

NOTES:

- RELATIVE PATHS OF LEFT 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 USE IN OTHER PROJECTS.)

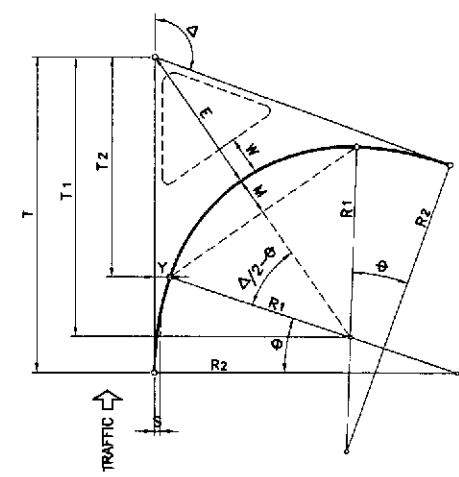
WHERE:

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

FORMULAS:

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

4 LEFT TURN LANE/S ELEMENTS
THREE CENTERED CURVE-SYMMETRICAL
RS-01



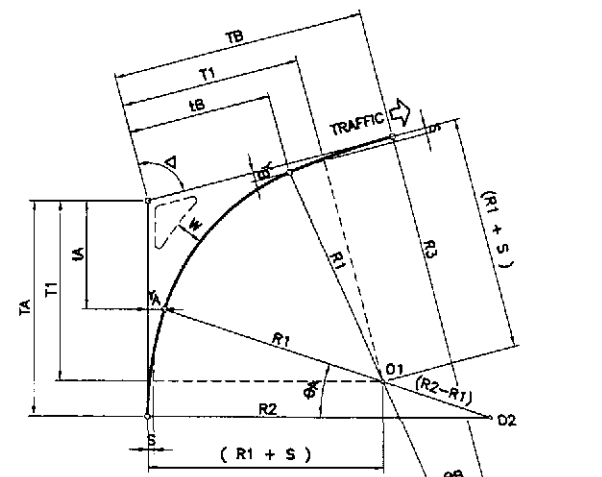
WHERE:

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 Δ/2
 T2 = T1 - R1 SIN Δ/2
 Y = (R1+S) - R1 COS Δ/2
 E = (R1+S) / COS Δ/2 - R1
 M = R1 - R1 COS Δ/2
 γ = COS⁻¹[(R2-R1-S) / (R2-R1)]

5 RIGHT TURN/S ELEMENTS
THREE CENTERED CURVE-SYMMETRICAL
RS-01



NOTES:

- FORMULAS DERIVED BELOW ARE FOR FIELD LAYOUT PURPOSE (DRAWING LAYOUT BY GRAPHICAL SOLUTION ONLY.)
- DESIGN RADII (R1, R2 & R3) AND OFFSET S AS WELL AS LANE WIDTH W (WHERE CORNER ISLANDS ARE REQUIRED UNDER CONDITIONS OBTAINING) AS BASED ON VALUES SET BY THE TEAM'S "A GUIDE TO TRAFFIC ENGINEERING AND MANAGEMENT TECHNIQUES".

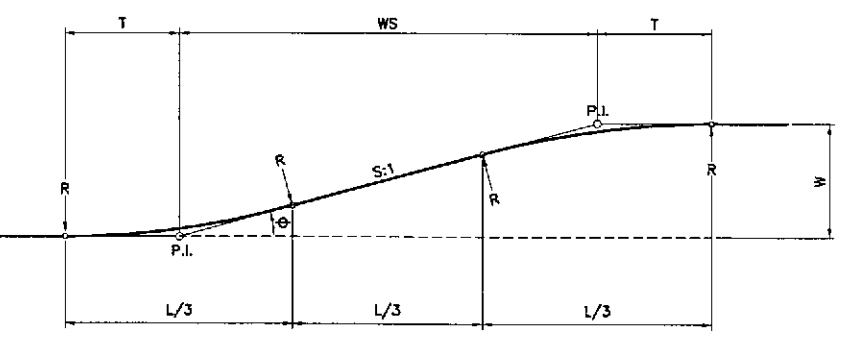
WHERE:

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:

γA = COS⁻¹[(R2-(R1+S)) / (R2-R1)]
 γB = COS⁻¹[(R3-(R1+S)) / (R3-R1)]
 T1 = (R1+S) TAN Δ/2
 TA = T1 + (R2-R1) SIN γA
 TB = T1 + (R3-R1) SIN γB
 VA = T1 - R1 SIN γA = TA - R2 SIN γA
 VB = T1 - R1 SIN γB = TB - R3 SIN γB
 YA = (R1+S) - R1 COS γA
 YB = (R1+S) - R1 COS γB

6 RIGHT TURN/S ELEMENTS
THREE CENTERED CURVE-ASYMMETRICAL
RS-01



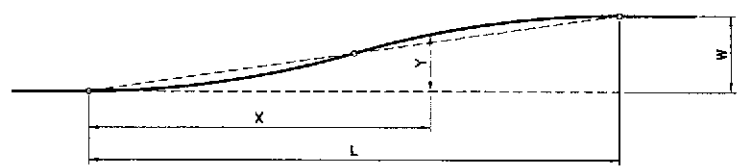
FORMULAS:

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
50 KPH	8
60 KPH	(10)
70 KPH	(12.5)
80 KPH	15
PARKING TURNOUT (ENTRANCE / EXIT)	2
BUS TURNOUT (DESIRABLE MIN)	4

(S VALUE SHOWN IN PARENTHESIS WERE INTERPOLATED FROM AASHTO)

1 ROADWAY TAPERING-L/3 TAN SECTION
(CIRCULAR CURVE ROUNDING)
RS-01



FORMULAS:

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

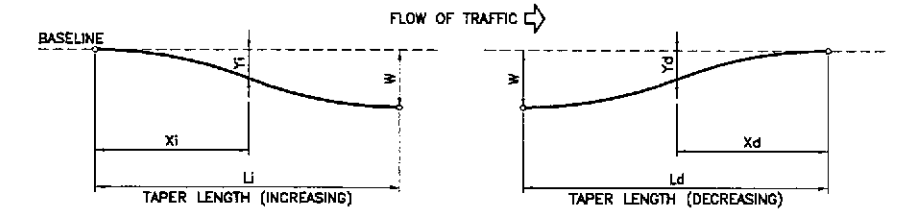
WHERE:

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

2 ROADWAY TAPERING
REVERSED PARABOLIC CURVE FLARES-SYMMETRICAL
(BY OFFSET)
RS-01



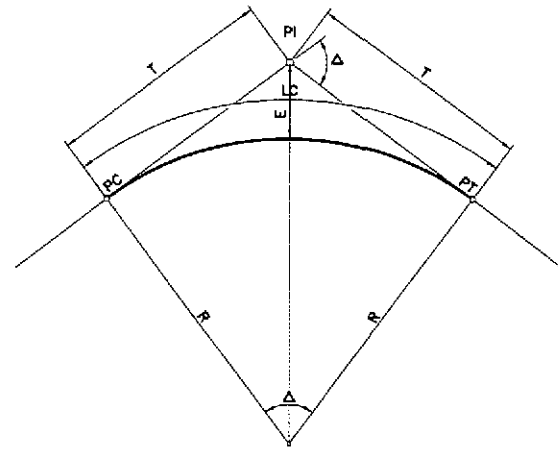
WHERE:

W = FULL WIDENING
 L = LENGTH OF TAPERING/TRANSITION
 Y = WIDENING/OFFSET FROM BASELINE @ X DISTANCE
 FOR X/L : Y = KW

INCREASING			
Xi/Li	K	Xi/Li	K
0.00	0.000	0.52	0.5103
0.02	0.0010	0.54	0.5470
0.04	0.0020	0.56	0.5836
0.06	0.0047	0.58	0.6194
0.08	0.0077	0.60	0.6548
0.10	0.0114	0.62	0.6888
0.12	0.0156	0.64	0.7217
0.14	0.0217	0.66	0.7522
0.16	0.0300	0.68	0.7789
0.18	0.0390	0.70	0.8050
0.20	0.0499	0.72	0.8286
0.22	0.0612	0.74	0.8521
0.24	0.0760	0.76	0.8741
0.26	0.0908	0.78	0.8947
0.28	0.1110	0.80	0.9128
0.30	0.1315	0.82	0.9293
0.32	0.1574	0.84	0.9440
0.34	0.1849	0.86	0.9580
0.36	0.2161	0.88	0.9691
0.38	0.2496	0.90	0.9775
0.40	0.2846	0.92	0.9849
0.42	0.3215	0.94	0.9903
0.44	0.3586	0.96	0.9952
0.46	0.3965	0.98	0.9982
0.48	0.4344	1.00	1.0000
0.50	1.4724		

DECREASING			
Xd/Ld	K	Xd/Ld	K
0.00	1.0000	0.52	0.1967
0.02	0.9964	0.54	0.1784
0.04	0.9905	0.56	0.1613
0.06	0.9810	0.58	0.1453
0.08	0.9660	0.60	0.1304
0.10	0.9438	0.62	0.1162
0.12	0.9200	0.64	0.1034
0.14	0.8920	0.66	0.0916
0.16	0.8602	0.68	0.0807
0.18	0.8238	0.70	0.0708
0.20	0.7816	0.72	0.0622
0.22	0.7324	0.74	0.0543
0.24	0.6822	0.76	0.0473
0.26	0.6340	0.78	0.0407
0.28	0.5848	0.80	0.0348
0.30	0.5365	0.82	0.0288
0.32	0.4912	0.84	0.0236
0.34	0.4478	0.86	0.0190
0.36	0.4092	0.88	0.0150
0.38	0.3748	0.90	0.0116
0.40	0.3443	0.92	0.0082
0.42	0.3144	0.94	0.0052
0.44	0.2868	0.96	0.0028
0.46	0.2610	0.98	0.0012
0.48	0.2373	1.00	0.0000
0.50	0.2163		

3 ROADWAY TAPERING
REVERSED PARABOLIC CURVE ASYMMETRICAL
(BY OFFSET)
RS-01



WHERE :

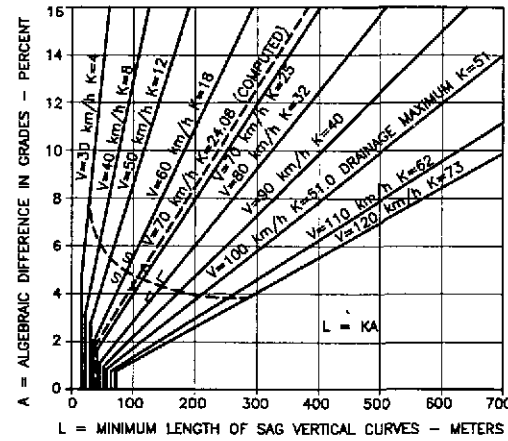
PI = POINT OF INTERSECTION
 Δ = INTERSECTION ANGLE
 R = CURVE RADIUS
 T = TANGENT LENGTH
 LC = CURVE LENGTH
 E = EXTERNAL DISTANCE
 PC = BEGINNING OF CIRCULAR CURVE
 PT = END OF CIRCULAR CURVE

FORMULAS:

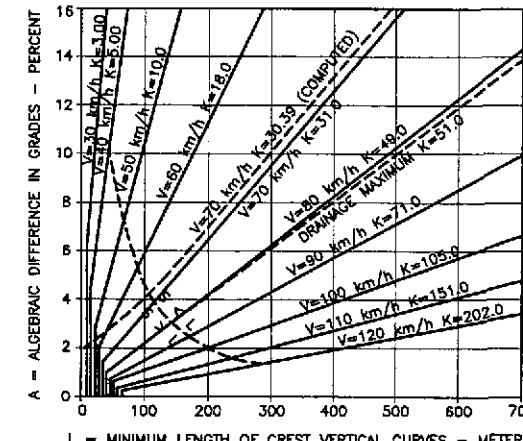
$T = R (\tan \Delta/2)$
 $LC = \frac{\pi R \Delta}{180}$
 $E = T (\tan \Delta/4)$

NOTE :

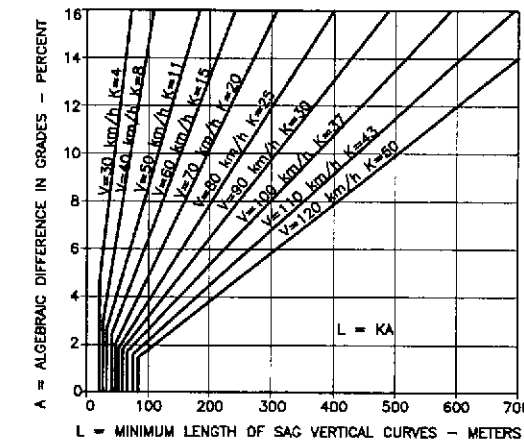
NO HORIZONTAL CURVE IS REQUIRED WHEN THE INTERSECTION ANGLE IS LESS THAN ONE DEGREE (1')



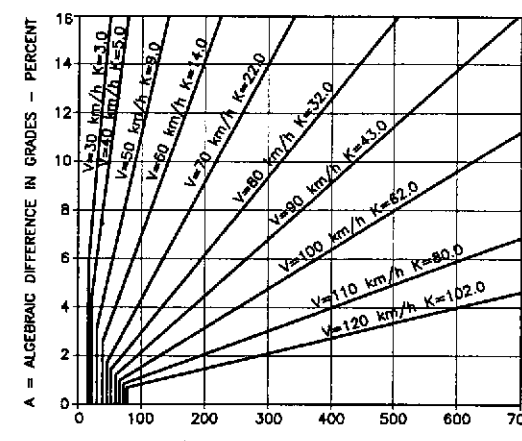
A = ALGEBRAIC DIFFERENCE IN GRADES - PERCENT
 L = MINIMUM LENGTH OF SAG VERTICAL CURVES - METERS



A = ALGEBRAIC DIFFERENCE IN GRADES - PERCENT
 L = MINIMUM LENGTH OF CREST VERTICAL CURVES - METERS



A = ALGEBRAIC DIFFERENCE IN GRADES - PERCENT
 L = MINIMUM LENGTH OF SAG VERTICAL CURVES - METERS



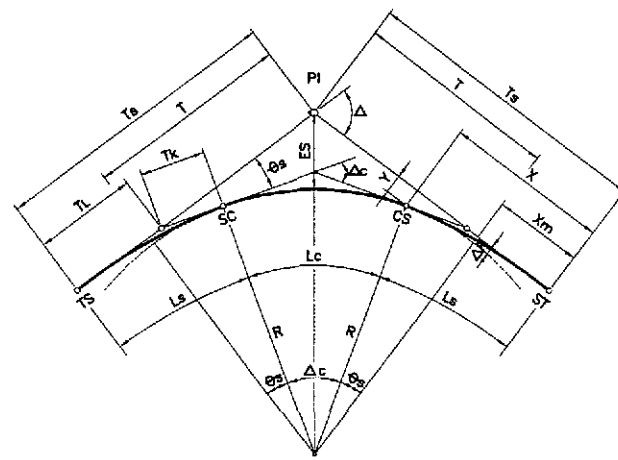
A = ALGEBRAIC DIFFERENCE IN GRADES - PERCENT
 L = MINIMUM LENGTH OF CREST VERTICAL CURVES - METERS

5a MAIN BYPASS
 RS-02

5b ACCESS ROADS
 RS-02

2 HORIZONTAL CURVE (CIRCULAR)
 RS-02

5 DESIGN CONTROLS FOR VERTICAL CURVES
 RS-02



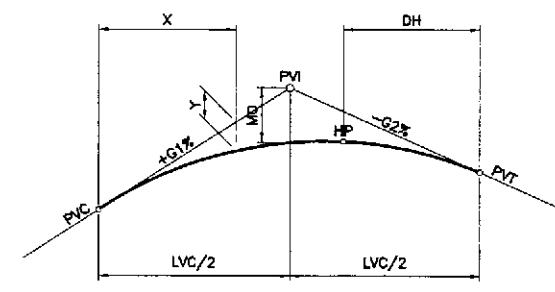
WHERE :

PI = POINT OF INTERSECTION
 Δ = INTERSECTION ANGLE
 R = CURVE RADIUS
 Es = EXTERNAL DISTANCE
 Ls = LENGTH OF SPIRAL
 A = PARAMETER OF CLOTHOID
 θ_s = 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
 Tl = LONG TANGENT OF SPIRAL
 Tx = SHORT TANGENT OF SPIRAL
 Ls = LENGTH OF SPIRAL
 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

FORMULAS:

$A^2 = R(Ls)$
 $\theta_s = Ls(D/40)$
 $x = Ls \left(1 - \frac{Ls^2}{40R^2}\right)$
 $y = \frac{Ls^2}{6R} \left(1 - \frac{Ls^2}{56R^2}\right)$
 $\Delta R = y + R \cos \theta_s - R$
 $X_m = x - R \sin \theta_s$
 $T = (R + \Delta R) \tan \Delta/2$
 $T_s = X_m + T$
 $\Delta c = \Delta - 2\theta_s$
 $L_c = \pi R \Delta c / 180$
 $T_l = x - (y / \tan \theta_s)$
 $T_x = \frac{y}{\sin \theta_s}$
 $E_s = \left[R + \frac{y}{4} \right] \sec \frac{\Delta}{2} - R$



WHERE :

PVI = VERTICAL POINT OF INTERSECTION
 PVC = VERTICAL POINT OF CURVATURE
 PVT = VERTICAL POINT OF TANGENCY
 LVC = LENGTH OF VERTICAL CURVE
 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

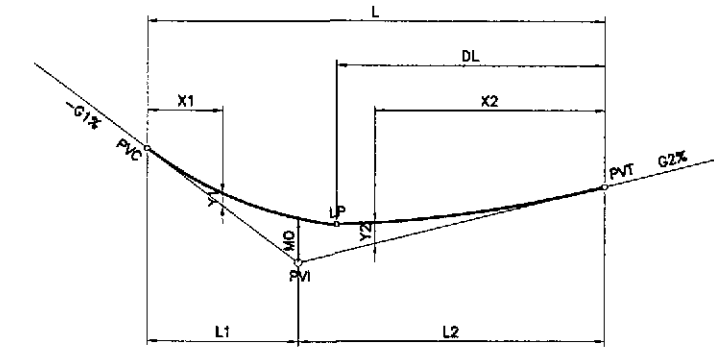
FOR SYMMETRICAL VERTICAL PARABOLIC CURVES :

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

(WHERE G IS THE LESSER GRADE)

NOTES :

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



WHERE :

L1 = SHORT SIDE OF VERTICAL CURVE LENGTH
 L2 = 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 :

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

NOTES :

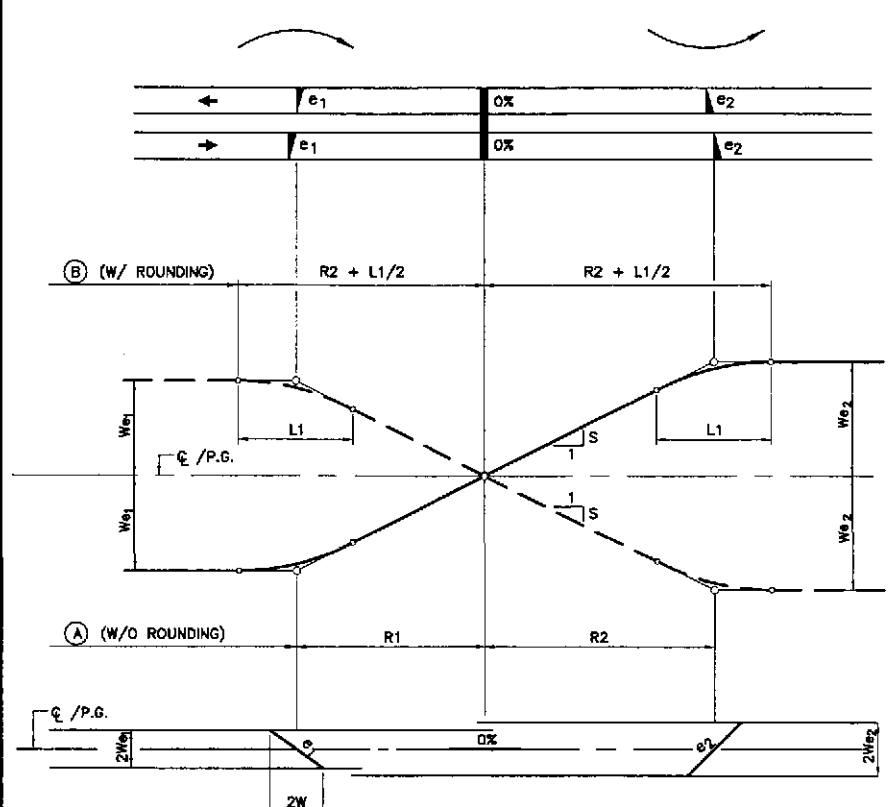
1. SIMILARLY APPLIES TO LP (LOW POINT) OF SAG VERTICAL CURVES
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1 HORIZONTAL CURVE WITH TRANSITION (CLOTHOID SPIRAL)
 RS-02

3 VERTICAL PARABOLIC CURVE (SYMMETRICAL)
 RS-02

4 VERTICAL PARABOLIC CURVE (ASYMMETRICAL)
 RS-02

	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS					PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE :	SHEET CONTENTS : GEOMETRIC DESIGN STANDARD - 2 HORIZONTAL AND VERTICAL CURVES	SHEET NO. : RS-02
	CHECKED	DATE	SIGNATURE		BUREAU OF DESIGN						NOT TO SCALE		
	SUBMITTED	DATE	SIGNATURE		Submitted By:	Reviewed By:	Recommended By:	Approved By:	FULL SIZE A1				
			DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES DIC, Director IV	MANUEL M. BONDAN Undersecretary	SIMEON A. DATUMANONG Secretary						

