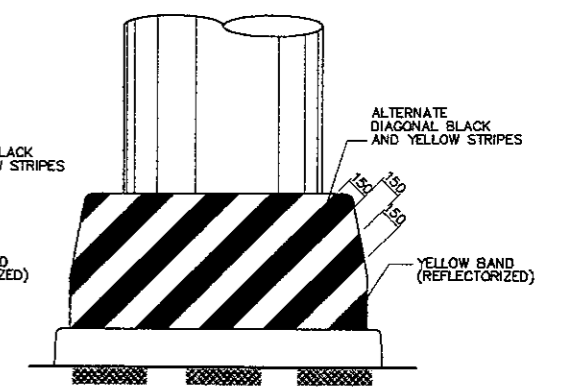
PLAN



SECTION



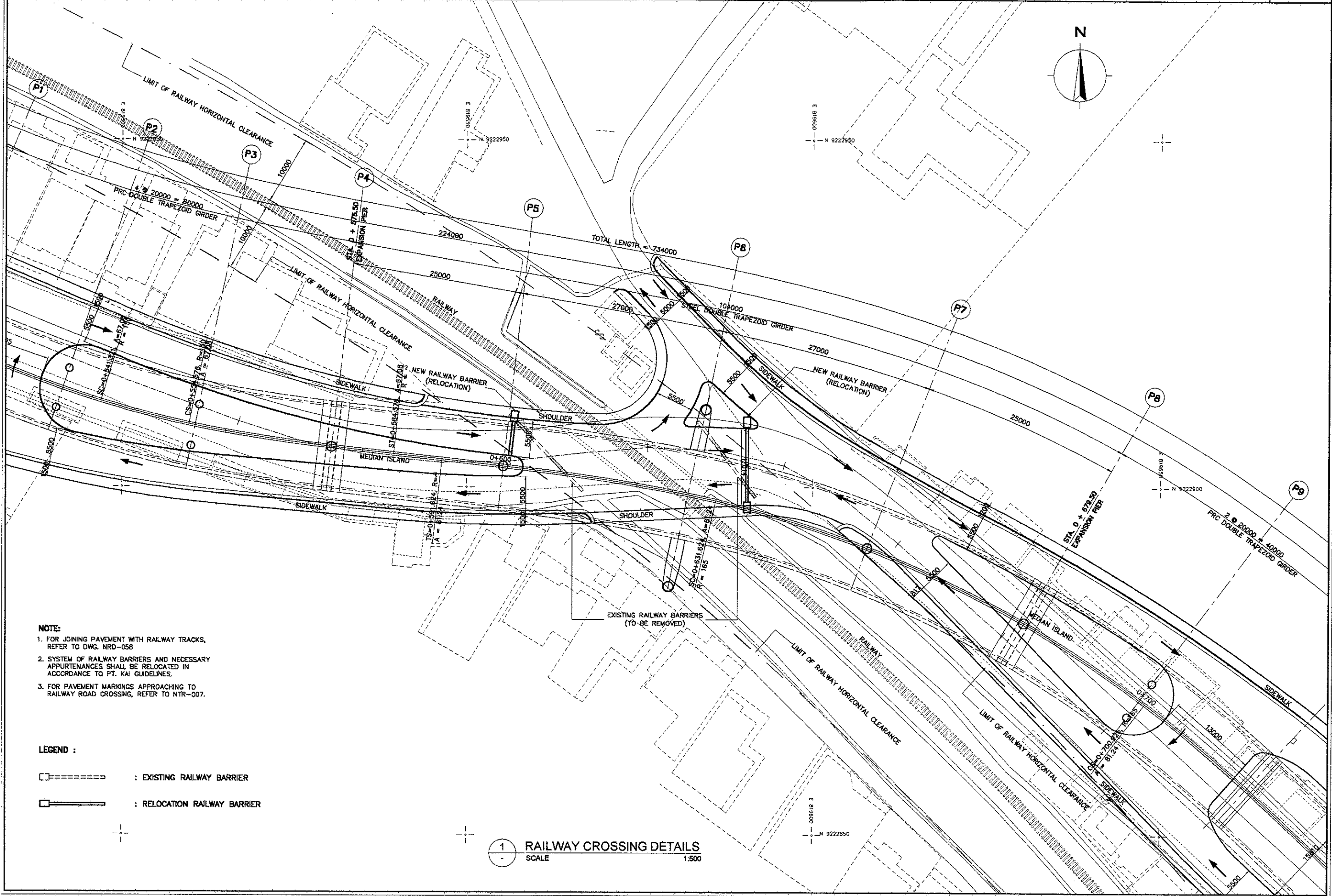
ELEVATION



ELEVATION

2 CONCRETE COLUMN PROTECTION TYPE 1
 SCALE 1:50

DESIGNED BY		CHECKED BY		SUBMITTED BY	
Name	R. UENO	Name	T. OKUMURA	Name	M. KIUCHI
Sign		Sign		Sign	
Date		Date		Date	



- NOTE:**
- FOR JOINING PAVEMENT WITH RAILWAY TRACKS, REFER TO DWG. NRD-058
 - SYSTEM OF RAILWAY BARRIERS AND NECESSARY APPURTENANCES SHALL BE RELOCATED IN ACCORDANCE TO PT. KAI GUIDELINES.
 - FOR PAVEMENT MARKINGS APPROACHING TO RAILWAY ROAD CROSSING, REFER TO NTR-007.

- LEGEND :**
- : EXISTING RAILWAY BARRIER
 - : RELOCATION RAILWAY BARRIER

1 RAILWAY CROSSING DETAILS
 SCALE 1:500