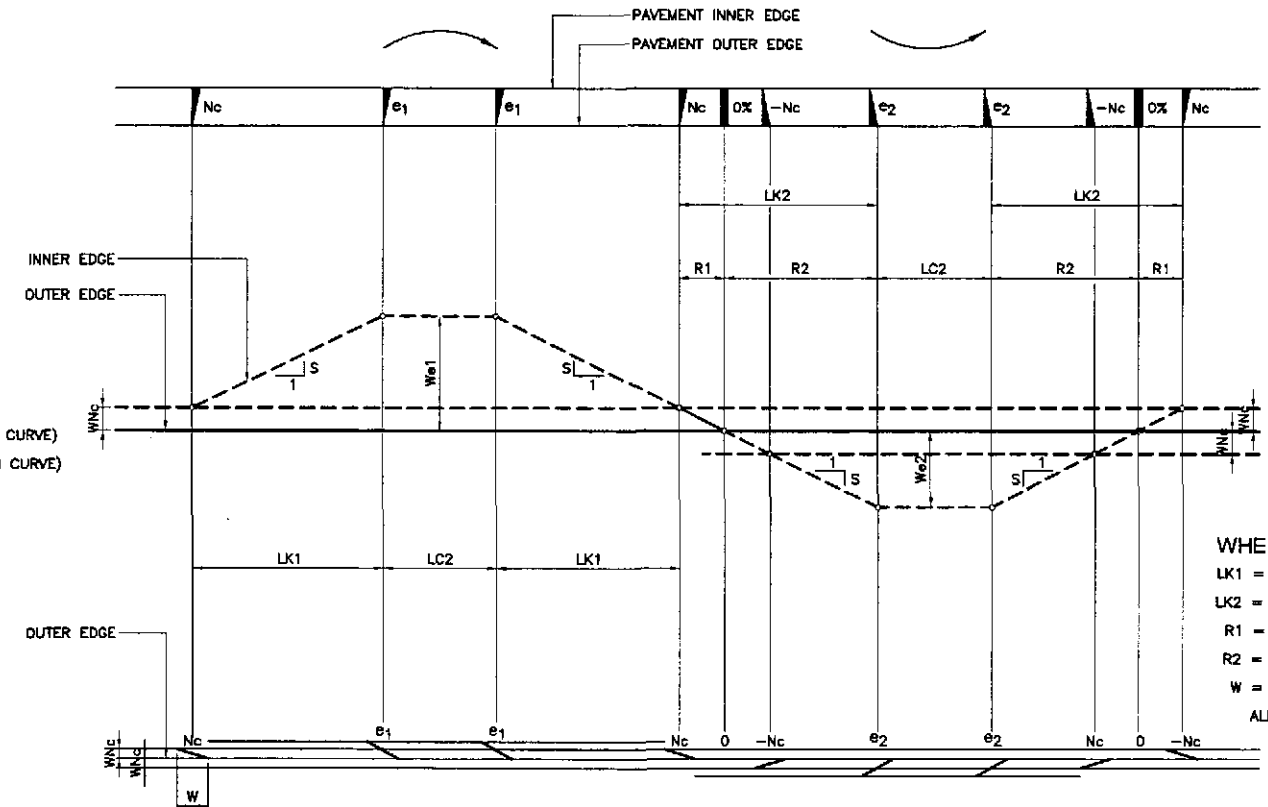


$$R1 = \frac{We_1}{S}$$

$$R2 = \frac{We_2}{S}$$

$$L1 = \frac{Wnc}{S}$$

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



$$LK1 = \frac{W}{S} (e_1 - NC)$$

$$R1 = \frac{Wnc}{S}$$

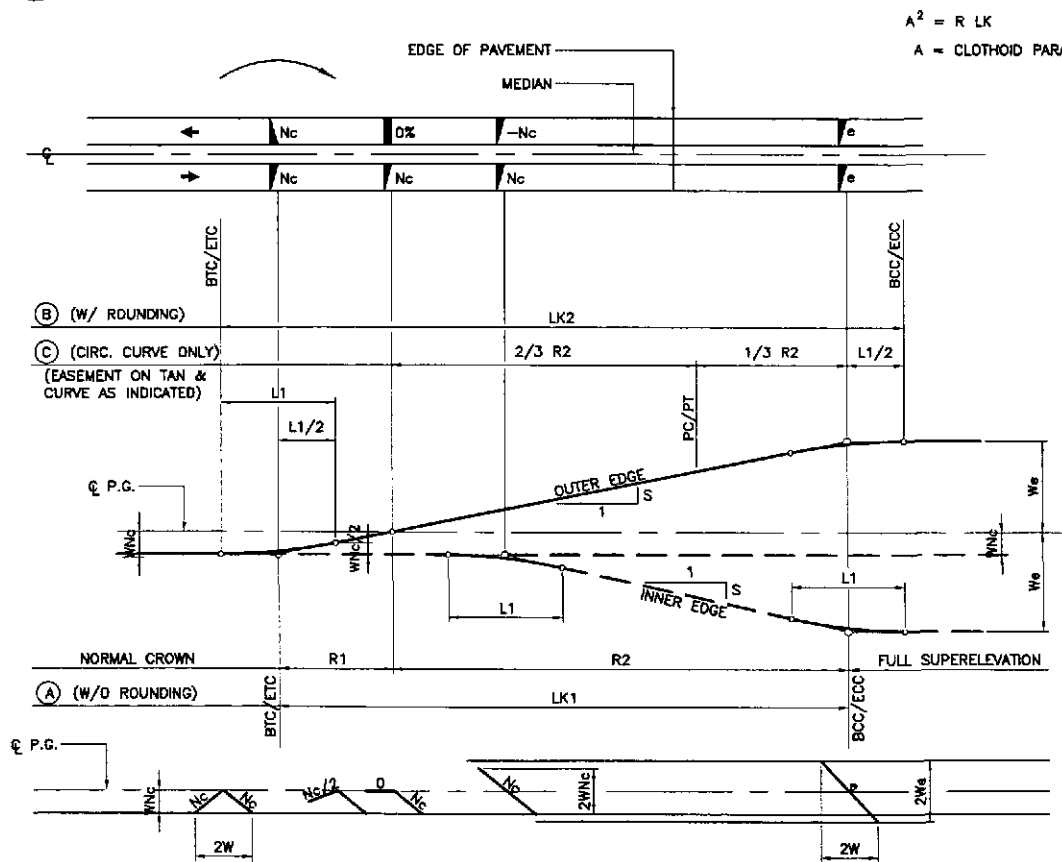
$$R2 = \frac{We_2}{S}$$

$$LK2 = R1 + R2 = \frac{W}{S} (Nc + e_2)$$

WHERE :
 LK1 = MIN. LENGTH OF EASEMENT/CLOTHOID (1st CURVE)
 LK2 = MIN. LENGTH OF EASEMENT/CLOTHOID (2nd CURVE)
 R1 = LENGTH OF SUPERELEVATION RUNOFF
 R2 = LENGTH OF SUPERELEVATION RUNOFF (2nd CURVE)
 W = CARRIAGEWAY (NORMAL)
 ALL OTHER NOMENCLATURE THE SAME

2 SUPERELEVATION TRANSITION-REVERSE CURVE (MAIN ROAD)
 RS-03

3 SUPERELEVATION TRANSITION-(RAMPS)
 PAVEMENT REVOLVED ABOUT OUTER EDGE
 RS-03



$$A^2 = R LK$$

A = CLOTHOID PARAMETER

$$R1 = \frac{Wnc}{S}$$

$$R2 = \frac{We}{S}$$

$$L1 = \frac{Wnc}{S}$$

$$LK1 = R1 + R2 = \frac{W}{S} (Nc + e)$$

$$LK2 = L1 + LK1 = \frac{W}{S} (2Nc + e)$$

WHERE :
 LK1 = MIN. LENGTH OF EASEMENT/CLOTHOID (W/O ROUNDING) L1
 LK2 = MIN. LENGTH OF EASEMENT/CLOTHOID (W/ ROUNDING)
 R1 = SUPERELEVATION RUNOUT LENGTH (WITHIN CLOTHOID) *
 R2 = SUPERELEVATION RUNOFF LENGTH
 L1 = LENGTH OF ROUNDING
 W = CARRIAGEWAY (ONE DIRECTION)
 e = SUPERELEVATION RATE
 Nc = NORMAL CROWN SLOPE
 S = RELATIVE SLOPE OF EDGES W/ e

* OTHER AUTHORITIES PLACE R1 ALONG THE TANGENT

1 SUPERELEVATION TRANSITION (MAIN ROAD)
 RS-03

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

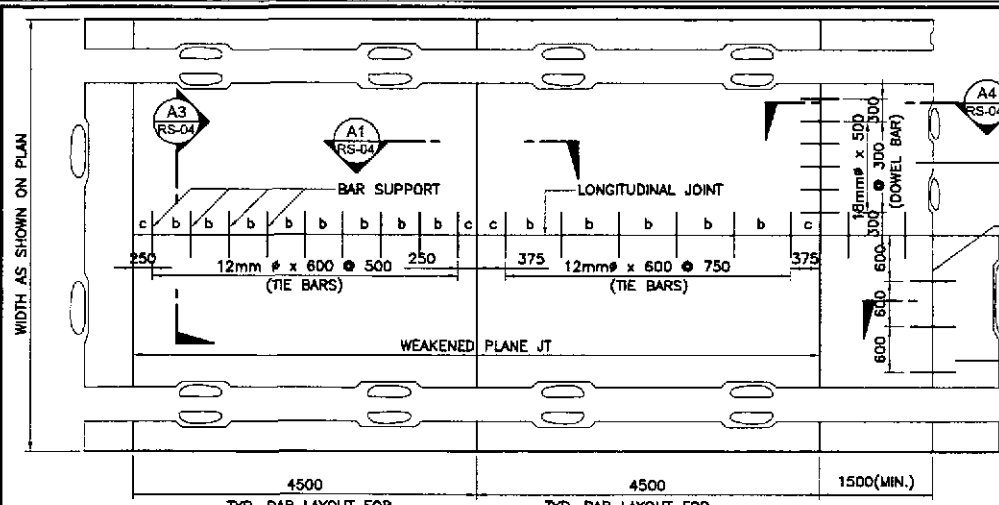
SUPERELEVATION "e" RATES

MAIN ROAD			RAMPS		
D	R	V=80 KPH e _{max} =0.080	D	R	V=40 KPH e _{max} =0.070
0'-10'	6,875.36	NC (0.004)	0'-30'	2,291.83	NC (0.003)
-20	3,437.78	NC (0.008)	1'-00'	1,145.92	NC (0.007)
-30	2,291.83	NC (0.013)	-30	763.94	NC (0.010)
-40	1,718.87	(0.016)	2'-00'	572.96	RC (0.013)
-50	1,375.10	0.021	-30	458.37	RC (0.016)
1'-00'	1,145.92	0.024	3'-00'	361.97	RC (0.019)
-10	982.21	0.027	-30	327.40	(0.022)
-20	858.44	0.030	4'-00'	286.48	0.024
-30	763.94	0.033	-30	254.65	0.027
-40	687.55	0.036	5'-00'	229.18	0.030
-50	625.05	0.039	6'-00'	190.99	0.035
2'-00'	572.96	0.041	7'-00'	163.70	0.039
-10	528.68	0.044	8'-00'	143.24	0.043
-20	491.11	0.046	9'-00'	127.32	0.047
-30	458.37	0.048	10'-00'	114.59	0.050
-40	429.72	0.050	11'-00'	104.17	0.054
-50	404.44	0.052	12'-00'	104.17	0.057
3'-00'	381.97	0.053	13'-00'	86.15	0.060
-10	361.87	0.055	14'-00'	81.85	0.062
-20	343.78	0.056	15'-00'	76.39	0.065
-30	327.40	0.057	16'-00'	71.62	0.066
-40	312.52	0.058	17'-00'	67.42	0.068
-50	298.93	0.059	18'-00'	63.68	0.069
4'-00'	286.48	0.059	19'-00'	60.31	0.069
-10	275.02	0.060	20'-00'	57.30	0.070
-20	264.44	0.060	-30	55.90	0.070
-30	254.65	0.060	-50	55.00	0.070

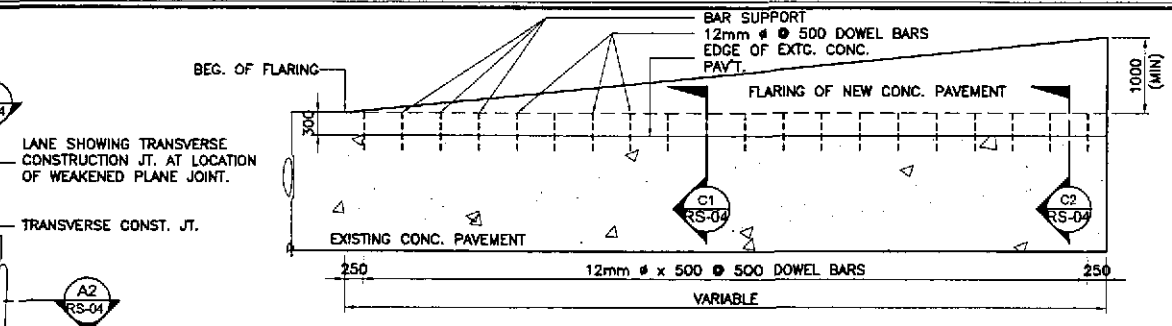
- NOTES:
- RATE OF SUPERELEVATION "e" AS SHOWN IN TABLE.
 - ROUNDING "L1" IS OPTIONAL AND NECESSARY ONLY IF "S" IS GREATER THAN THAT SHOWN IN TABLE.
 - SIDEWALKS SHALL ALWAYS SLOPE TOWARDS THE TRAVELWAY.
 - SHOULDERS OF THE MAIN ROADS SHALL ALWAYS SLOPE OUTWARD THE TRAVELWAY IRRESPECTIVE OF THE RATE OF "e". NORMAL SHOULDER SLOPE SHALL BE THE SAME AS THE TRAVELWAY.
 - FOR THE INTERCHANGE RAMPS, TREATMENT FOR THE OUTER OR THE RIGHT SIDE SHOULDER SHALL BE THE SAME AS THE ABOVE. THE INNER SHOULDER SHALL ALWAYS SLOPE TOWARDS THE LEFT OR THE INSIDE. WHERE "e" IS IN THE OPPOSITE DIRECTION THE ALGEBRAIC SUM OF THE SLOPES OF THE SHOULDER AND TRAVELWAY SHALL BE EQUAL TO 8.0%.
 - SUPERELEVATION "e" RATES AS SHOWN IN TABLE ARE BASED ON A PARABOLIC FORM OF DISTRIBUTION.

NC = NORMAL CROWN SLOPE (0.020)
 (WHERE THEORETICAL e ≤ NC/2)
 RC = REMOVE ADVERSE CROWN & SUPERELEVATE AT NC
 (WHERE THEORETICAL e > NC/2)

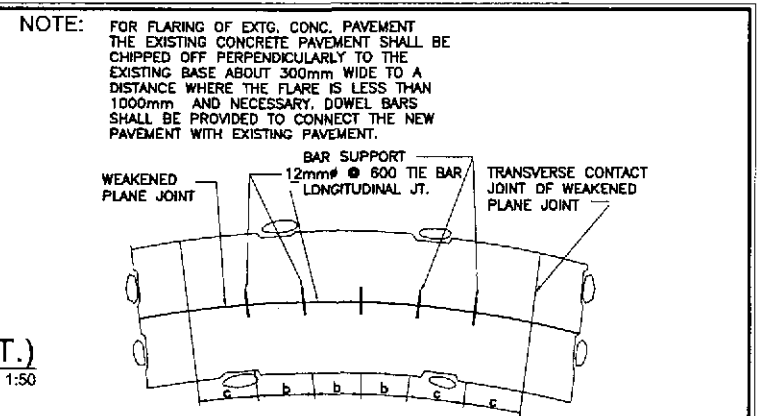
<p>JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL YAO YACHIYO ENGINEERING CO., LTD.</p>	DESIGNED: 9/11/02 CHECKED: 9/10/02 SUBMITTED: 9/13/02	<p>DANILO C. TRAJANO Project Director</p>	<p>JOSEFINA M. ALAGAR Chief, Highways Division</p>	<p>GILBERTO S. REYES DIC, Director IV</p>	<p>MANUEL M. BONDAN Underscretary</p>	<p>SIMED A. DATUMANONG Secretary</p>	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE : NOT TO SCALE FULL SIZE A1	SHEET CONTENTS : GEOMETRIC DESIGN STANDARD - 3 SUPERELEVATION ATTAINMENT/ DETAILS DIAGRAMATIC PROFILES/ SECTIONS	SHEET NO. : RS-03
	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN OFFICE OF THE SECRETARY									



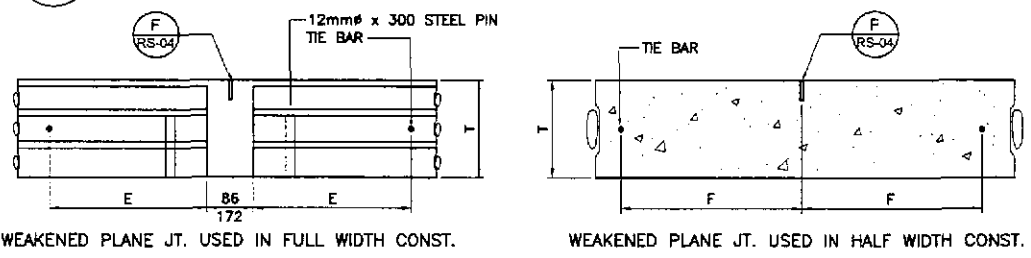
A TYPICAL PLAN OF TWO LANE PAVEMENT
RS-04 SCALE 1:50



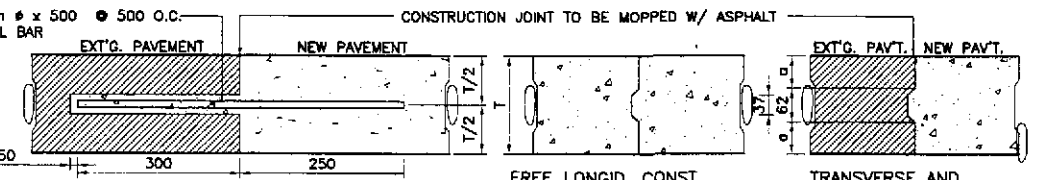
C PLAN (SHOWING FLARING OF EXISTING CONC. PAV'T.)
RS-04 SCALE 1:50



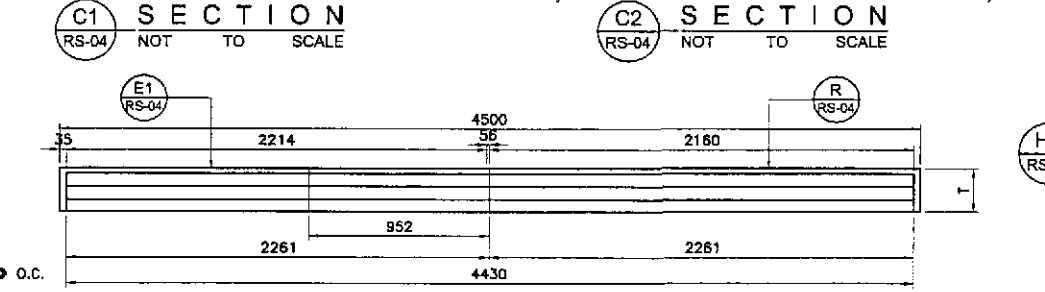
G BAR SPACING ALONG CURVES DETAIL
RS-04 SCALE



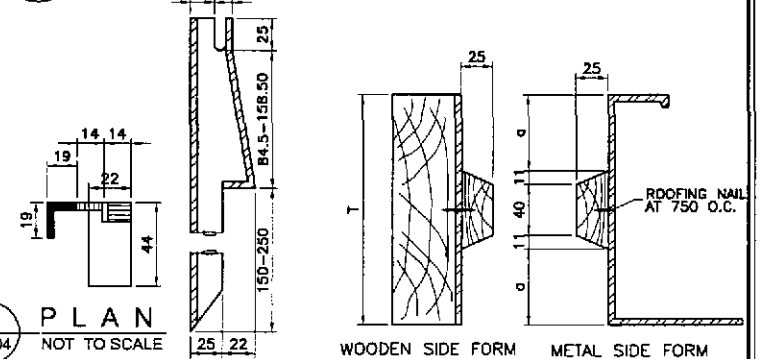
F WEAKENED PLANE JT. USED IN FULL WIDTH CONST.
F WEAKENED PLANE JT. USED IN HALF WIDTH CONST.



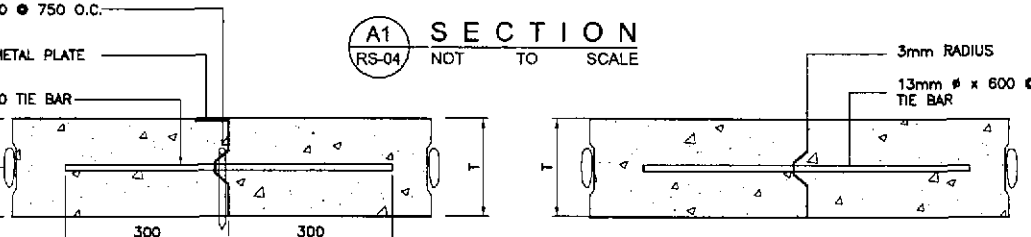
C1 SECTION (TO BE USED FOR FLARING EX'TG. CONC. PAVEMENT)
C2 SECTION (TO BE PROVIDED IN PAVEMENT MORE THAN FOUR LANES IN WIDTH)
R (TO BE USED ONLY FOR CONNECTIONS W/ EX'TG. CONCRETE PAVEMENT)



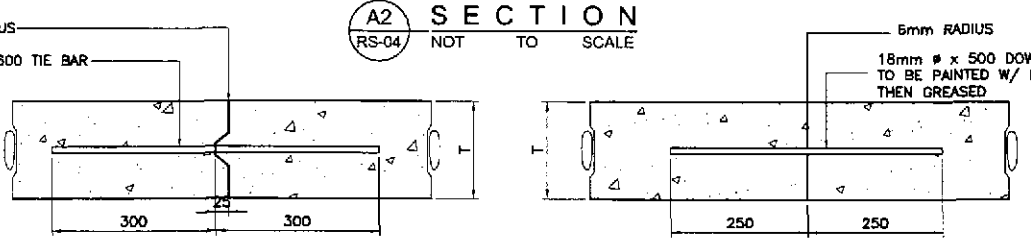
D ELEVATION (SHOWING ASSEMBLY OF DEFORMED PLATE FOR 4.50m. PANEL)
RS-04 SCALE



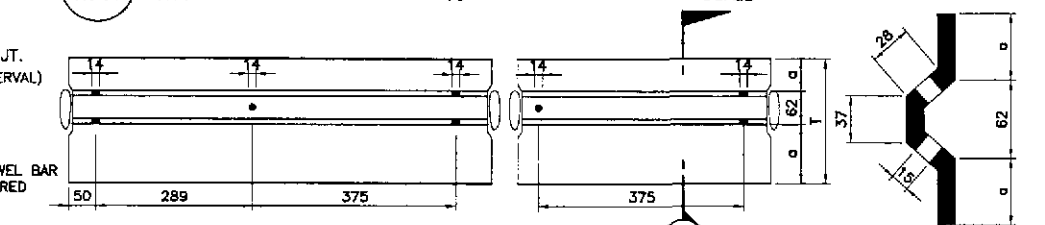
H1 PLAN
H2 ELEVATION
J SIDE FORM DETAIL



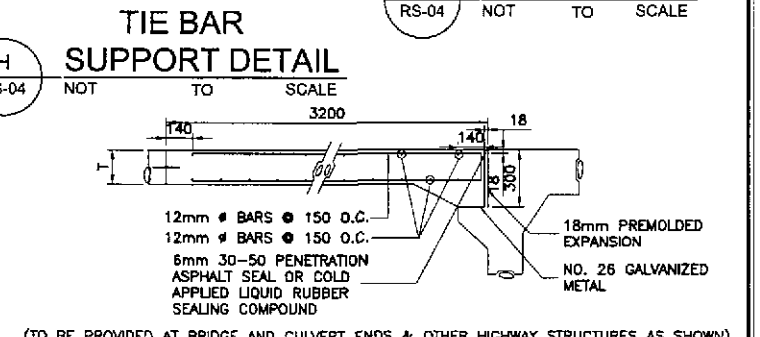
A1 SECTION (TO BE USED FOR FULL WIDTH OR SIMULTANEOUS CONST. OF TWO OR MORE LANES)
A2 SECTION (TO BE PLACED ONLY IN MIDDLE THIRD OF NORMAL JOINT INTERVAL)



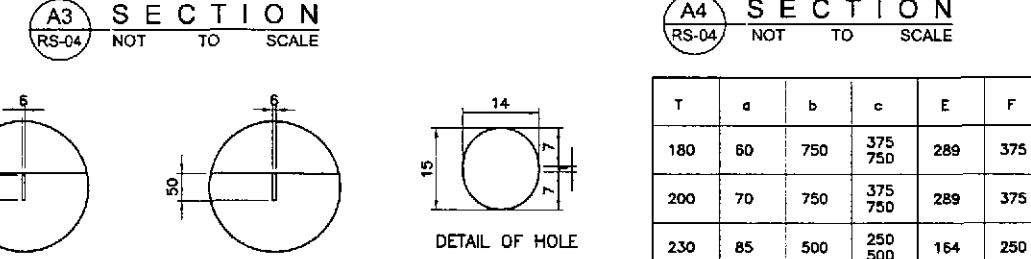
A3 SECTION (TO BE USED FOR HALF WIDTH OR LANE AT TIME OF CONSTRUCTION)
A4 SECTION (TO BE PLACED ONLY AT LOCATION OF WEAKENED PLANE JOINT)



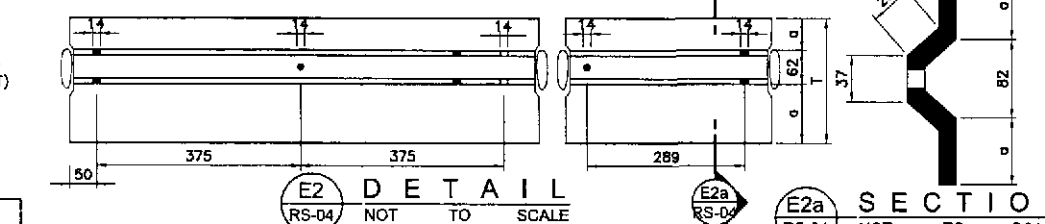
E1 DETAIL
E1a SECTION



I TRANSVERSE EXPN. JOINT DETAIL
RS-04 SCALE



F WEAKENED GROOVE DETAIL
RS-04 SCALE



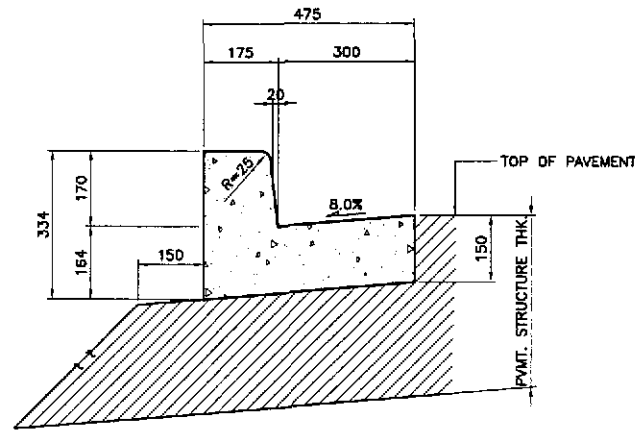
E2 DETAIL
E2a SECTION
B DOWELLED EXPN. JOINT DETAIL

T	a	b	c	E	F
180	60	750	375 750	289	375
200	70	750	375 750	289	375
230	85	500	250 500	164	250
250	95	500	250 500	164	250
280	110	500	250 500	164	250

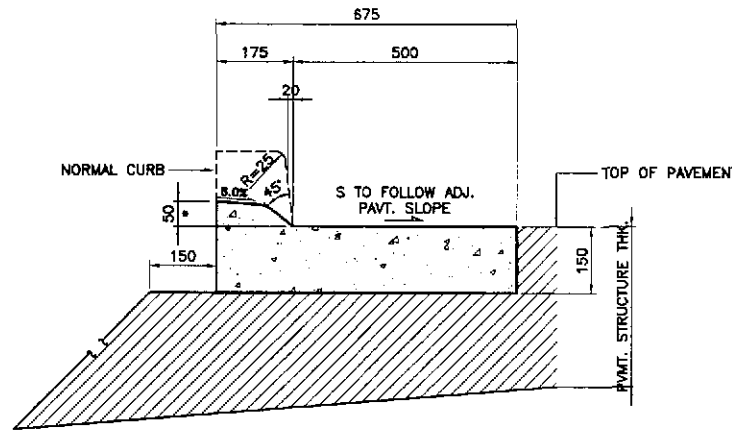
TABLE OF DIMENSIONS

- NOTES:**
- MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE "GENERAL SPECIFICATIONS FOR ROADS AND BRIDGES 1995".
 - CONSTRUCTIONS (CONTACT JOINTS ARE FORMED WHEN CONCRETE ON ONE SIDE OF THE JOINT IS POURED AHEAD AND ALLOWED TO SET BEFORE POURING ON THE OTHER SIDE.
 - AT CONSTRUCTION JOINT, (LONGITUDINAL OR TRANSVERSE) CARE SHOULD BE TAKEN THAT NO CONCRETE FROM THE LAST SLAB PLACED OVERHANGS ANY PORTION OF FIRST SLAB.
 - ALL BARS SHALL BE DEFORMED STEEL BARS.
 - TYPE OF WEAKENED PLANE JOINT TO BE USED SHALL BE AS SPECIFIED IN THE PLANS AND ONLY ONE TYPE SHALL BE USED FOR THE WHOLE PROJECT.
 - MATERIAL FOR THE DEFORMED METAL PLATE SHALL BE BRAND NEW SHEET METAL GAUGE NO. 18 OF IRON FREE FROM RUST AND KINKS.
 - AT LEAST SIX(6) SUCCESSIVE DOWEL BUTT JOINTS AT NORMAL JOINT SPACING, SHALL BE PROVIDED BEFORE OR AFTER AN EXPANSION JOINT.
 - THE GROVE OR CRACK ABOVE JOINT (LONGITUDINAL OR TRANSVERSE) SHALL BE SEALED WITH 30-50 PENETRATION ASPHALT SEAL OR COLD APPLIED LIQUID RUBBER COMPOUND AFTER THE CONCRETE HARDENS AND BEFORE OPENING THE PAVEMENT TO TRAFFIC. PENETRATION ASPHALT SEAL ON CONCRETE PAVEMENT JOINTS SHOULD BE POURED IN SUCH MANNER THAT SPILLING WILL BE ELIMINATED/PREVENTED THUS, PROVIDE SMOOTH RIDING/LEVELLING SURFACE.
 - ALL TRANSVERSE JOINTS, EXCEPT CONSTRUCTION JOINTS, SHALL BE CONTINUOUS FROM EDGE TO EDGE.
 - ALL LONGITUDINAL JOINTS SHALL MEET AT INTERSECTIONS WITH NO GAP OR OFFSETS.
 - WHEN WIDTH OF LANE IS THIRTY SIX(36) METERS OR LESS, SIZE OF THE BAR MAY BE REDUCED TO 12mm DIAMETER.
 - ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

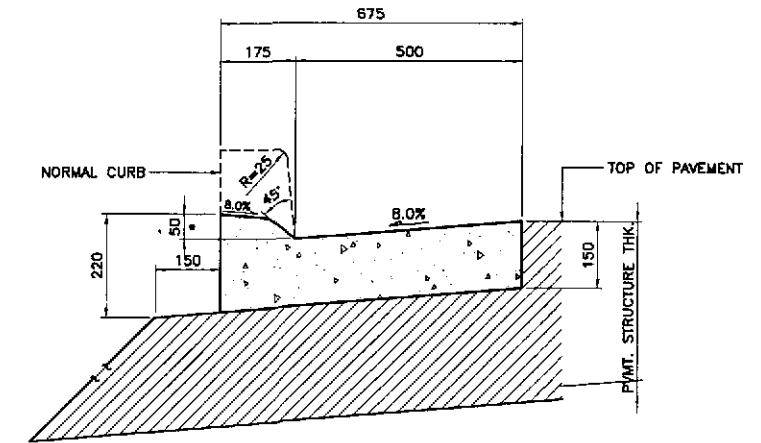
	DATE: 7/8/02 DESIGNED: [Signature] CHECKED: 9/20/02 SUBMITTED: 9/23/02	SIGNATURE: [Signature] P.M. - PMO Submitted By: [Signature] Reviewed By: [Signature] Recommended By: [Signature] Approved By: [Signature]	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN OFFICE OF THE SECRETARY	PROJECT AND LOCATION: THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE: NOT TO SCALE FULL SIZE A1	SHEET CONTENTS: STANDARD PORTLAND CEMENT CONCRETE PAVEMENT	SHEET NO.: RS-04
	DANILLO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES Dir. Director IV	MANUEL M. BONDAN Undersecretary	SIMON A. DATUMANONG Secretary		
	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS YEO YACHIYO ENGINEERING CO., LTD.						



1c TYPE "C"
RS-05

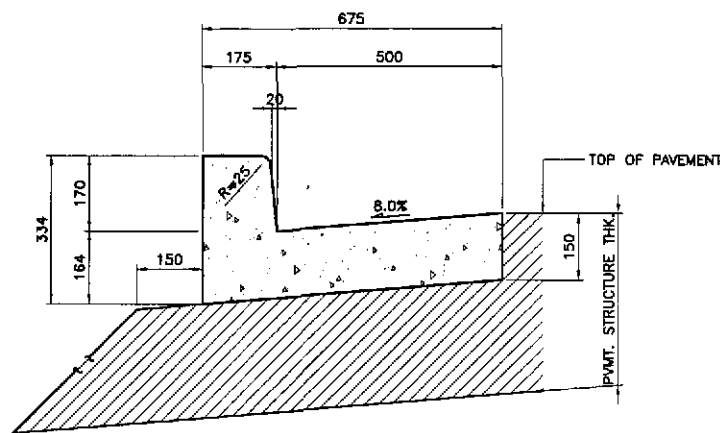


2c TYPE "B"
RS-05

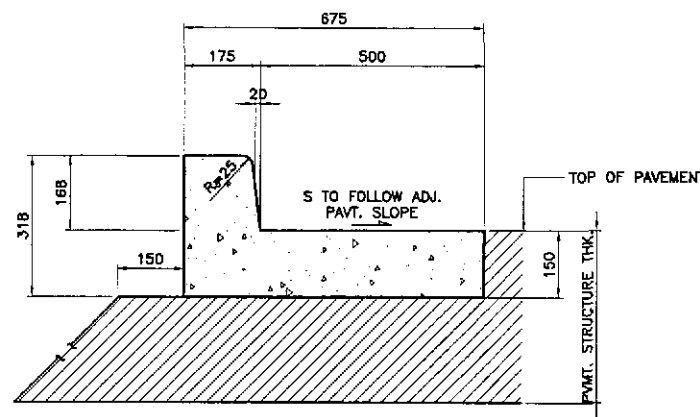


* 30 FOR RAMPS FOR PHYSICALLY HANDICAPPED

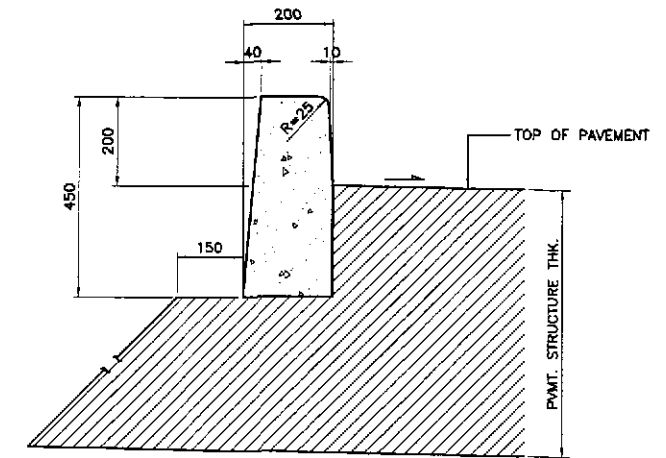
3 CONCRETE DROP CURB AND GUTTER (MODIFIED)
RS-05 NOT TO SCALE



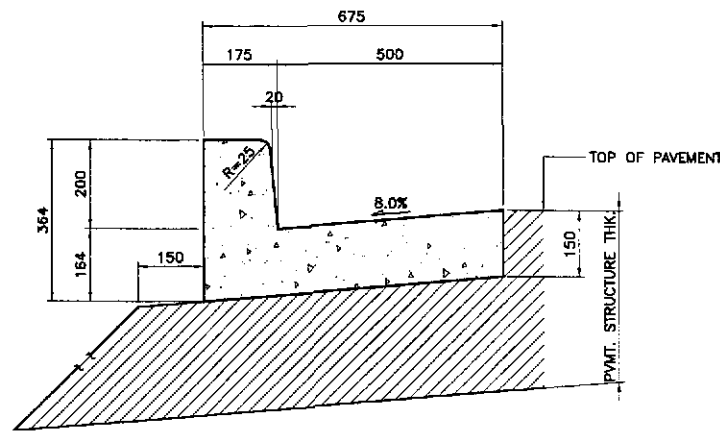
1b TYPE "B"
RS-05



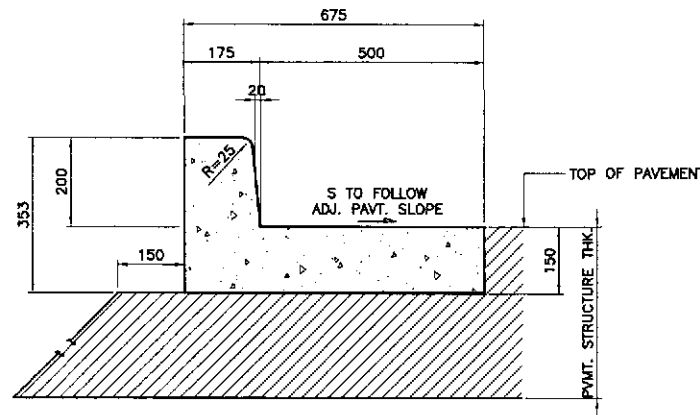
2b TYPE "B"
RS-05



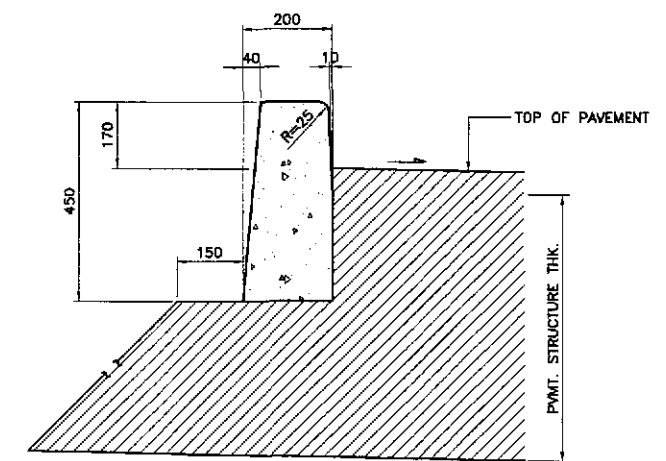
4a TYPE "A"
RS-05



1a TYPE "A"
RS-05



2a TYPE "A"
RS-05



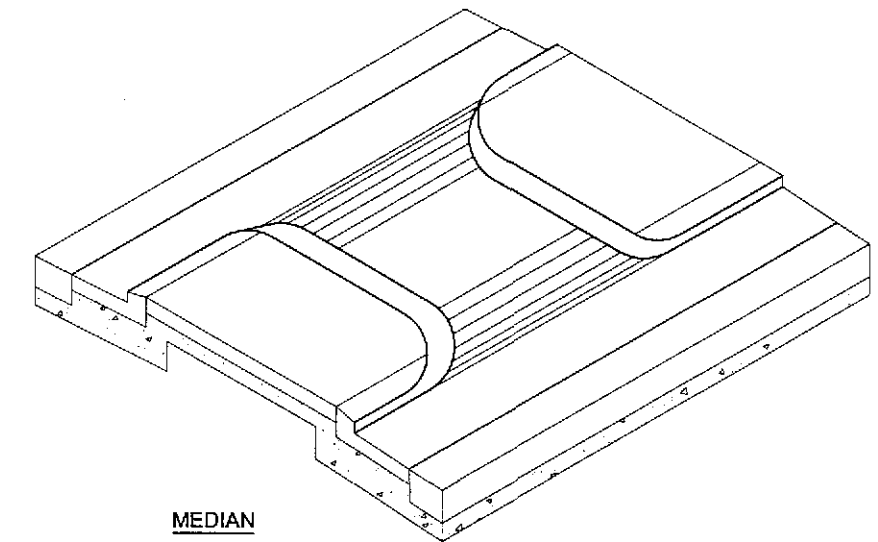
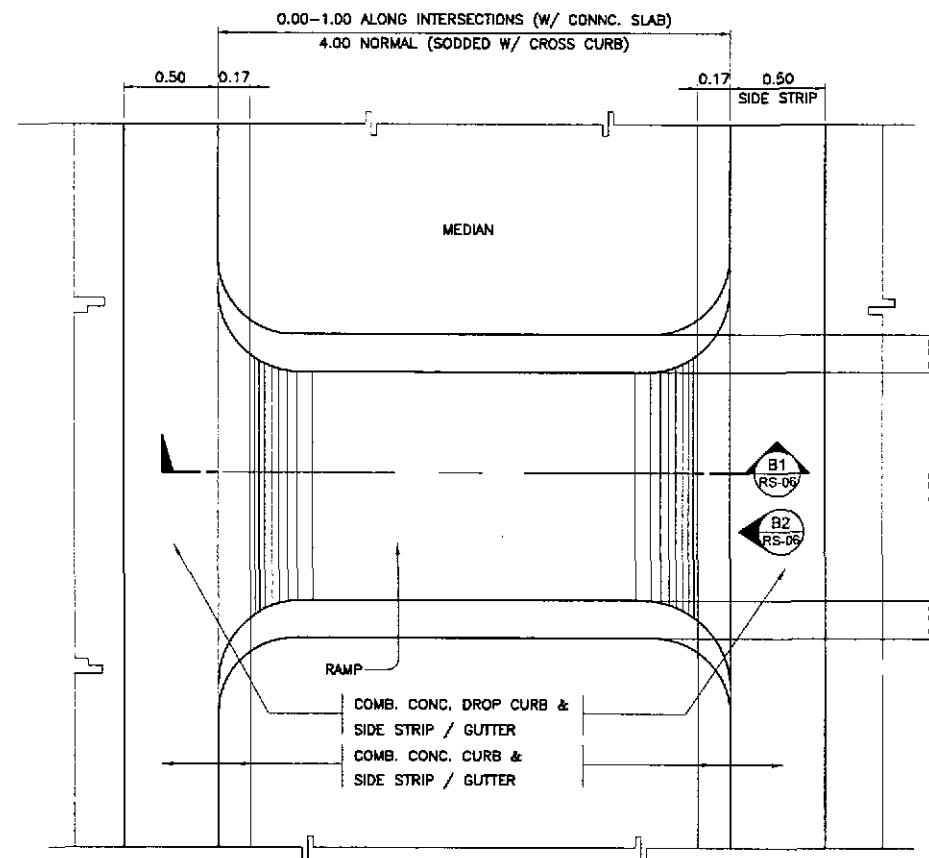
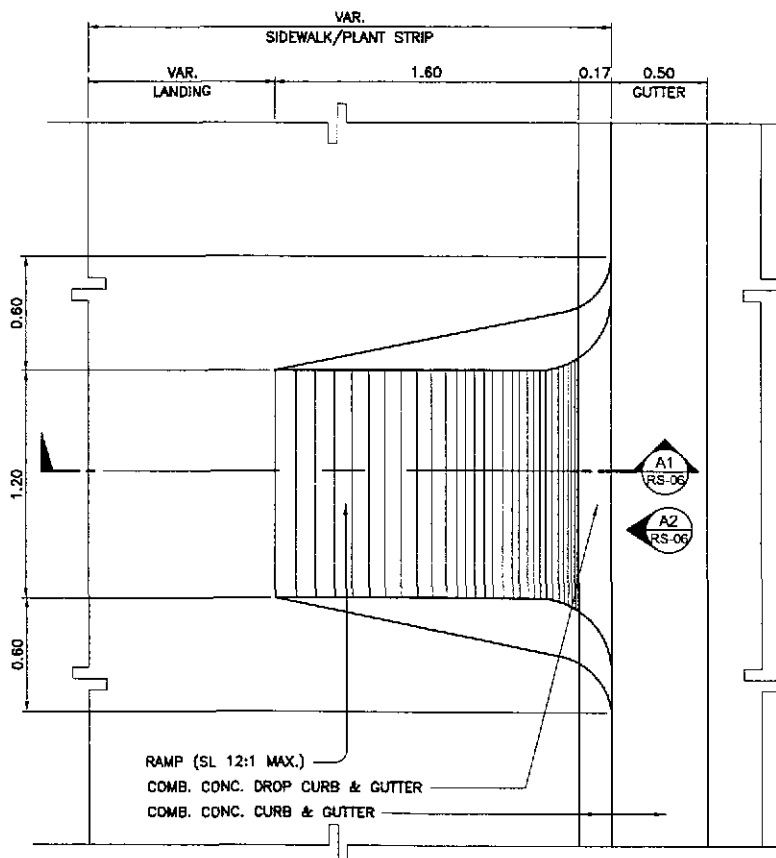
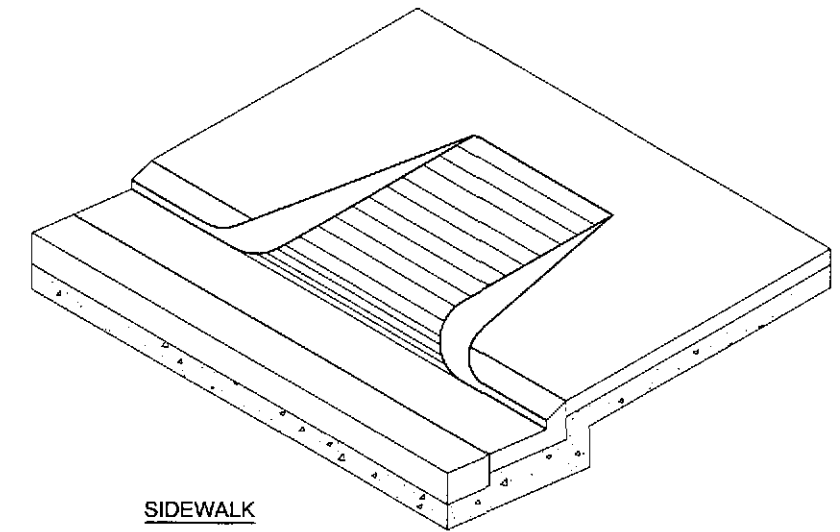
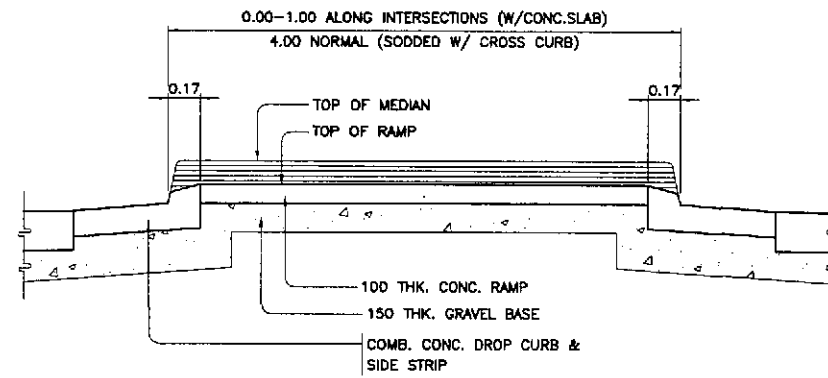
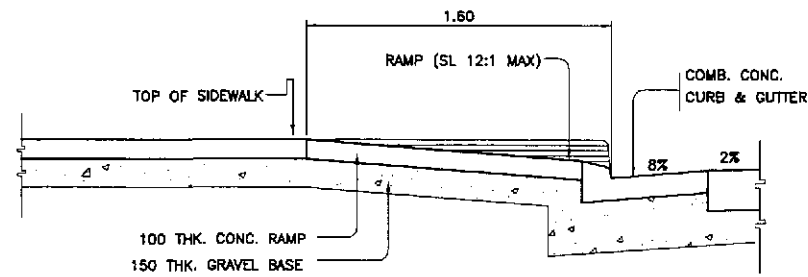
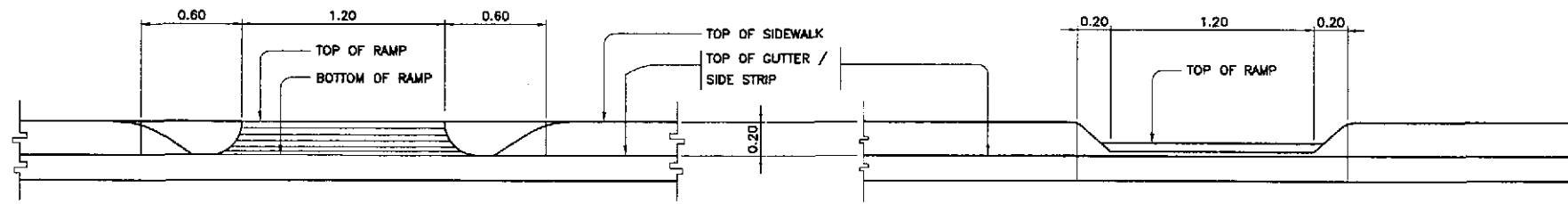
4b TYPE "B"
RS-05

1 COMBINATION CONCRETE CURB AND GUTTER
RS-05 NOT TO SCALE

2 COMBINATION CONCRETE CURB AND SIDE STRIP
RS-05 NOT TO SCALE

4 CONCRETE CURB
RS-05 NOT TO SCALE

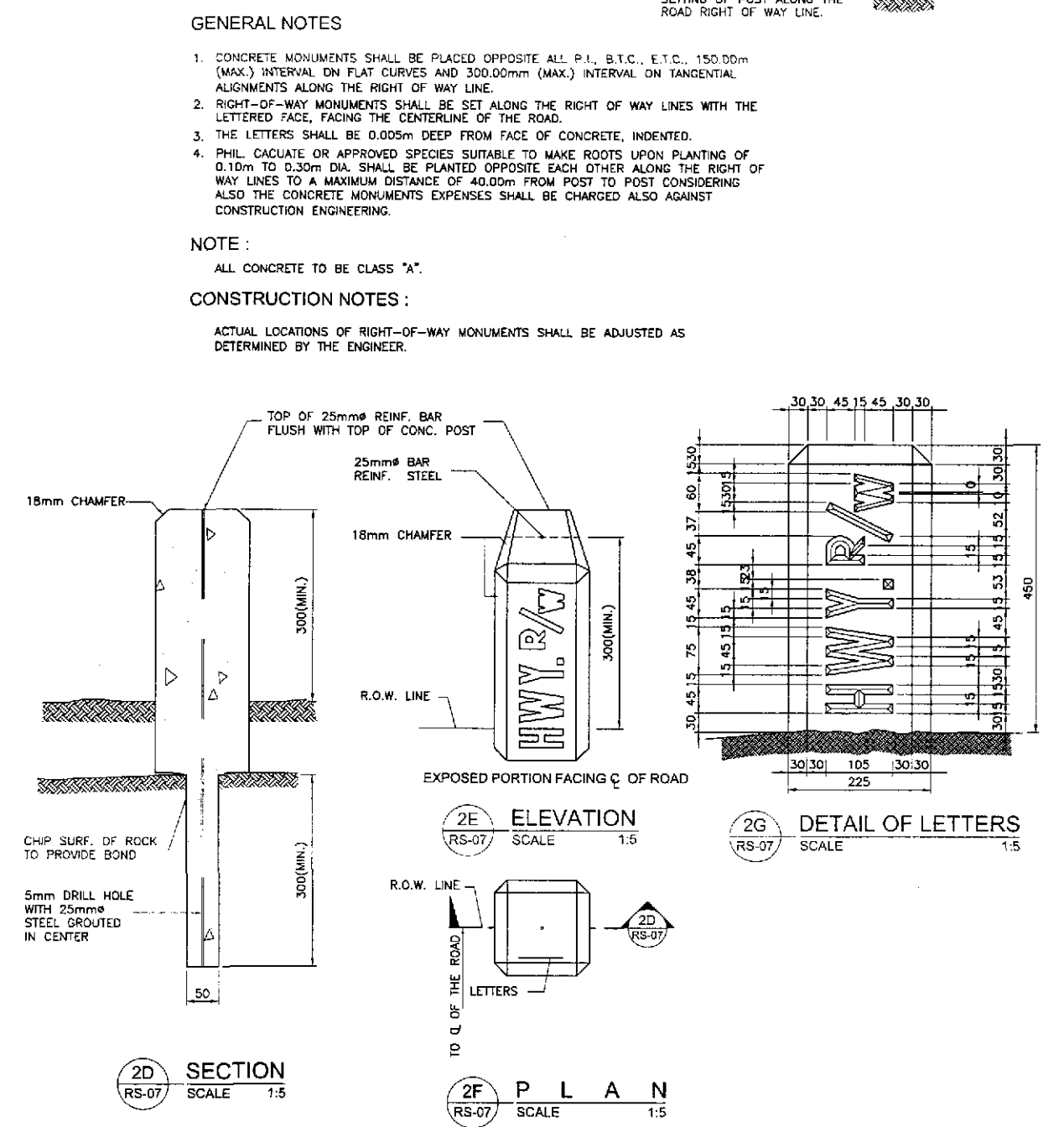
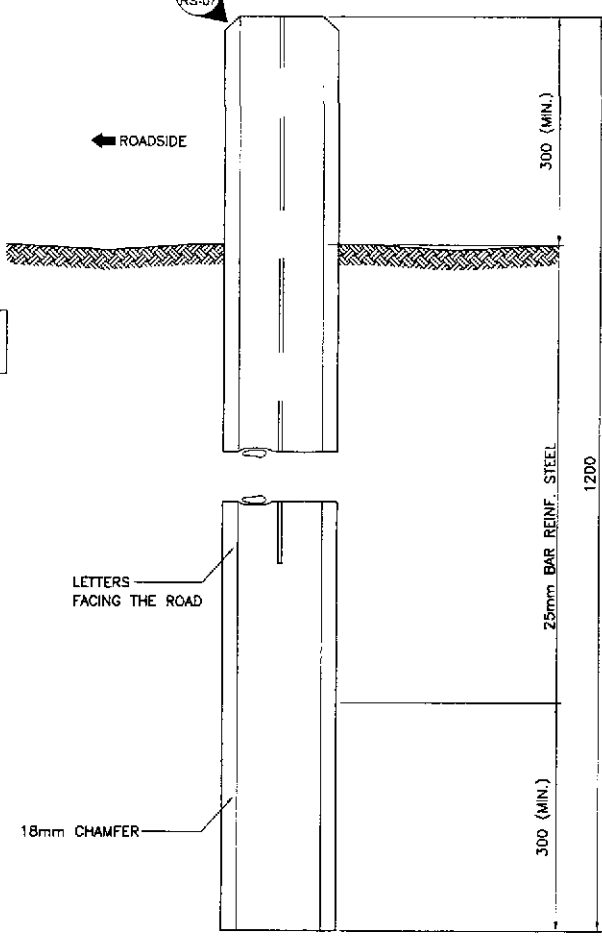
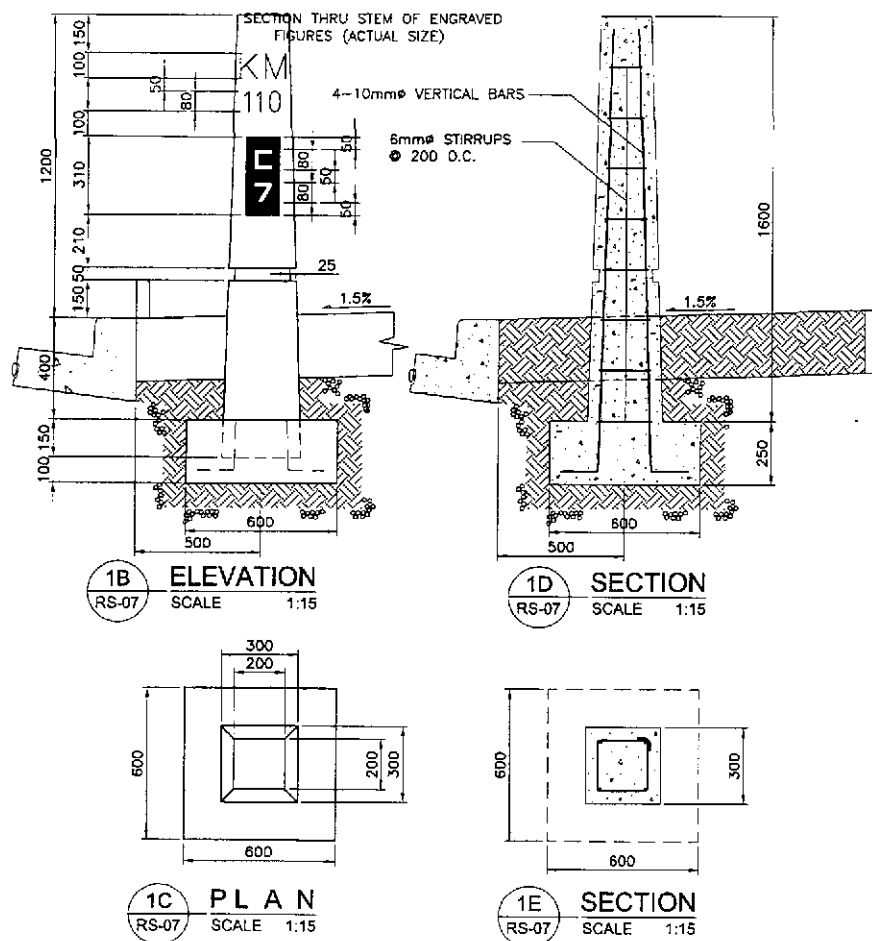
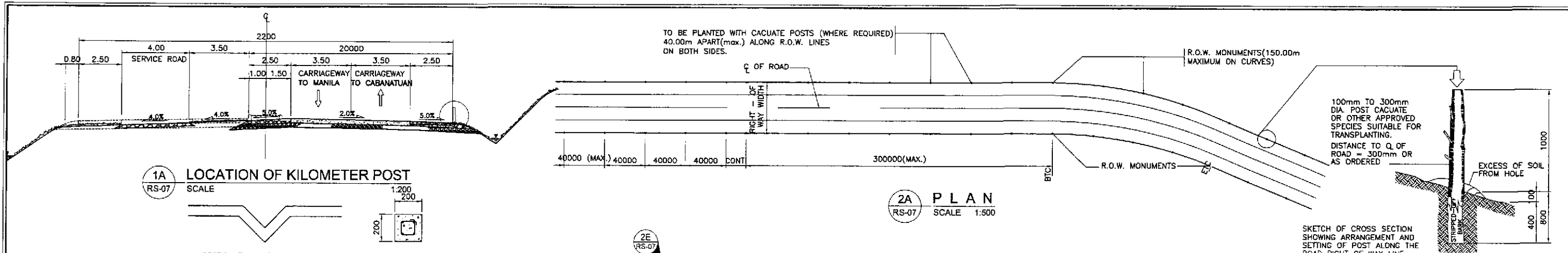
	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	9/18/07	S. ACACIO		BUREAU OF DESIGN			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	NOT TO SCALE	CONCRETE CURB AND GUTTER DETAILS	RS-05
	SUBMITTED	9/23/07	M. R. R. R.		OFFICE OF THE SECRETARY			PLARIDEL BYPASS - CONTRACT PACKAGE II	FULL SIZE A1		
					Submitted By:	Reviewed By:	Recommended By:	Approved By:			
			DANILD C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highway Division	GILBERTO S. REYES DC, Director IV	MANUEL M. BONGAN Undersecretary	SIMEDON A. DATUMANONG Secretary				



C ISOMETRIC VIEW
RS-06 NOT TO SCALE

1 CURB-CUT RAMP DETAILS
RS-06 SCALE AS SHOWN

	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	DESIGNED	9/18/02	[Signature]	BUREAU OF DESIGN			AS SHOWN	CURB-CUT RAMP DETAILS (FOR THE PHYSICALLY HANDICAPPED)	RS-06
	CHECKED	9/20/02	[Signature]	Submitted By:	Reviewed By:	Recommended By:	FULL SIZE A1		
SUBMITTED	9/23/02	[Signature]	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II			



NOTES:

- CONCRETE MIXTURE TO BE USED SHOULD BE CLASS "A" MIX (1:2:3). ALL CONCRETE SHOULD BE PLAIN CEMENT FINISHED, PAINTED WITH WHITE REFLECTORIZED WHILE LETTERINGS AND NUMERALS SHOULD BE CHROME YELLOW REFLECTORIZED PAINT. BE V-CUT (SEE SECTION DRAWING) POST.
- ALL DIMENSIONS ARE ALL IN MILLIMETERS UNLESS OTHERWISE STATED.

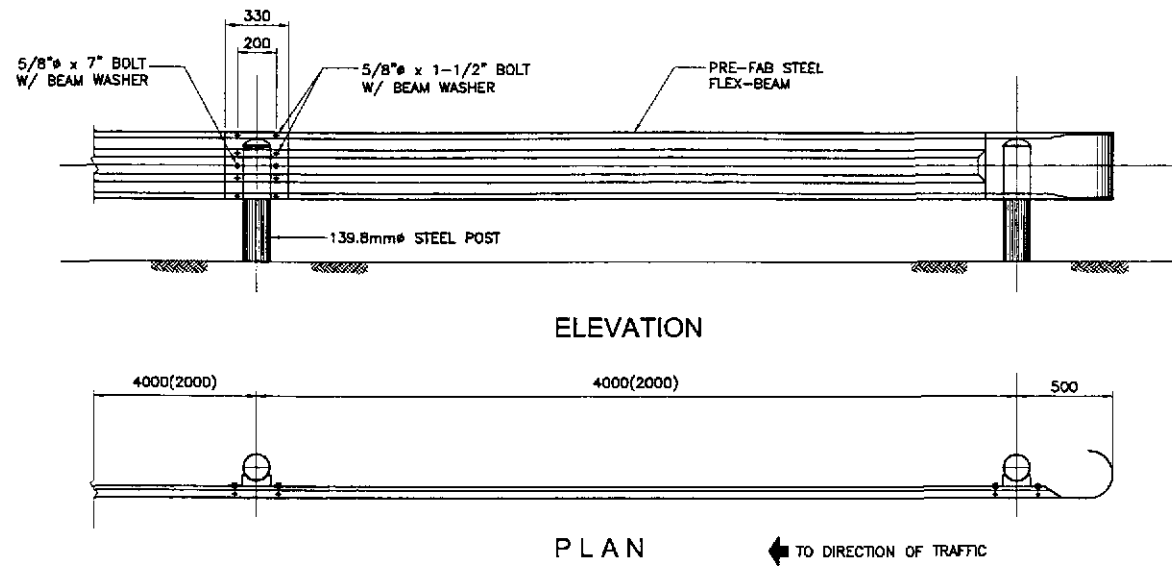
CONDITIONS :

- WHERE THE SHOULDER IS LESS THAN 1.00 TO 2.50 METERS, KILOMETER POST SHALL BE LOCATED AS FAR AS PRACTICABLE BUT NOT LESS THAN 0.50 METER AWAY FROM THE GUTTER THAT CLEAR VISIBILITY WITHIN 25.00 TO 50.00 METERS IS FACILITATED.
- ALL KM. POST TO BE PLACED ON THE RIGHT HAND SIDE OF THE ROAD.

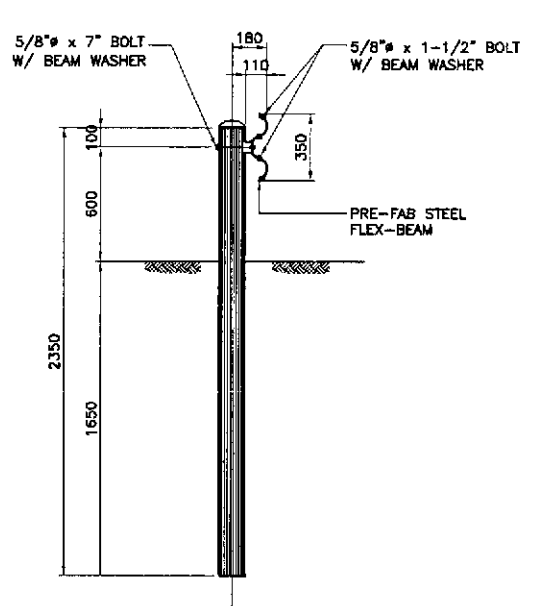
1 KILOMETER POST SCALE AS SHOWN

2 RIGHT OF WAY MARKER SCALE AS SHOWN

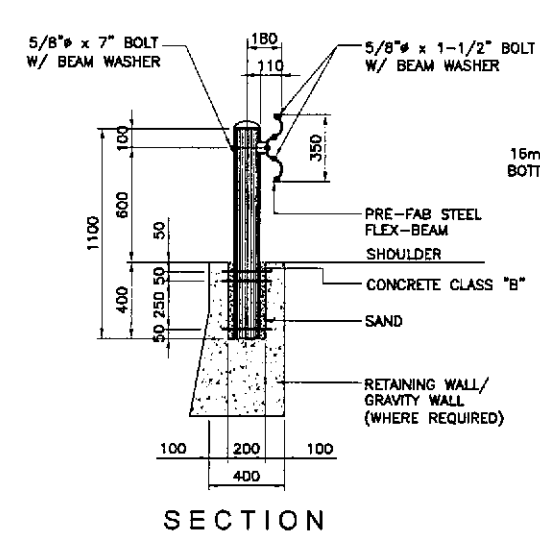
<p>JAPAN INTERNATIONAL COOPERATION AGENCY</p>		<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>		<p>PROJECT AND LOCATION :</p> <p>THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)</p>	<p>SCALE :</p> <p>AS SHOWN</p>	<p>SHEET CONTENTS :</p> <p>STANDARD KILOMETER POST AND RIGHT OF WAY MARKERS</p>	<p>SHEET NO. :</p> <p>RS-07</p>
DESIGNED	DATE	SIGNATURE	<p>Submitted By:</p> <p>DANILO C. TRAJANO Project Director</p>	<p>Reviewed By:</p> <p>JOSEFINA M. ALAGAR Chief, Highways Division</p>	<p>Recommended By:</p> <p>GILBERTO S. REYES OIC, Director IV</p>	<p>Recommended By:</p> <p>MANUEL M. BONOAN Undersecretary</p>	<p>Approved By:</p> <p>SIMEON A. DATUMANONG Secretary</p>
CHECKED	DATE	SIGNATURE	<p>Submitted By:</p> <p>DANILO C. TRAJANO Project Director</p>	<p>Reviewed By:</p> <p>JOSEFINA M. ALAGAR Chief, Highways Division</p>	<p>Recommended By:</p> <p>GILBERTO S. REYES OIC, Director IV</p>	<p>Recommended By:</p> <p>MANUEL M. BONOAN Undersecretary</p>	<p>Approved By:</p> <p>SIMEON A. DATUMANONG Secretary</p>
SUBMITTED	DATE	SIGNATURE	<p>Submitted By:</p> <p>DANILO C. TRAJANO Project Director</p>	<p>Reviewed By:</p> <p>JOSEFINA M. ALAGAR Chief, Highways Division</p>	<p>Recommended By:</p> <p>GILBERTO S. REYES OIC, Director IV</p>	<p>Recommended By:</p> <p>MANUEL M. BONOAN Undersecretary</p>	<p>Approved By:</p> <p>SIMEON A. DATUMANONG Secretary</p>



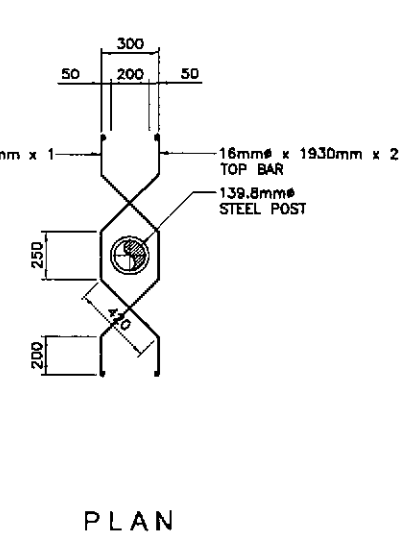
1 GUARDRAIL DETAIL
RS-08 SCALE 1:20



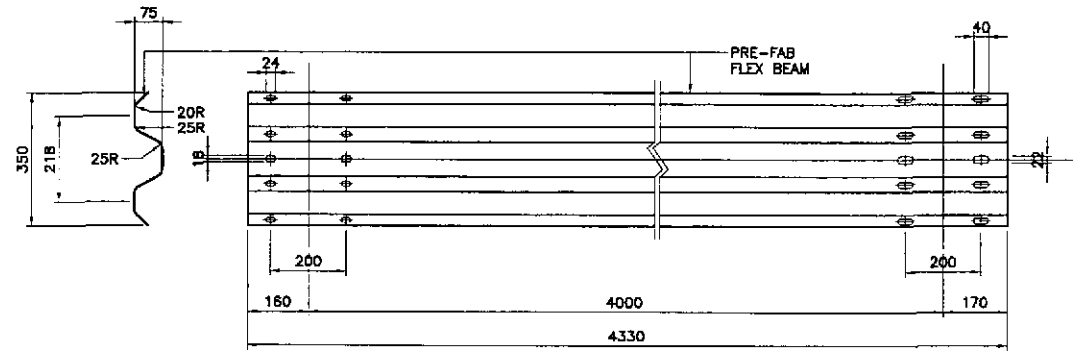
SECTION



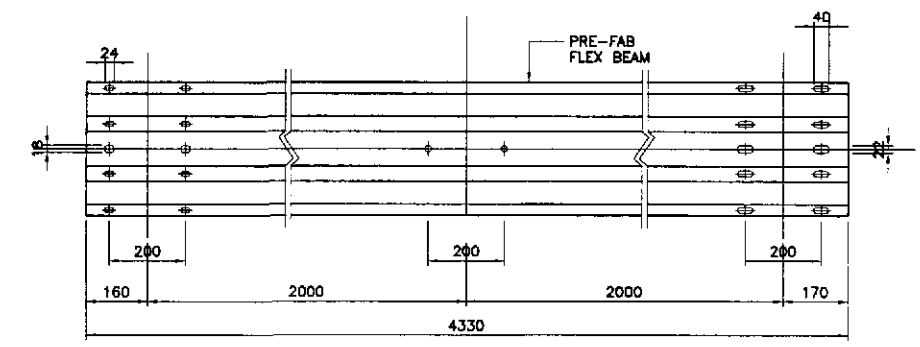
2 STEEL POST DETAIL
RS-08 SCALE 1:20



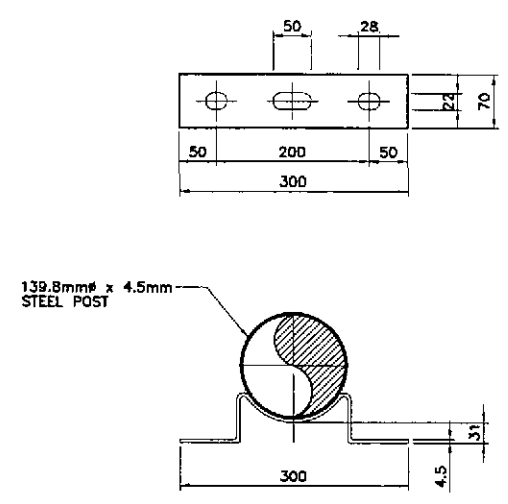
PLAN



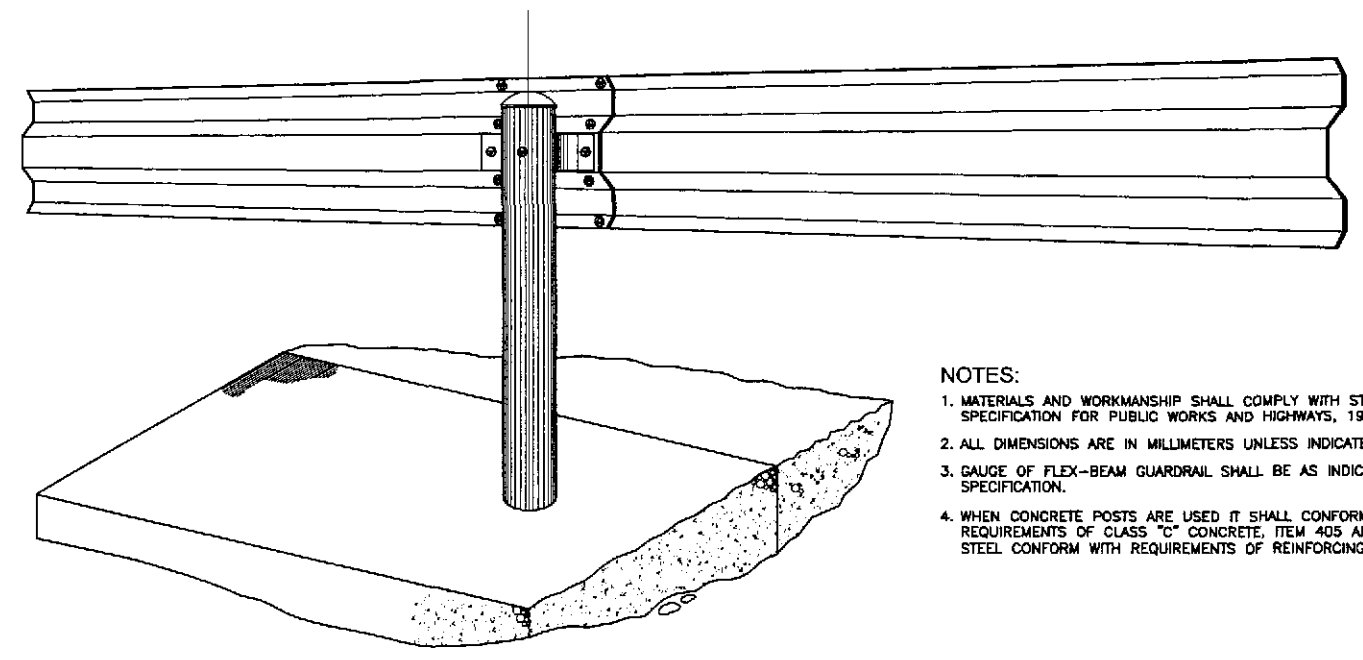
3 BEAM TYPE GUARDRAIL (TYPE "GR-A")
RS-08 SCALE 1:10



4 BEAM TYPE GUARDRAIL ON RETAINING WALL (TYPE "GR-B")
RS-08 SCALE 1:10



5 BRACKET DETAIL
RS-08 SCALE 1:5



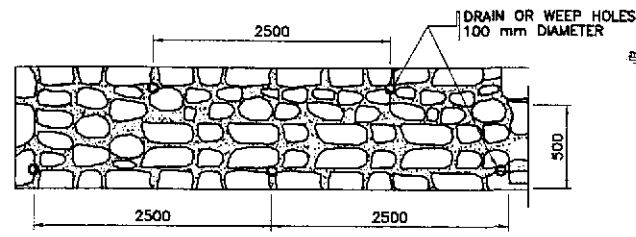
PERSPECTIVE

- NOTES:
1. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH STANDARD SPECIFICATION FOR PUBLIC WORKS AND HIGHWAYS, 1995 EDITION.
 2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS INDICATED OTHERWISE.
 3. GAUGE OF FLEX-BEAM GUARDRAIL SHALL BE AS INDICATED IN SPECIFICATION.
 4. WHEN CONCRETE POSTS ARE USED IT SHALL CONFORM WITH THE REQUIREMENTS OF CLASS "C" CONCRETE, ITEM 405 AND REINFORCING STEEL CONFORM WITH REQUIREMENTS OF REINFORCING STEEL, ITEM 404.

	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE : AS SHOWN FULL SIZE A1	SHEET CONTENTS : STANDARD STEEL BEAM GUARDRAIL (TYPE GR-A & GR-B)	SHEET NO. : RS-08
	CHECKED	9/18/02	<i>[Signature]</i>		P.U.H. - PMO Submitted By: <i>[Signature]</i> DANILLO C. TRAJANO Project Director	BUREAU OF DESIGN Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	OFFICE OF THE SECRETARY Recommended By: GILBERTO S. REYES D/C, Director IV				
SUBMITTED	9/23/02	<i>[Signature]</i>	TEAM LEADER DANILLO C. TRAJANO Project Director								

NOTE :

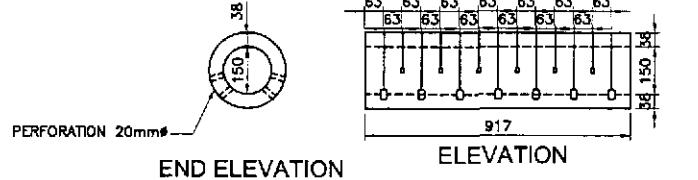
DRAIN OR WEEP HOLES SHALL BE PROVIDED IN SLOPE EMBANKMENT AT LOCATIONS SHOWN ON THE PLANS. GRAVEL BACKING NOT LESS THAN 0.057 CUBIC METER SHALL BE PROVIDED AT EACH DRAIN OR WEEP HOLES TO INSURE PROPER OPERATION OF THE DRAIN. ROCK BACKING SHALL EXTEND TO AT LEAST ONE (1) FOOT ABOVE THE DRAIN OR WEEP HOLES.



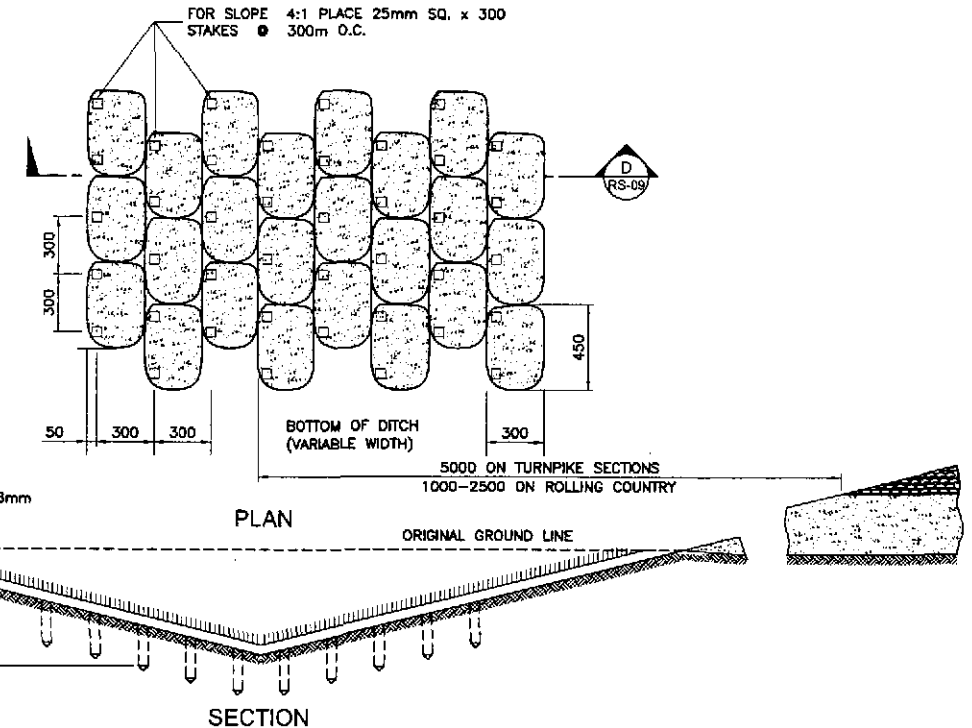
2A ELEVATION OF GROUDED RIP-RAP
RS-09 NOT TO SCALE

NOTE :

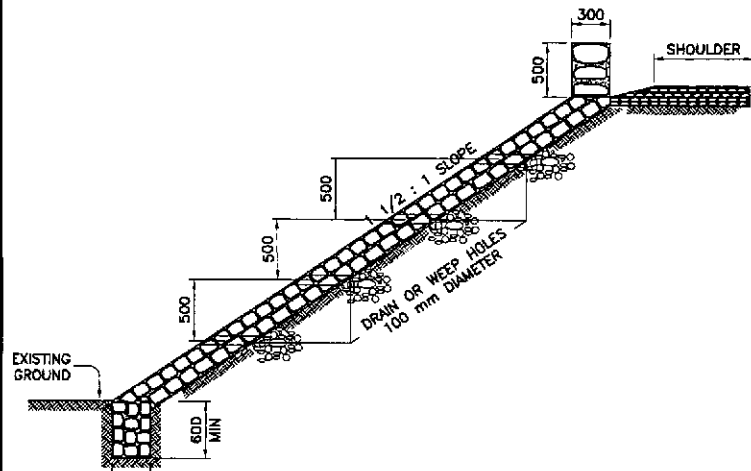
WHERE COMMON BORROW CONSIST OF CLAY OR OTHER IMPERVIOUS MATERIALS, SHOULDER DRAINS SHALL BE INSTALLED 20.00 M. APART ON EACH SHOULDER AND ARRANGED IN SUCH A WAY THAT THE DRAINS ON EACH SHOULDERS ARE STAGGERED AND NOT EXACTLY OPPOSITE EACH OTHER, THEY SHOULD BE CONSTRUCTED AT LOWEST POINT OF SAG VERTICALS ON BOTH SHOULDERS.



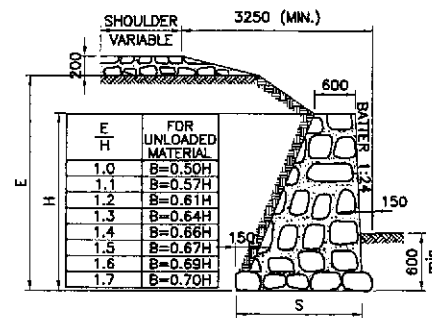
150mmØ UNREINFORCED CONCRETE PIPE UNDERDRAIN
RS-09 NOT TO SCALE



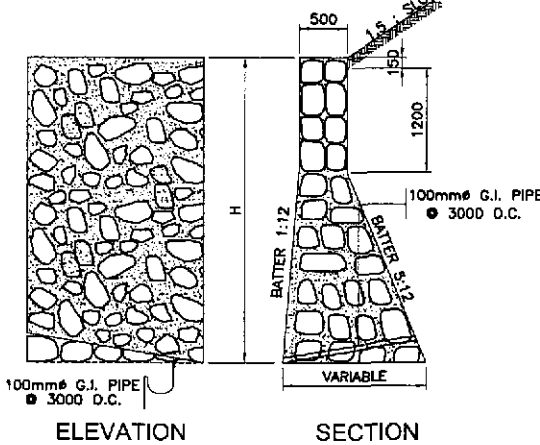
D DETAIL OF SODDING
RS-09 NOT TO SCALE



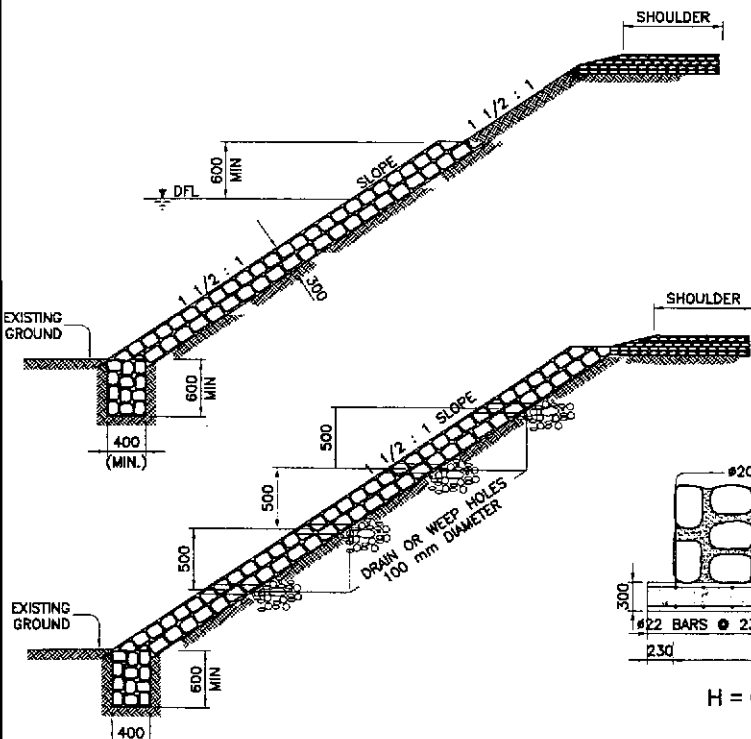
1A GROUDED RIP-RAP PROTECTION FOR SLOPE OF EMBANKMENT
RS-09 NOT TO SCALE



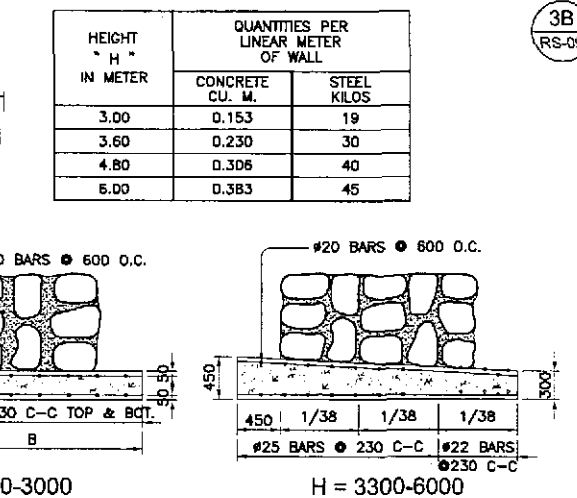
1B RUBBLE MASONRY RETAINING WALL
RS-09 NOT TO SCALE



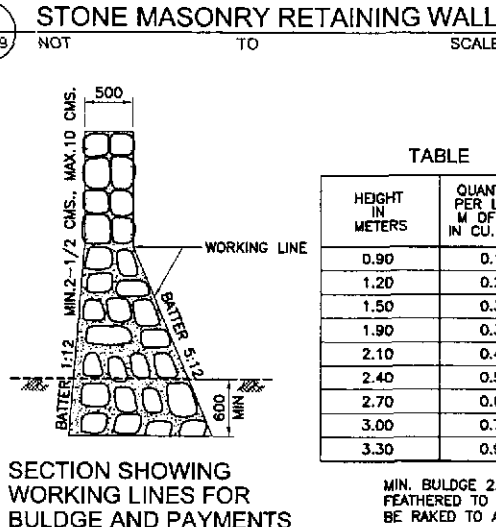
3B STONE MASONRY RETAINING WALL
RS-09 NOT TO SCALE



A EMBANKMENT PROTECTION WALLS
RS-09 NOT TO SCALE

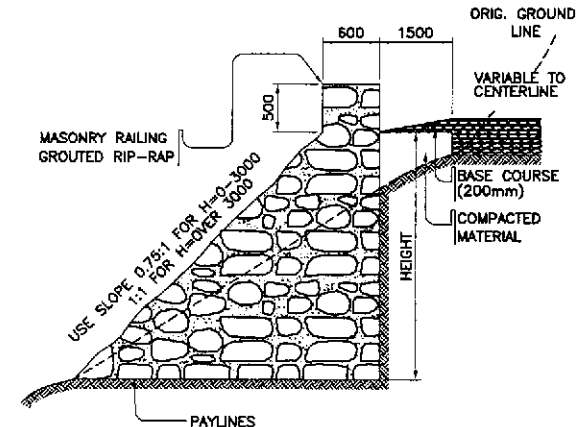


2B FOOTING FOR WALL
RS-09 NOT TO SCALE



B MASONRY RETAINING WALLS
RS-09 NOT TO SCALE

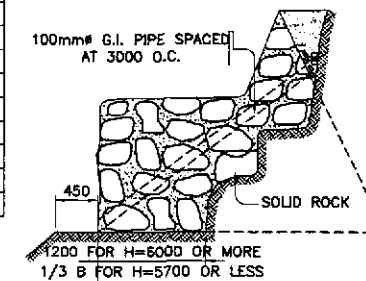
NOTE :
EMBANKMENT WILL BE CONSTRUCTED ONLY ON A FOUNDATION BED SATISFACTORY TO THE ENGINEER. THE STONES SHALL NOT BE LESS THAN 0.15 CU.M. IN VOLUME WITH 75% OF STONES AT LEAST 0.03 CU.M. IN VOLUME AND LAID OFF TO THE LINES AND DIMENSIONS REQUIRED. THE STONES SHALL BE BONDED TO SAME EXTENT AND SECURELY BEDDED. SPALLS SHALL BE USED TO FILL VOIDS. ANY SPACE BACK TO HAND-LAID ROCK EMBANKMENT SHALL BE FILLED ENTIRELY WITH COMPACTED MATERIAL.



5B HAND LAID ROCK EMBANKMENT
RS-09 NOT TO SCALE

HEIGHT IN METERS	QUANTITIES PER LINEAR M OF WALL IN CU. METER		HEIGHT IN METERS	QUANTITIES PER LINEAR M OF WALL IN CU. METER	
	CONCRETE	STEEL		CONCRETE	STEEL
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	

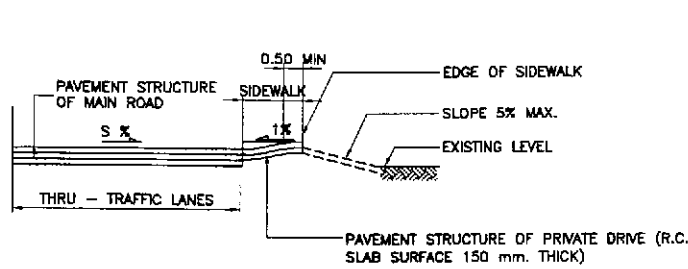
MIN. BULGE 2.50 CMS., MAX. BULGE 10 CMS. FEATHERED TO WORKING LINE AT JOINTS TO BE RAKED TO A DEPTH OF 2.50 TO 5 CMS.



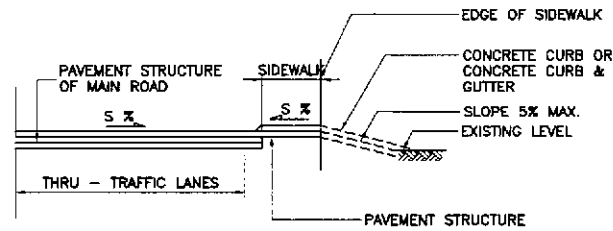
4B METHOD OF STEPPING FOOTING
RS-09 NOT TO SCALE

NOTE :

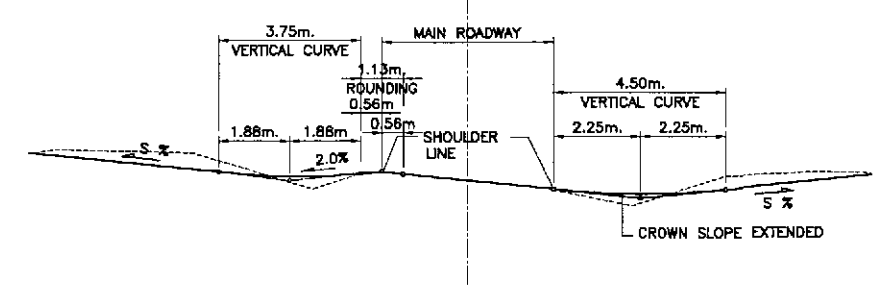
CONCRETE CLASS "A" FOOTING FOR WALL WHEN ORDERED BY THE ENGINEER. DEPTH OF FOOTING : FOOTING SHALL BE CARRIED DOWN TO A FIRM FOUNDATION AS DIRECTED BY THE ENGINEER. MORTAR : TO BE ONE (1) PART CEMENT AND THREE (3) PARTS SAND. MORTAR : JOINTS WITH GENERALLY 2.50 TO 4 CMS., MIN. 2 CMS., MAX. 6.50 CMS. BULGE : THE BULGE OF INDIVIDUAL STONES SHALL VARY BETWEEN 2.50 TO 10 CMS. SURFACE FINISH : TO BE FREE OF TOOL OR DRILL MARKS. PAYMENT FOR POROUS TILE DRAIN WITH ROCK BACKFILL AND FOR 150mmØ & GALVANIZED IRON PIPES WITH ROCK BACKING PAYMENT WILL NOT BE MADE DIRECT, BUT WILL BE INCLUDED AS PART OF THE PRICE BID FOR MASONRY QUANTITY TO BE PAID FOR SHALL BE WITHIN THE WORKING LINES AS SHOWN IN SECTIONS. ALL WALL MASONRY SHALL BE "STONE MASONRY" ITEM 505 OF GOVERNMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.



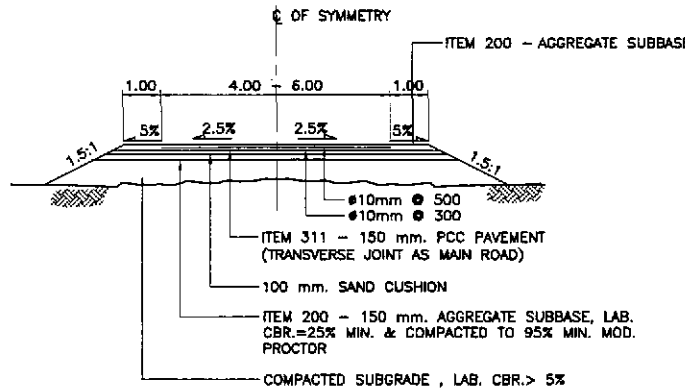
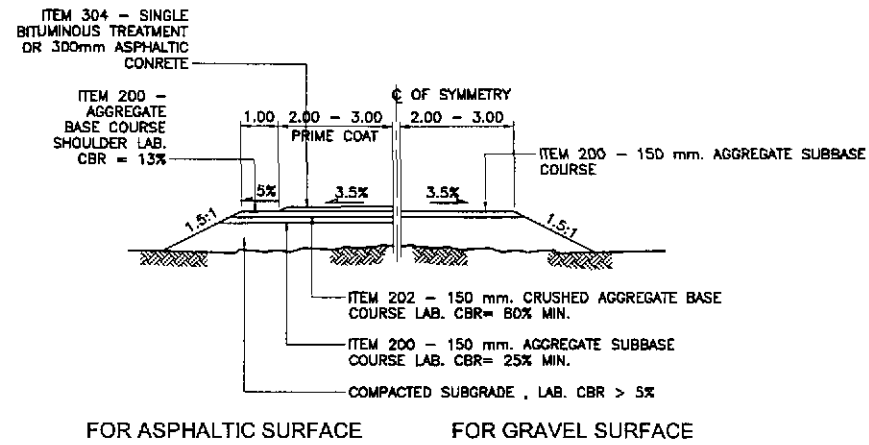
4 TYPICAL PRIVATE DRIVEWAY AT SIDE WALK (PROFILE)
RS-10 NOT TO SCALE



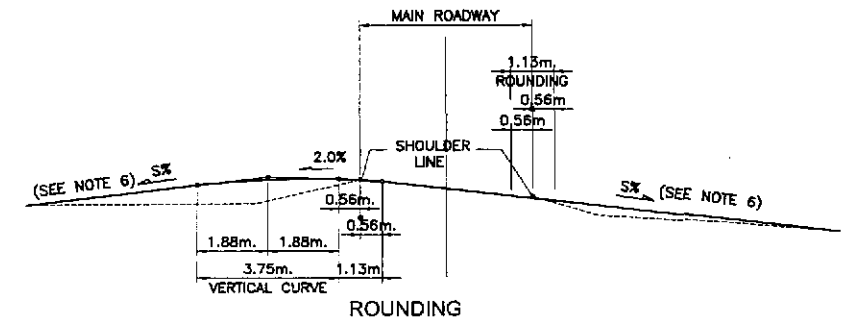
5 TYPICAL SIDE ROAD AT SIDE WALK (PROFILE)
RS-10 NOT TO SCALE



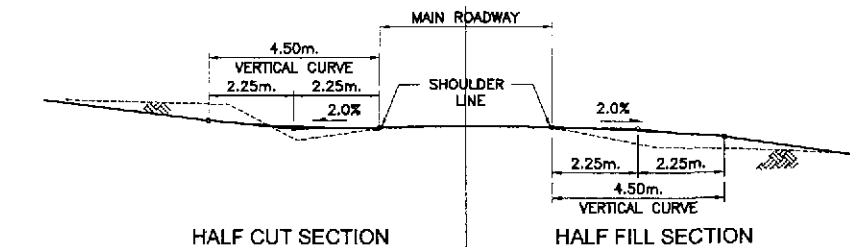
6C SUPERELEVATED CUT SECTION
RS-10 NOT TO SCALE



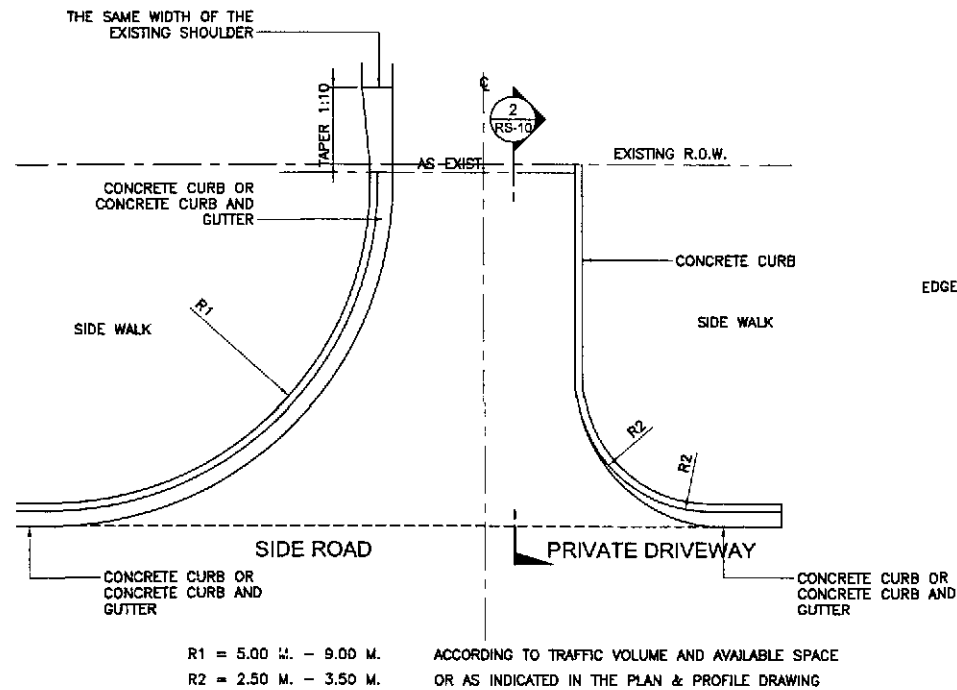
3 TYPICAL CROSS - SECTION
RS-10 NOT TO SCALE



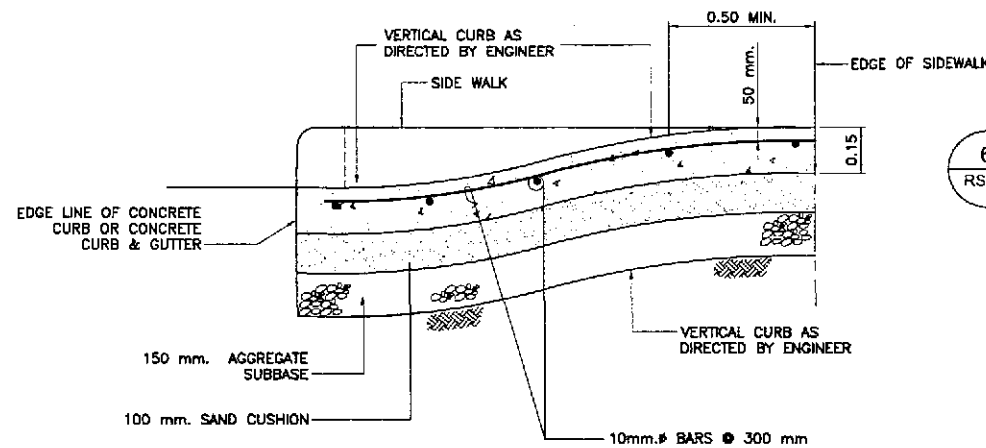
6B SUPERELEVATED FILL SECTION
RS-10 NOT TO SCALE



6A STANDARD CROWNED SECTION
RS-10 NOT TO SCALE



1 PLAN OF SIDE ROAD & PRIVATE DRIVEWAY AT SIDE WALK
RS-10 NOT TO SCALE



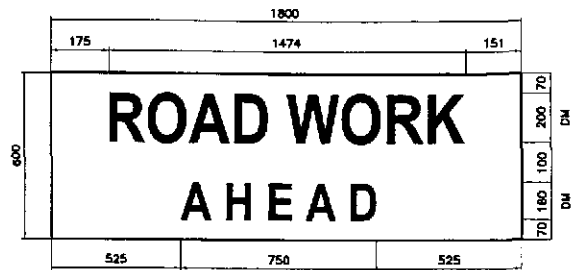
2 SECTION OF R.C. CONCRETE PAVEMENT OF SIDE ROAD & PRIVATE DRIVEWAY
RS-10 NOT TO SCALE

6 VERTICAL ALIGNMENT OF ACCESS ROAD APPROACHES TO MINOR INTERSECTION
RS-10 NOT TO SCALE

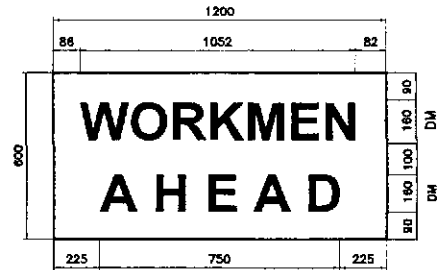
NOTES:

1. THE ENGINEER SHALL DIRECT THE LISTING OF CONNECTION SIDE ROAD/ PRIVATE DRIVEWAY APPROACHES. THE ARRANGEMENT OF THE DRAINAGE STRUCTURES (IF ANY), THE LIMIT OF WORK FOR THE CONNECTION ROADS AND THE TYPE AND QUANTITIES OF PAVEMENT STRUCTURE.
2. THE WORD "SIDE ROAD" IN THIS DRAWING REFER TO THE ROAD CONNECTING TO THE HIGHWAY SIDE ROAD LEADS TO THE BARANGAY, PUBLIC PLACE ETC., WHILE "PRIVATE DRIVEWAY" IS THE PRIVATE CONNECTION ROAD FOR PRIVATE HOUSE.
3. SIDE ROAD (PUBLIC) APPROACHES AND PRIVATE DRIVEWAY TO BUILDINGS OR RESIDENCE SHALL BE PAVED 1.5 m OUT FROM EDGE OF SHOULDER OR TO THE RIGHT-OF-WAY LINE, WHICHEVER IS LESS, PAVEMENT THICKNESSES SHALL BE AS SHOWN ON THE PLANS.
4. USE 4:1 OF FLATTER SIDE SLOPE IN THE APPROACH RADII AREA.
5. THE SIDE SLOPES IN THE MAIN ROADWAY AND THE APPROACH ROADWAY IF STEEPER THE 4:1 SHALL BE SMOOTHLY TRANSITIONED INTO THE 4:1 AREA.
6. SIDE CROSS DRAINS SHALL BE LOCATED 10.00m OR AS SHOWN IN THE PLAN.
7. 15m. RADII TO BE USED ON INTERSECTION ROADS, EXCEPT RESIDENTIAL DRIVES, UNLESS OTHERWISE SPECIFIED ON PLANS.
8. RADII MAY BE VARIED TO SUIT FIELD CONDITIONS.
9. TANGENT SLOPE NOT STEEPER THAN 10% BEYOND VERTICAL CURVE. THE SLOPE MAY BE STEEPER, IF REQUIRED, TO MEET EXISTING APPROACH SLOPE.
10. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN METERS.

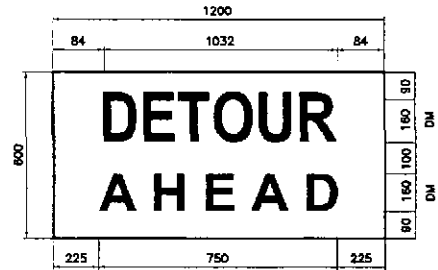
	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	9/20/02	S. JOSE		P.H. - PMD	BUREAU OF DESIGN	OFFICE OF THE SECRETARY		NOT TO SCALE	SIDE ROAD APPROACHES AND PRIVATE DRIVEWAY ACCESS	RS-10
	SUBMITTED	9/23/02	M. K. K.		Submitted By:	Reviewed By:	Recommended By:		Approved By:		
					DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES DIC, Director IV		MANUEL M. BONGAN Undersecretary		



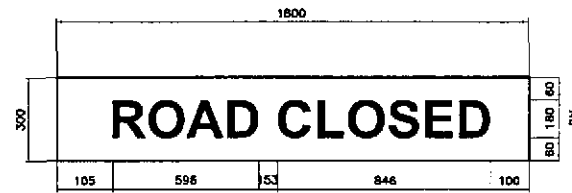
T1 - 1



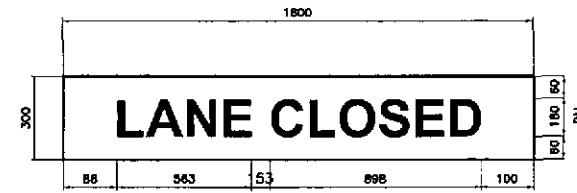
T1 - 5



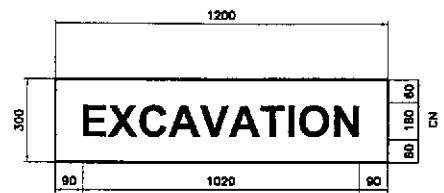
T1 - 6



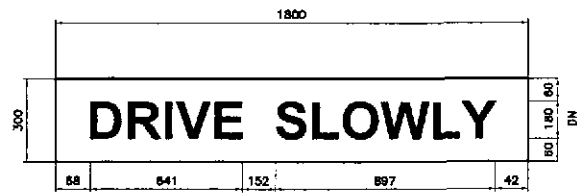
T2 - 2



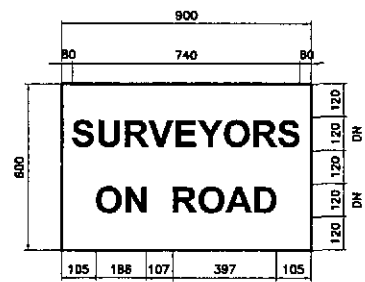
T2 - 4



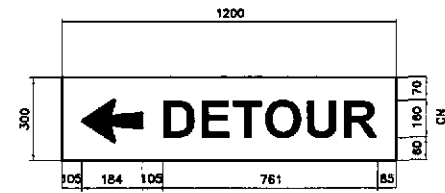
T2 - 6



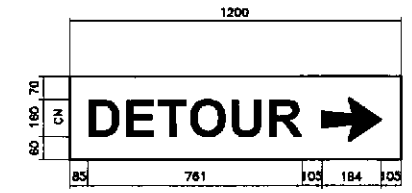
T2 - 7



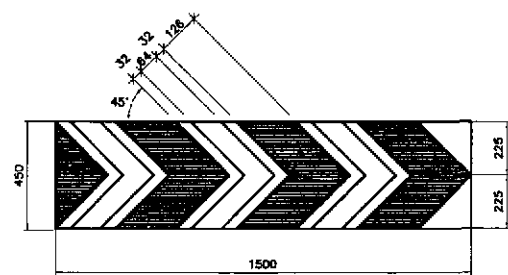
T2 - 8



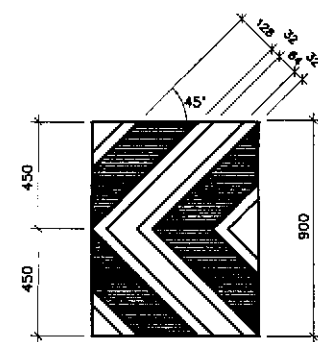
T4 - 1L



T4 - 1R

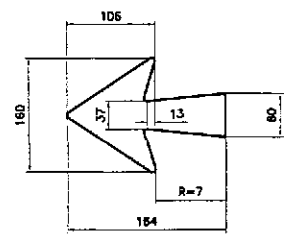


T4 - 2

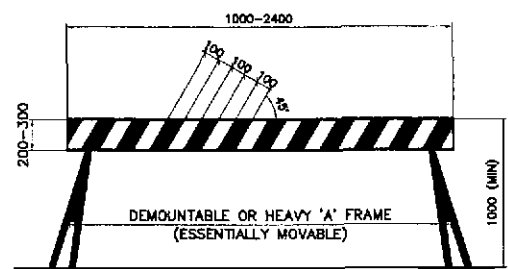


T4 - 3

- NOTES :
1. BARRIER SHALL HAVE AN ALTERNATE DIAGONAL BLACK AND YELLOW STRIPES. THE YELLOW BANDS SHALL BE REFLECTORIZED.
 2. BARRIER POINTS SHALL BE PRINTED YELLOW.
 3. PROVISION SHALL BE MADE FOR THE HANDLING OF SIGNS BELOW THE BARRIER BARS.



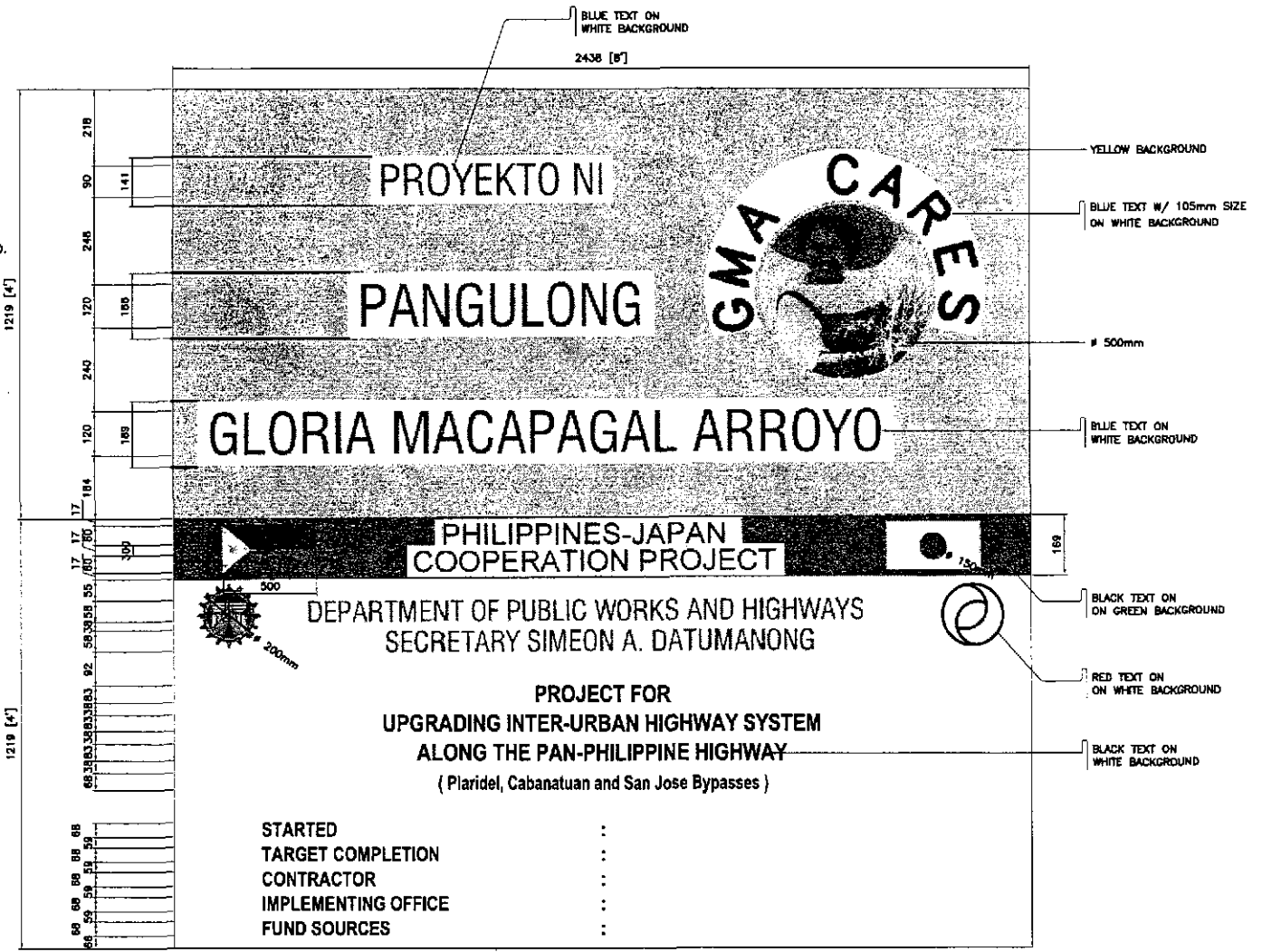
DETAIL OF ARROW



TYPE 1 BARRICADE

- NOTES :
1. ADVANCE SIGNS (T1) AND POSITION SIGNS (T2) SHALL HAVE BLACK LETTERS ON YELLOW REFLECTORIZED BACKGROUND.
 2. TRAFFIC DIVERSION SIGNS (T4-1) SHALL HAVE BLACK LETTERS AND ARROW ON YELLOW REFLECTORIZED BACKGROUND.
 3. TRAFFIC DIVERSION SIGNS (T4-2) & (T4-3) SHALL HAVE WHITE CHEVRONS ON BLACK BACKGROUND. WHITE REFLECTIVE MATERIAL 64mm. WIDE TO BE CENTRALLY PLACED ON WHITE BANDS.

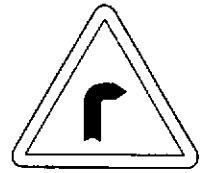
BARRICADES (TYPE I, TYPE II, TYPE III) SHOULD CONFORM WITH SPECIFICATIONS MENTIONED IN PHILIPPINES ROAD SHOWS MANUAL (REVISED EDITION MP#H, TRAFFIC ENG'G. AND MANAGEMENT PROJECT SERIES OF 1962.



1 ROAD WORK SIGN DETAILS NOT TO SCALE

2 PROJECT SIGN BOARD DETAILS (Two(2) at every Contract Package) NOT TO SCALE

	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES				PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE : AS SHOWN FULL SIZE A1	SHEET CONTENTS : STANDARD ROAD WORK SIGN AND PROJECT SIGN BOARD DETAILS	SHEET NO. : RS-11
	CHECKED	9/20/02	SIGNATURE		DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS							
	SUBMITTED	9/23/02	TEAM LEADER		PUHL - PMC Submitted By: DANILO C. TRAJANO Project Director	BUREAU OF DESIGN Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	OFFICE OF THE SECRETARY Recommended By: GILBERTO S. REYES OC, Director IV	Approved By: MANUEL M. BONDAN Undersecretary				



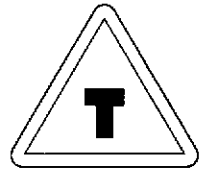
1
W1-1(L or R)



2
W1-4 (L)



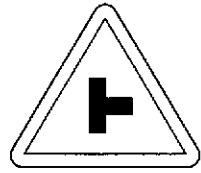
3
W2-1



4
W2-4



5
W2-5



6
W2-6 (L or R)



7
W2-7



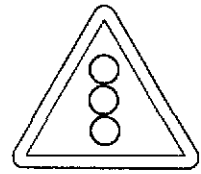
8
W2-8



9
W2-9 (R)



10
W2-10 (L or R)



11
W3-1



12
W4-2



13
W4-2 (R)



14
W4-3



15
W5-3



16
W5-9



17
W5-10



18
W6-1



19
W6-2



20
WB-3A



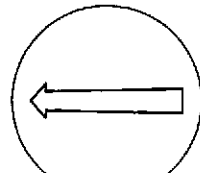
21
WB-3B



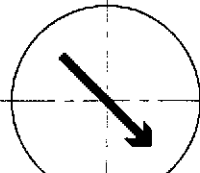
22
R1-1A



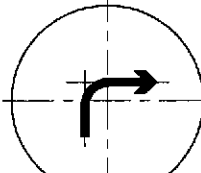
23
R1-2A



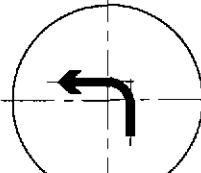
24
R2-2L



25
R2-3



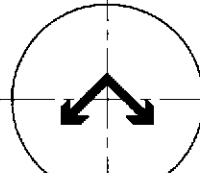
26
R2-4A (R)



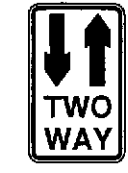
27
R2-4A (L)



28
R2-4P



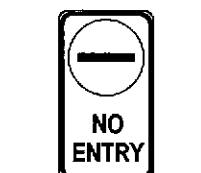
29
R2-5



30
R2-6A



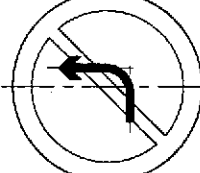
31
R2-7A (L)



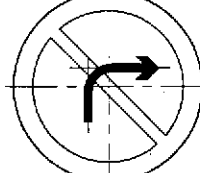
32
R3-1PA



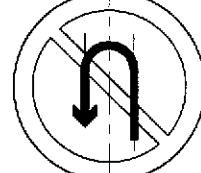
33
R3-6P



34
R3-13A



35
R3-14A



36
R3-15A



37
R3-16



38
R4-1B(80)



39
R4-3B (40)



40
R6-4

LEGEND:

A. WARNING SIGNS

- 1. SHARP TURN (W1-1)
- 2. REVERSE CURVE (W1-4) (L)
- 3. CROSS ROAD (W2-1)
- 4. T JUNCTION (W2-4)
- 5. Y JUNCTION (W2-5)
- 6. SIDE ROAD JUNCTION (W2-6)
- 7. ROUNDABOUT (W2-7)
- 8. PRIORITY ROAD (W2-8)
- 9. PRIORITY ROAD (W2-9) (R)
- 10. PRIORITY ROAD (W2-10)
- 11. SIGNALS AHEAD (W3-1)
- 12. ROAD NARROWED (W4-2)
- 13. ROAD NARROWED (W4-2) (R)
- 14. DIVIDED ROAD (W4-3)
- 15. HUMPS (W5-3)
- 16. SLIPPERY ROAD (W5-9)
- 17. CATTLE CROSSING (W5-10)
- 18. PEDESTRIANS (W6-1)
- 19. CHILDREN (W6-2)
- 20. (DISTANCE)...m. (W8-3a)
- 21. (DISTANCE)...m. (W8-3b)

B. REGULATORY SIGNS

- 22. STOP (R1-1A)
- 23. GIVE WAY (R1-2)(A)
- 24. DIRECTION TO BE FOLLOWED (R2-2)(L)
- 25. DIRECTION TO BE FOLLOWED (R2-3)
- 26. DIRECTION TO BE FOLLOWED (R2-4A)(R)
- 27. DIRECTION TO BE FOLLOWED (R2-4A)(L)
- 28. DIRECTION TO BE FOLLOWED (R2-4P)
- 29. DIRECTION TO BE FOLLOWED (R2-5)
- 30. TWO WAY (R2-6)(A)
- 31. DIRECTION TO BE FOLLOWED (R2-7A)(L)
- 32. NO ENTRY (R3-1P)(A)
- 33. NO ENTRY (R3-6P)
- 34. TURNING PROHIBITION (R3-13A)
- 35. TURNING PROHIBITION (R3-14A)
- 36. TURNING PROHIBITION (R3-15A)
- 37. PROHIBITION OF OVERTAKING (R3-16)
- 38. SPEED RESTRICTION (R4-1B)(80)
- 39. SPEED RESTRICTION (R4-3B)(40)
- 40. LOAD RESTRICTION (R6-4)
- 41. TURN RIGHT AT ANY TIME W/ CARE (S2-3)
- 42. NO RIGHT TURN ON RED SIGNAL (S2-6)
- 43. ROAD CLOSED (S2-9)
- 44. HAZARD MARKERS (T4-3)

NOTE:

THE MATERIALS, DIMENSIONS, SIZES OF LETTERS AND NUMERALS, SHAPE, COLOR AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS OF DPWH'S, PHILIPPINE ROAD SIGNS MANUAL, REVISED EDITION, 1982.



41
S2-3



42
S2-6



43
S2-9



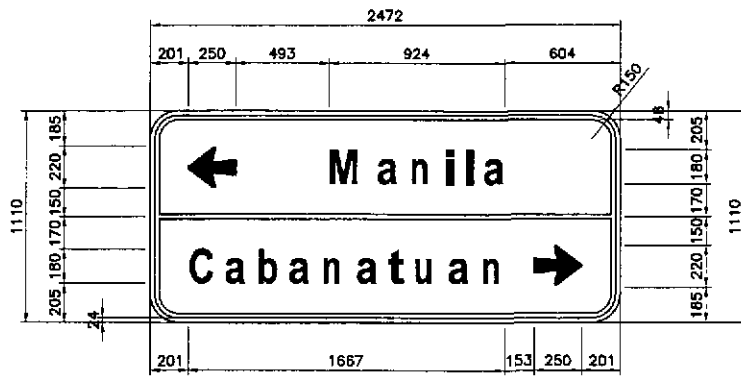
44
T4-3 (L OR R)

JICA
JAPAN INTERNATIONAL COOPERATION AGENCY

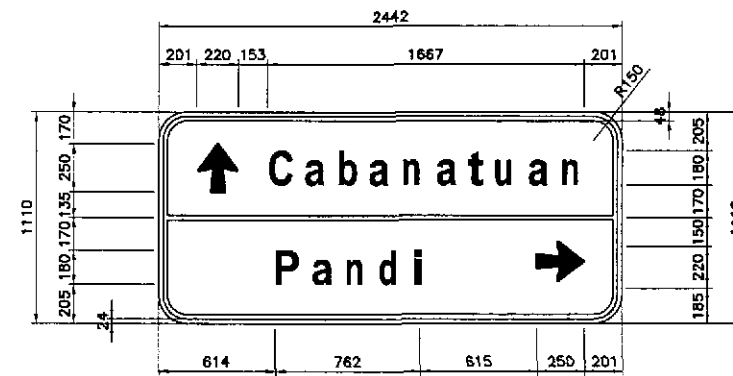
K&E KATAHIRA & ENGINEERS INTERNATIONAL
YEO YACHIYO ENGINEERING CO., LTD.

DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			
DESIGNED 9/18/02	S. LUNA	RJHL - PMO	BUREAU OF DESIGN	OFFICE OF THE SECRETARY	
CHECKED 9/20/02	S. ROSE	Submitted By:	Reviewed By:	Recommended By:	Approved By:
SUBMITTED 9/25/02	TEAM LEADER	DANILO G. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OK, Director IV	MANUEL M. BONDAN Undersecretary
				(See cover sheet for Signature/Approval)	(See cover sheet for Signature/Approval)
				SIMEON A. DATUMANONG Secretary	

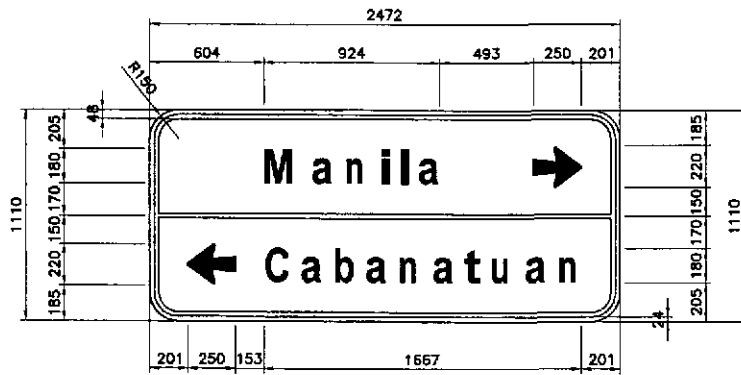
PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	NOT TO SCALE	STANDARD TRAFFIC SIGNS SIGN INDEX	RS-12
PLARIDEL BYPASS - CONTRACT PACKAGE II	FULL SIZE A1		



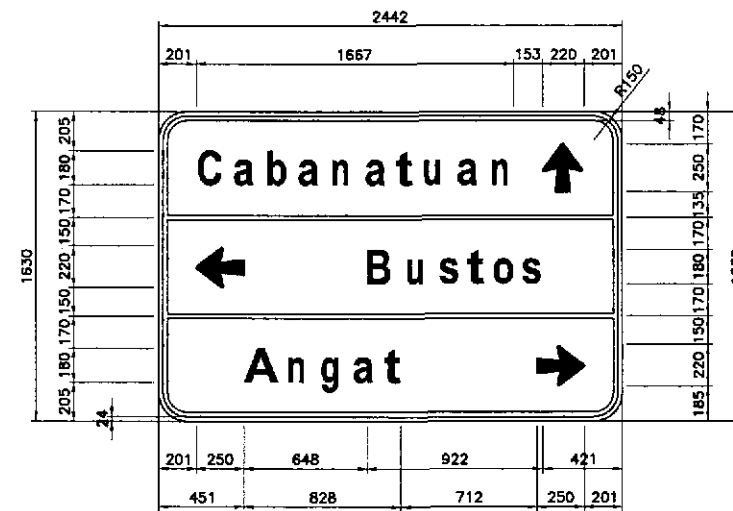
GS-1



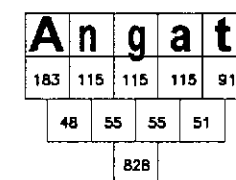
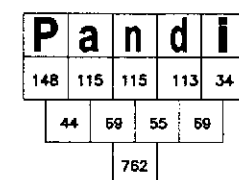
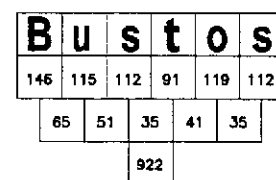
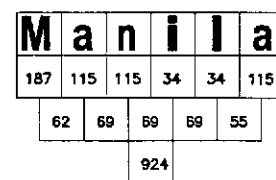
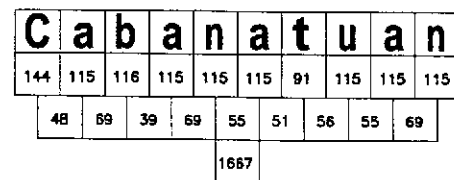
GS-5



GS-2



GS-7



ROADSIDE SIGNS - MOUNTING SELECTION TABLE

SIGN SIZE WIDTH x DEPTH (mm)	NUMBER AND DIAMETER (mm) OF GALVANIZED PIPE POSTS
1200 x 600	2 x 65
1800 x 600	2 x 65
1800 x 1200	2 x 100
2400 x 600	2 x 100
2400 x 1200	2 x 125
2400 x 1800	2 x 125
3000 x 600	2 x 100
3000 x 1200	2 x 125
3000 x 1800	2 x 150
3000 x 2400	2 x 150
3700 x 600	2 x 100
3700 x 1200	2 x 125
3700 x 1800	2 x 150
3700 x 2400	3 x 150
4300 x 600	2 x 100
4300 x 1200	2 x 125
4300 x 1800	3 x 150
4900 x 600	3 x 100
4900 x 1200	3 x 125
4900 x 1800	3 x 150
5500 x 600	3 x 100
5500 x 1200	3 x 125
5500 x 1800	3 x 150
6100 x 600	3 x 100
6100 x 1200	3 x 125
6100 x 1800	3 x 150

FOR INTERMEDIATE SIGN SIZES :

- (a.) TAKE DIMENSIONS OF SIGN TO NEAREST 300mm.
- (b.) FOR AN ODD DIMENSION TAKE THE NEAREST EVEN HIGHER DIMENSION IN TABLE E.G.:

NOTES:

1. THIS TABLE GIVES NUMBER AND SIZE OF GALVANIZED PIPE POSTS REQUIRED FOR SIGN SIZES SHOWN. ASSUMING UNDERSIDE OF SIGN IS 2.0m CLEAR ABOVE ROAD PAVEMENT. FOR SIGNS WITH CLEARANCES GREATER THAN 2.0m THE WIDTH USED IN THIS TABLE SHOULD BE THE ACTUAL WIDTH INCREASED BY A PERCENTAGE EQUAL TO THE PERCENTAGE INCREASE IN HEIGHT ABOVE 2.0m.
2. 12mm DIAMETER CADMIUM - PLATED BOLTS, NUTS AND WASHERS SHALL BE USED FOR ATTACHING SIGN TO POSTS.
3. TOP OF PIPE TO BE SUITABLY CAPPED AND PIPE BASES SHALL BE SEALED AGAINST MOISTURE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.

SIGN POST FOUNDATION TABLE

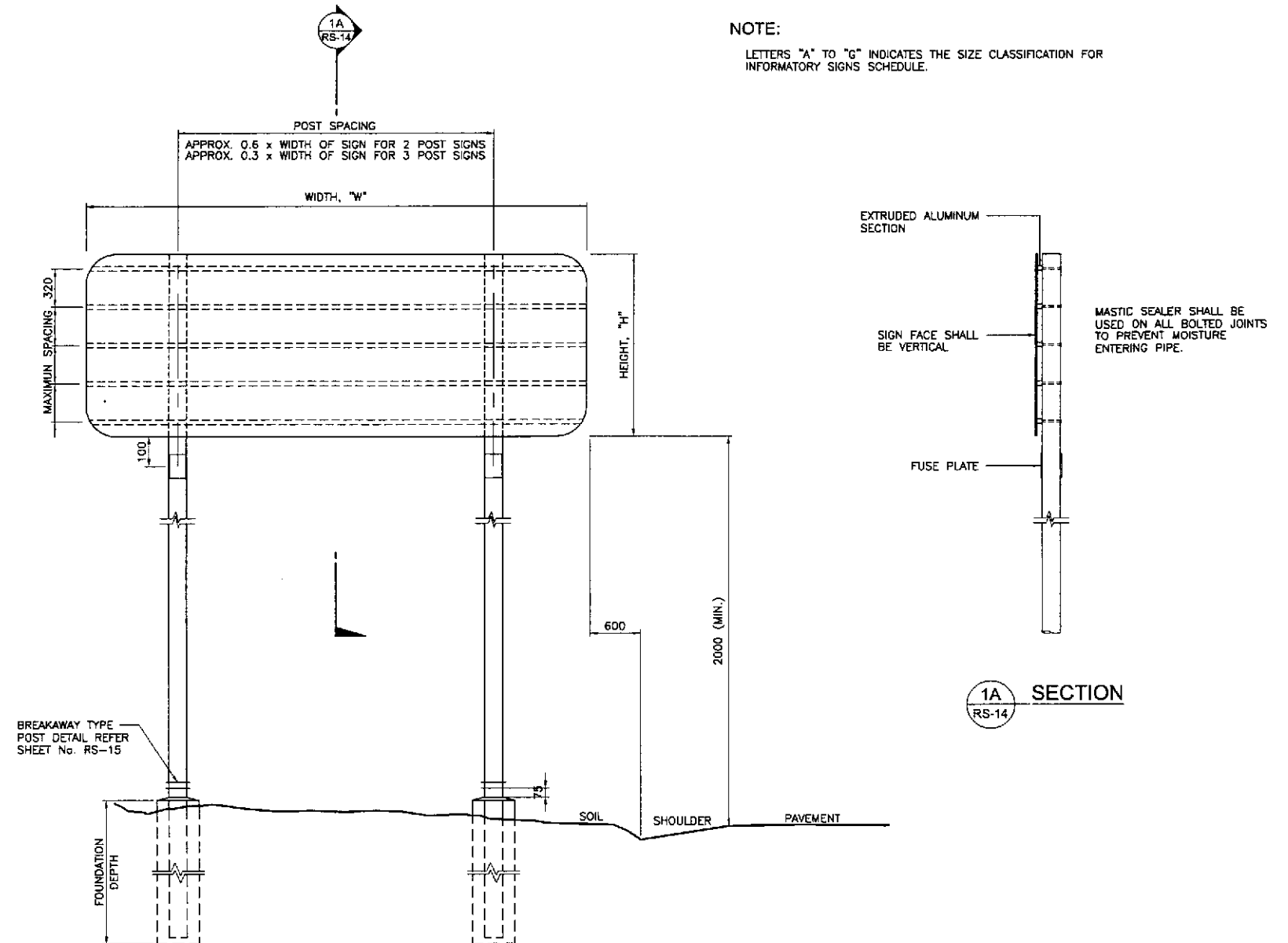
POST PROFILE # (mm)	FOUNDATION DIAMETER (mm)	FOUNDATION DEPTH (mm)
≤ 100	400	1000
125	425	1200
150	450	1500

CLASSIFICATION FOR INFORMATORY SIGN

	H ≥ 900	H ≤ 1500	H ≤ 2100	H > 2100
W ≤ 2100	A	B	B	-
W ≤ 2700	B	C	C	-
W ≤ 3350	B	C	D	D
W ≤ 4000	B	C	D	G
W ≤ 4600	B	C	G	G
W ≥ 4600	E	F	G	G

NOTE:

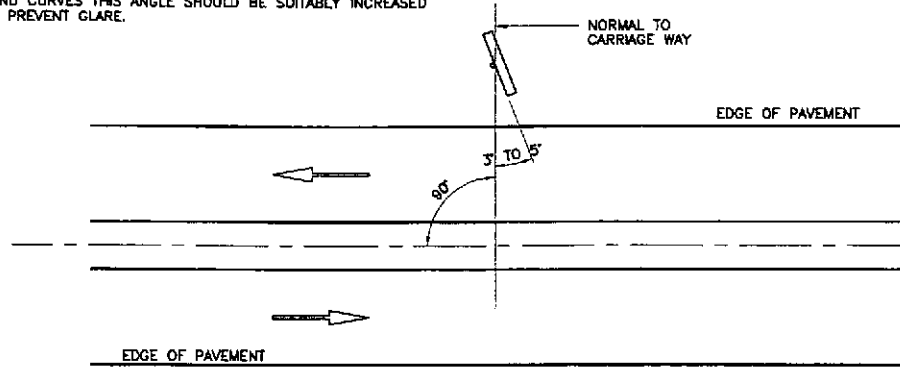
LETTERS "A" TO "G" INDICATES THE SIZE CLASSIFICATION FOR INFORMATORY SIGNS SCHEDULE.



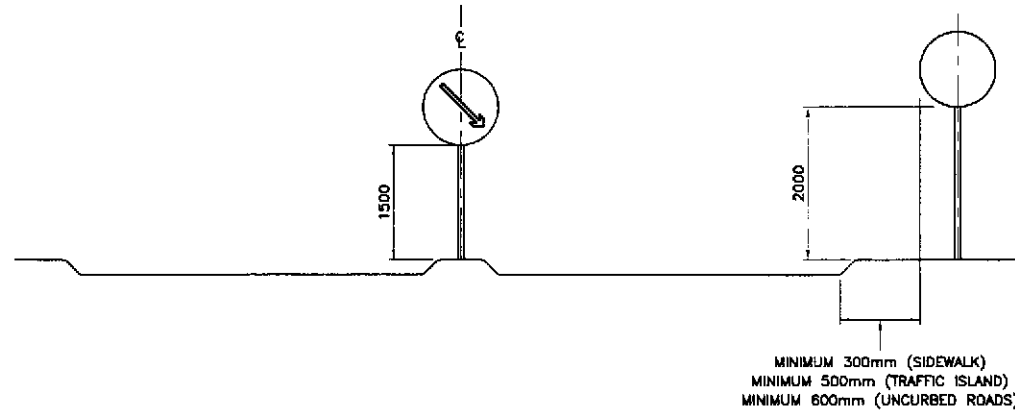
1 TYPICAL SIGN MOUNTING
RS-14 NOT TO SCALE

	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN			PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE : NOT TO SCALE FULL SIZE A1	SHEET CONTENTS : MOUNTING/SUPPORT FOR ROAD SIGN TYPICAL SIGN MOUNTING DETAILS (1 OF 2)	SHEET NO. : RS-14
	CHECKED	DATE	SIGNATURE		Submitted By: DANILLO C. TRAJANO Project Director	Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By: GILBERTO S. REYES OIC, Director IV				

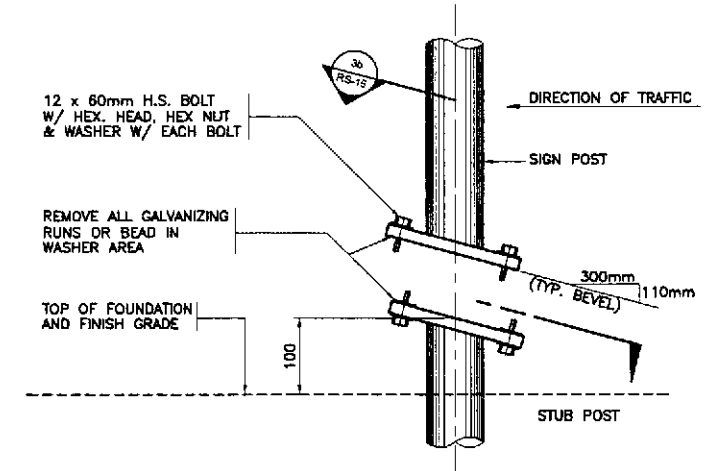
NOTE:
SIGN SHALL BE TURNED 3° TO 5° FROM ONCOMING TRAFFIC ON STRAIGHT SECTIONS AND RIGHT HAND CURVES. ON LEFT HAND CURVES THIS ANGLE SHOULD BE SUITABLY INCREASED TO PREVENT GLARE.



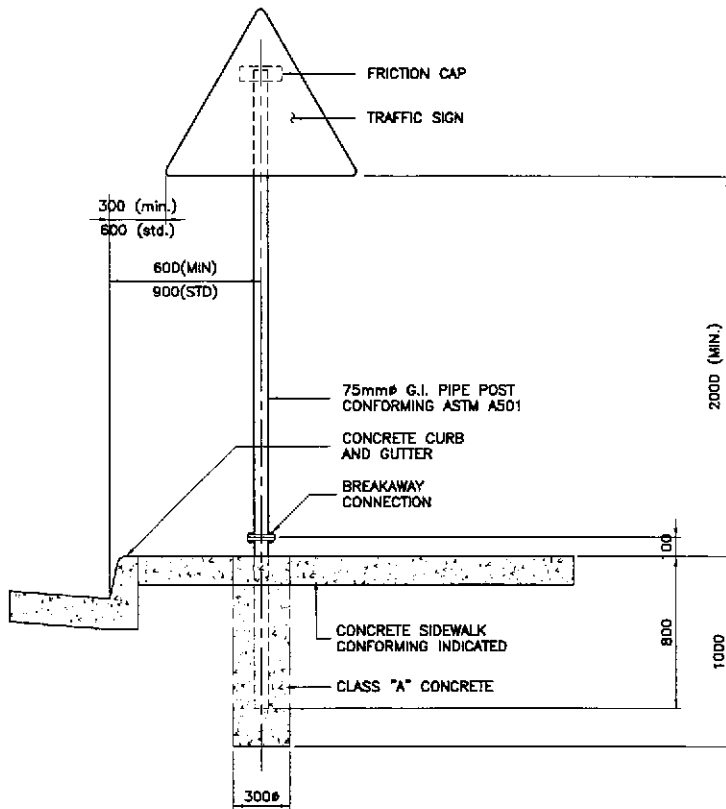
1 PLAN VIEW
RS-15



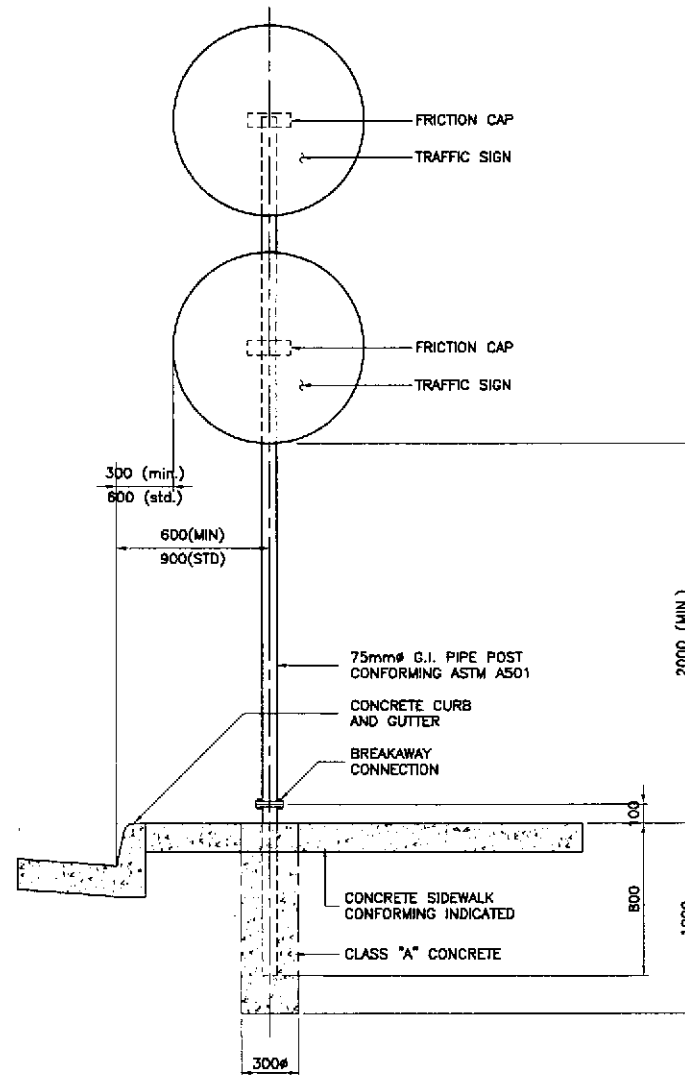
2 SIGN POSITIONS
RS-15 NOT TO SCALE



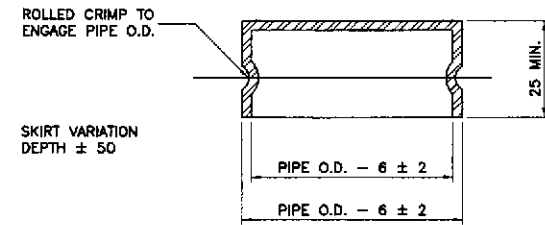
3a ELEVATION
RS-15



6 INSTALLATION DETAILS (TYPE 'A')
RS-15



7 INSTALLATION DETAILS (TYPE 'B')
RS-15

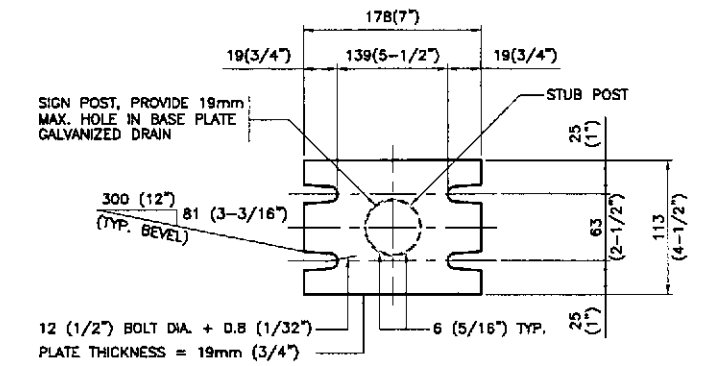


4 FRICTION CAP DETAIL
RS-15

NOTES:
FRICTION CAPS MAY BE MANUFACTURED FROM EITHER HOT ROLLED OR COLD ROLLED STEEL SHEETS. MINIMUM SHEET THICKNESS SHALL BE GAUGE 24.
THE RIM EDGE SHALL BE REASONABLY STRAIGHT AND SMOOTH.
CAPS SHALL BE SIZED AND FORMED IN SUCH MANNER AS TO PRODUCE A DRIVE-ON FRICTION FIT AND HAVE NO TENDENCY TO ROCK WHEN SEATED ON THE PIPE. THE DEPTH SHALL BE SUFFICIENT TO GIVE POSITIVE PROTECTION AGAINST THE ENTRANCE OF RAIN WATER. THEY SHALL BE FREE OF SHARP CREASES OR INDENTATION AND SHOW NO EVIDENCE OF METAL FAILURE.
CAPS SHALL HAVE AN ELECTRO DEPOSITED COATING OF ZINC IN ACCORDANCE WITH REQUIREMENTS OF ASTM SPECS. A164, TYPE G.S.

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:
1. ASSEMBLE POST TO STUB WITH BOLTS AND ONE FLAT WASHER ON EACH BOLT BETWEEN PLATES.
2. SHIM AS REQUIRED TO PLUMB POST.
3. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE WITH 300 TO 380mm WRENCH TO BED WASHER AND SHIMS AND CLEAN BOLT TREADS THEN LOOSEN.
4. RETIGHTEN BOLT IN A SYSTEMATIC ORDER TO A TORQUE OF 200in-lb (266.016 x 10⁻⁴ KN-M).
5. LOOSEN EACH BOLT AND RETIGHTEN TO THE PRESCRIBED TORQUE IN THE SAME ORDER AS INITIAL TIGHTENING.
6. BURR TREADS AT JUNCTION WITH NUT USING A CENTER PUNCH TO PREVENT NUT LOOSENING.

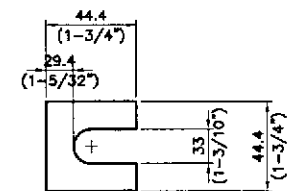
TYPICAL SIGN MOUNTING DETAILS
NOT TO SCALE



3b SECTION
RS-15

SECTION SHOWN FOR INSTALLATIONS ON RIGHT SHOULDER AND IN GORE. PLATE SLOTS BEVELS ARE OPPOSITE HAND FROM THAT SHOWN FOR INSTALLATIONS ON LEFT SHOULDER. PLATES FOR BASE CONNECTION SHALL CONFORM W/ THE REQ'S OF ASTM A 36.

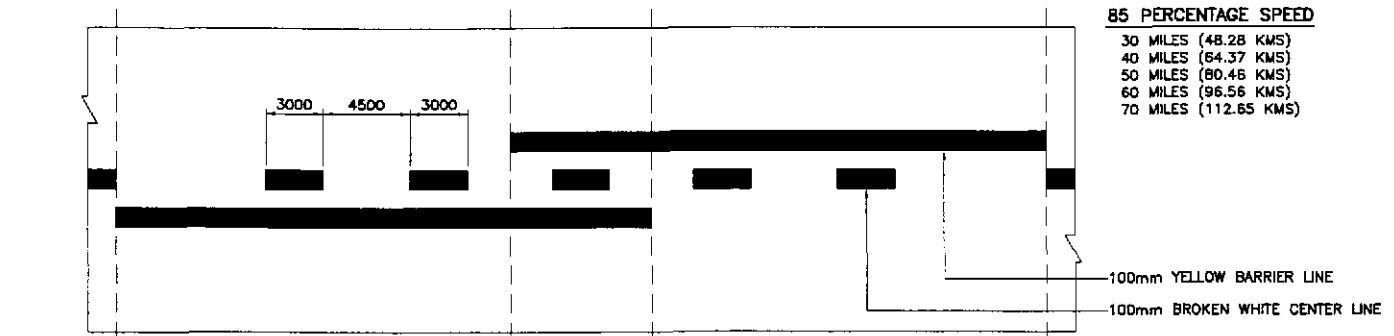
3 SIGN POST & STUB POST DETAIL
RS-15



5 SHIM DETAIL
RS-15

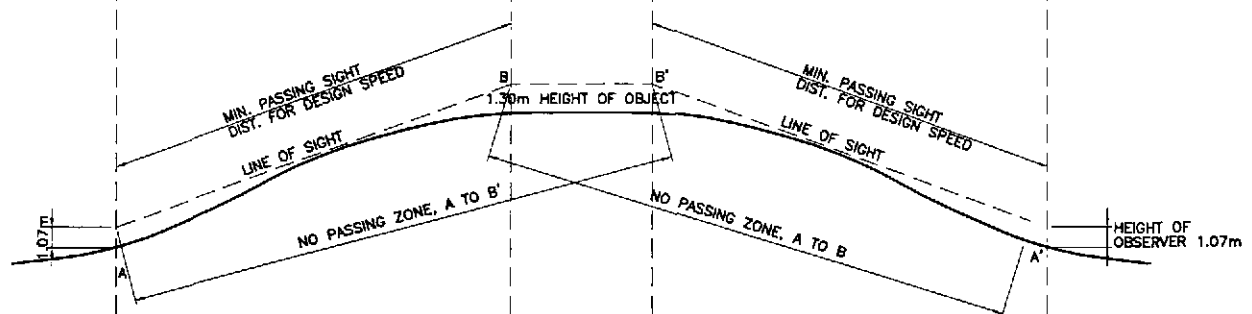
NOTES:
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
MATERIAL AND FABRICATION SHALL CONFORM TO THE REQUIREMENTS OF GENERAL SPECIFICATIONS.
ALL PIPE POST, STRUCTURAL STEEL BOLTS AND WASHER SHALL BE GALVANIZED AS PER AASHTO M 111.
ALL HIGH STRENGTH BOLTS AND WASHER SHALL CONFORM TO ASTM-325 AND ALL HIGH STRENGTH NUTS SHALL BE OF SUCH CAPACITY AS TO DEVELOP THE BOLT STRENGTH.
TIGHTEN THE HIGH STRENGTH BOLTS IN THE BASE CONNECTION BY THE USE OF TORQUE, DO NOT OVERTIGHTEN.
DESIGN TORQUE EQUALS TO 200in-lb(266.016x10⁻⁴KN-m)

	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :		
	CHECKED	9/20/02	S. LUNA		BUREAU OF DESIGN			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	NOT TO SCALE	MOUNTING / SUPPORT FOR ROAD SIGN TYPICAL SIGN MOUNTING DETAILS (2 OF 2)	RS-15		
	SUBMITTED	9/23/02	S. LUNA		OFFICE OF THE SECRETARY			PLARIDEL BYPASS - CONTRACT PACKAGE II	FULL SIZE A1				
Submitted By: DANILLO C. TRAJANO, Project Director				Reviewed By: JOSEFINA M. ALAGAR, Chief, Highways Division			Recommended By: GILBERTO S. REYES, OIC, Director IV			Approved By: MANUEL M. BONDAN, Undersecretary		Approved By: SIMEON A. DATUMANONG, Secretary	



85 PERCENTILE SPEED

30 MILES (48.28 KMS)
40 MILES (64.37 KMS)
50 MILES (80.46 KMS)
60 MILES (96.56 KMS)
70 MILES (112.65 KMS)



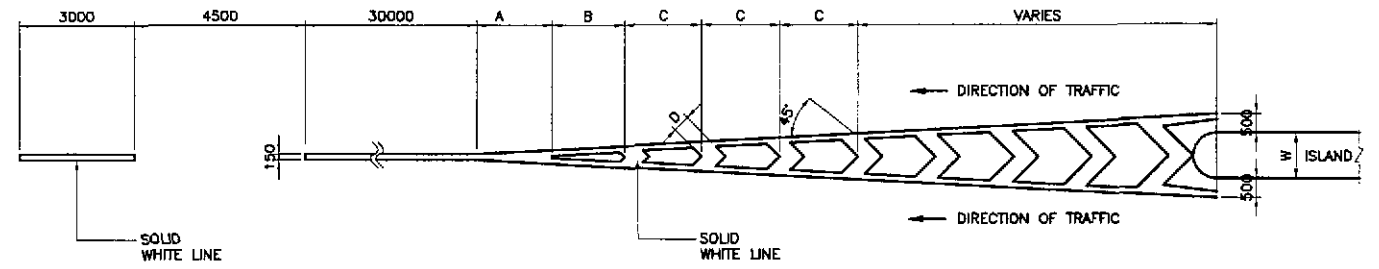
AA' BEGIN NO PASSING ZONE
SIGHT DISTANCE BECOMES LESS THAN MIN. MEASURED BETWEEN POINTS 1.30 METER ABOVE PAVEMENT.

BB' END NO PASSING ZONE
SIGHT DISTANCE AGAIN EXCEEDS MINIMUM.

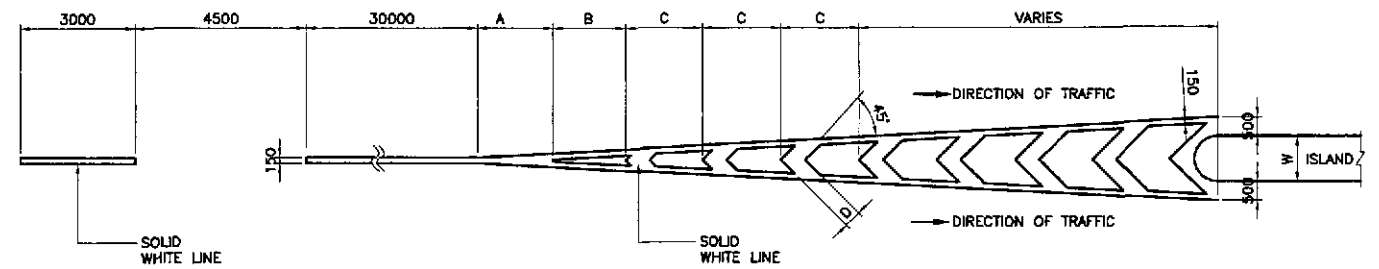
NOTE:
NO PASSING ZONE IN OPPOSITE DIRECTION MAY OR MAY NOT OVERLAP DEPENDING ON VERTICAL ALIGNMENT AND DESIGN SPEED, FOR NO OVERLAPPING TYPE, REFER TO FIGURE 6 OF DPWH MANUAL ON PAVEMENT MARKINGS (1980), IF REQUIRED.

1B NO-PASSING LINES ON HORIZONTAL CURVES (OVERLAPPING TYPE)
RS-17 NOT TO SCALE

85 PERCENTILE SPEED (km/h)	MIN. SIGHT DISTANCE (1.15m to 1.15m) (m)	MIN. LENGTH OR BARRIER LINE L (m)	MIN. DISTANCE BETWEEN BARRIER LINE (m)
50	150	75	150
60	180	90	175
70	210	105	200



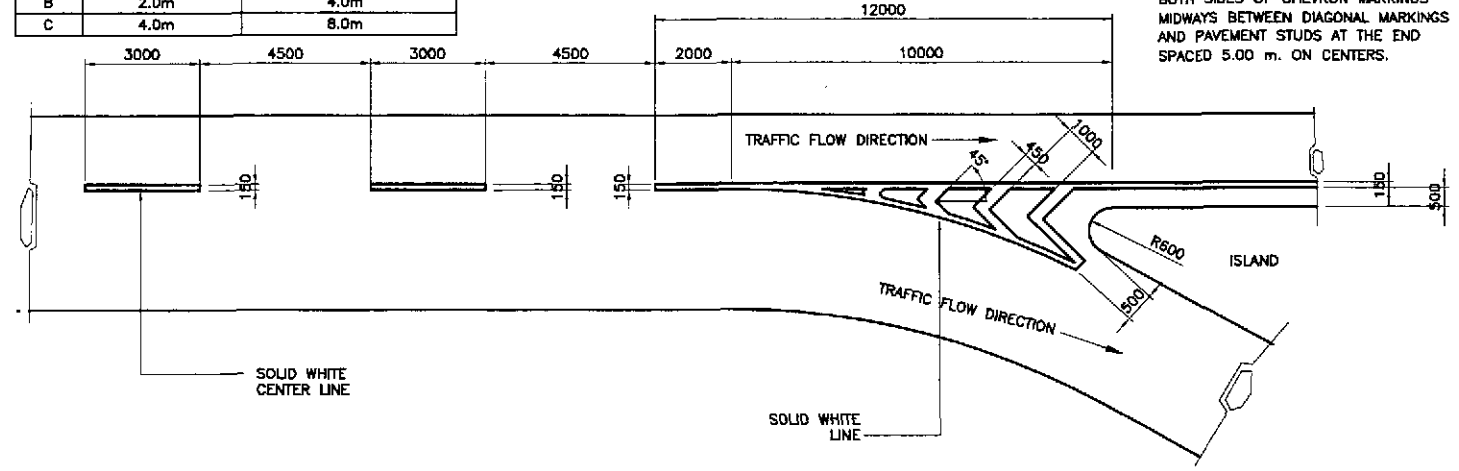
1E CHEVRON MARKINGS
RS-17 NOT TO SCALE



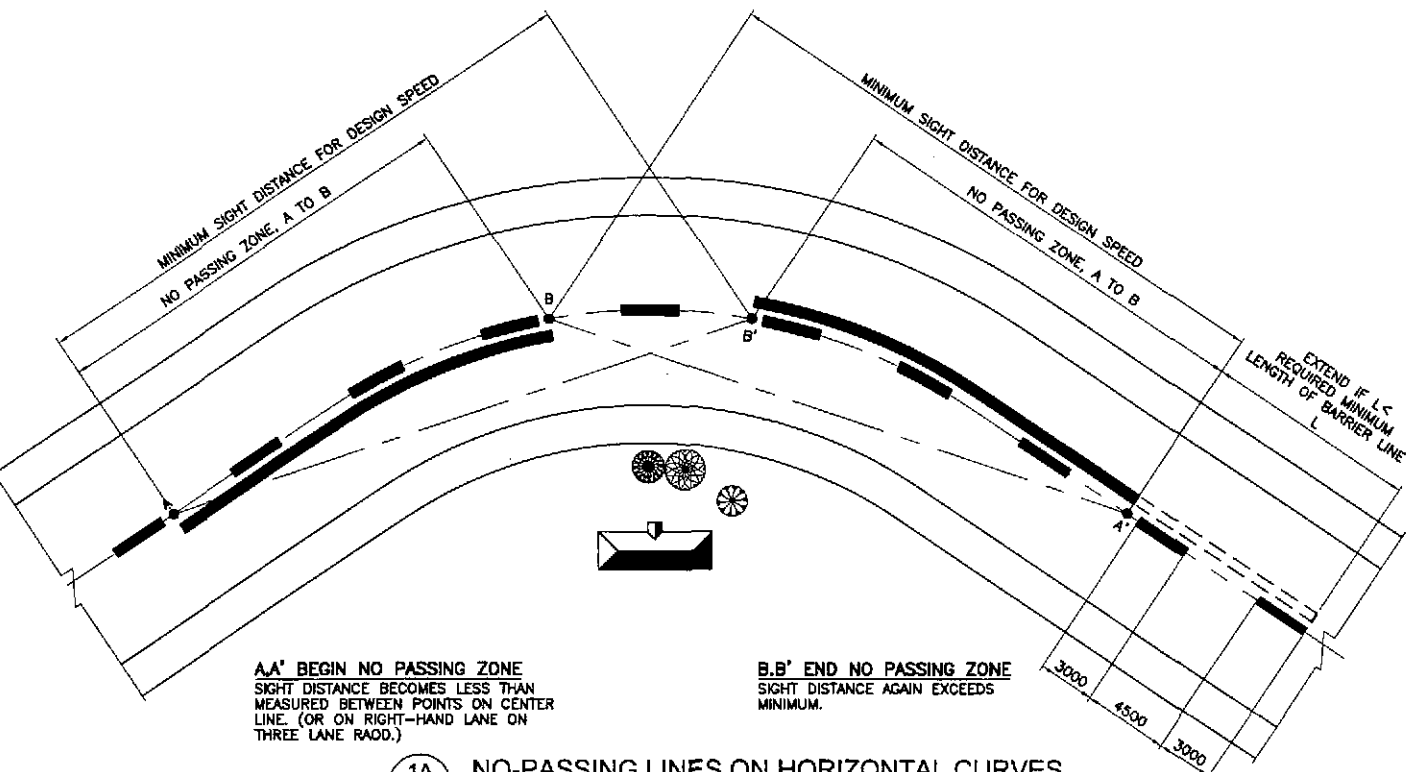
1D CHEVRON MARKINGS NEAR OBSTRUCTION
RS-17 NOT TO SCALE

	RAMPS & OTHER ROADS (60 KPH OR LESS)	BYPASS MAINLINE (GREATER THAN 60 KPH)
W	150mm	150mm
D	500mm	1000mm
A	1.5m	3.0m
B	2.0m	4.0m
C	4.0m	8.0m

NOTE:
PROVIDE CONCRETE CHATTER BARS AT BOTH SIDES OF CHEVRON MARKINGS MIDWAYS BETWEEN DIAGONAL MARKINGS AND PAVEMENT STUDS AT THE END SPACED 5.00 m. ON CENTERS.



1C CHEVRON MARKINGS AT INTERSECTION
RS-17 NOT TO SCALE



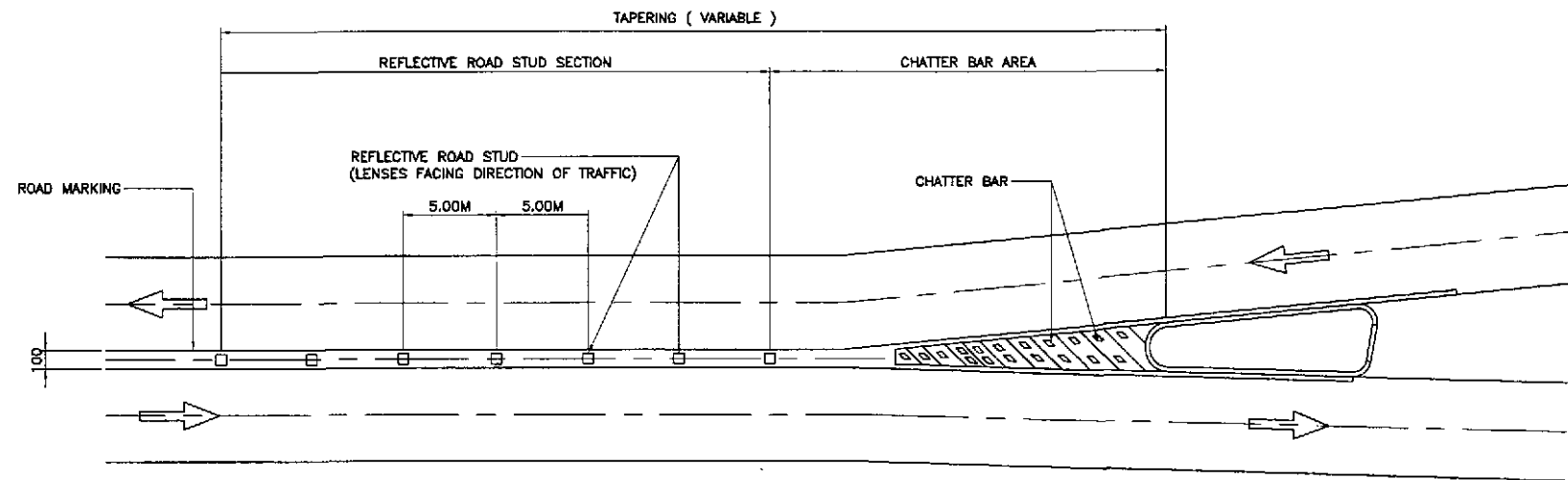
AA' BEGIN NO PASSING ZONE
SIGHT DISTANCE BECOMES LESS THAN MEASURED BETWEEN POINTS ON CENTER LINE. (OR ON RIGHT-HAND LANE ON THREE LANE ROAD.)

BB' END NO PASSING ZONE
SIGHT DISTANCE AGAIN EXCEEDS MINIMUM.

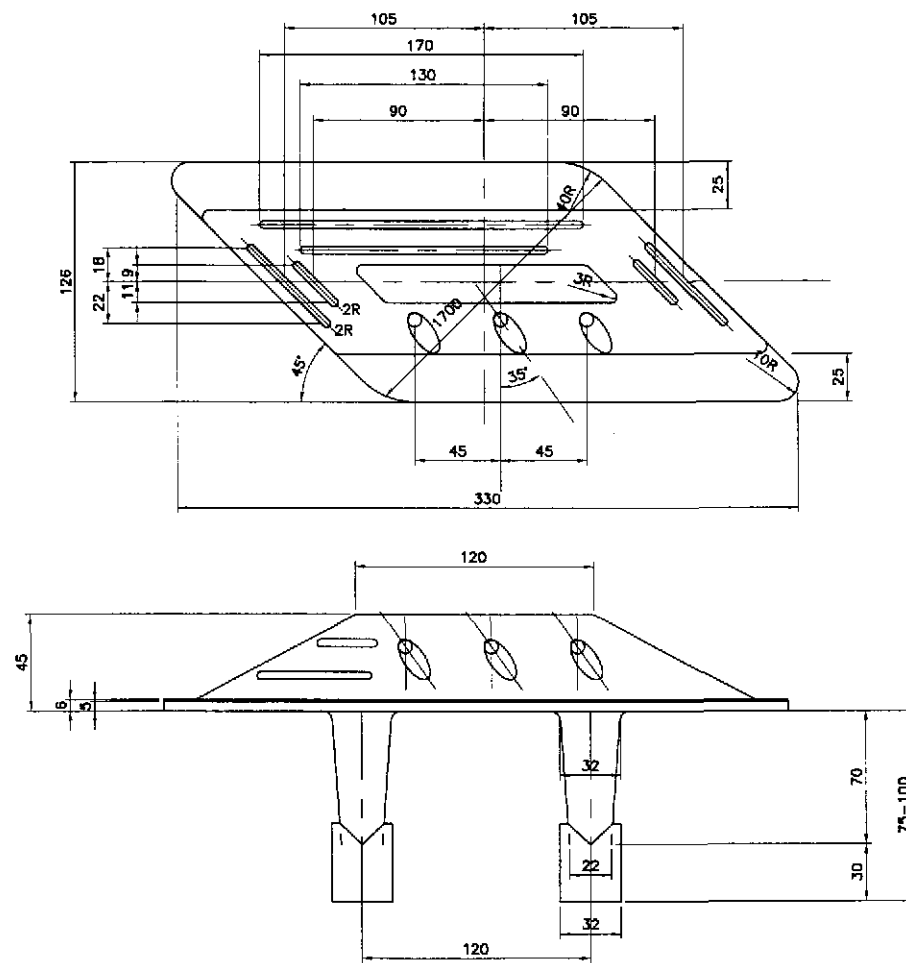
1A NO-PASSING LINES ON HORIZONTAL CURVES
RS-17 NOT TO SCALE

1 STANDARD PAVEMENT MARKINGS
RS-17 NOT TO SCALE

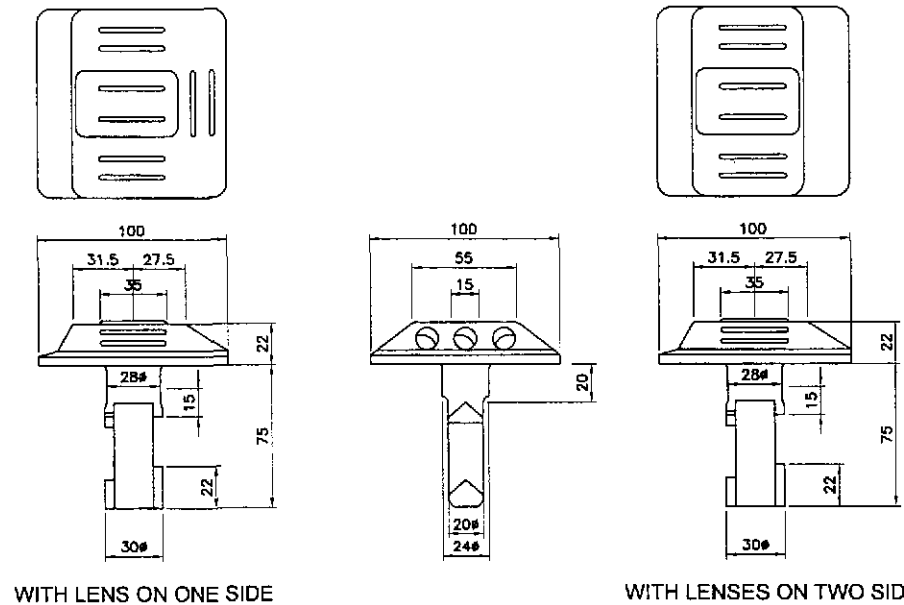
	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :	
	DESIGNED	9/18/02	S. LUNA	BUREAU OF DESIGN			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	NOT TO SCALE FULL SIZE A1	STANDARD PAVEMENT MARKINGS SHEET 2 OF 2	RS-17
	CHECKED	9/20/02	S. LUNA	Submitted By:	Reviewed By:	Recommended By:				
	SUBMITTED	9/23/02	M. R. S. S. S.	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES O/C, Director IV				
			Approved By:	Recommended By:	Approved By:					
			MANUEL M. BONDAN Undersecretary							



3 LOCATION OF ROAD STUDS AND CHATTER BARS
 RS-18 NOT TO SCALE



1 CHATTER BAR
 (WITH LENSES ON 1 - SIDE)
 RS-18 SCALE 1:20 M



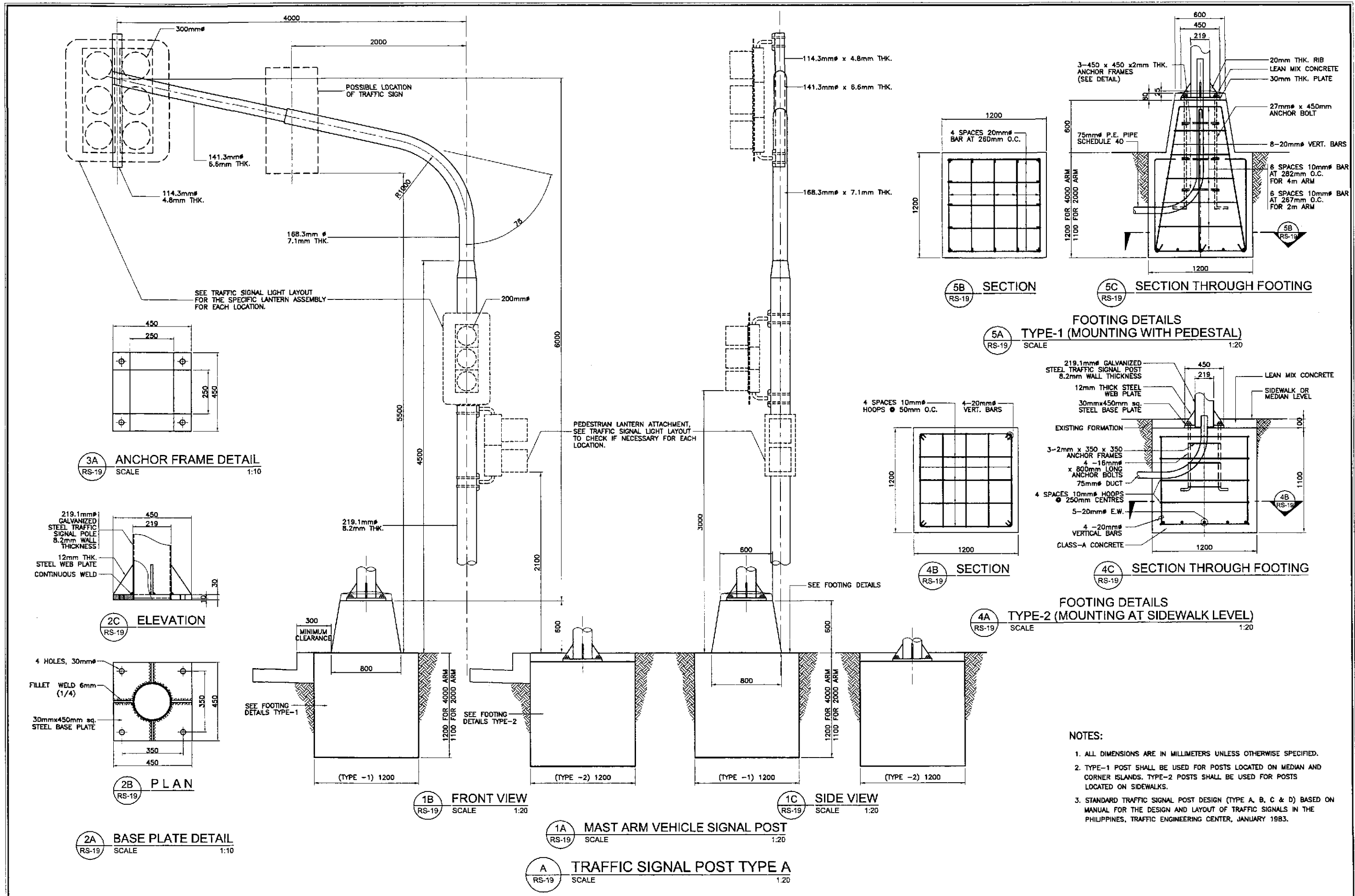
2 REFLECTIVE ROAD STUDS FOR CONCRETE
 (WITH LENSES ON ONE - SIDE / TWO SIDES)
 RS-18 SCALE 1:20

JICA
 JAPAN INTERNATIONAL COOPERATION AGENCY
 KATAHIRA & ENGINEERS INTERNATIONAL
 YEC YACHIYO ENGINEERING CO., LTD.

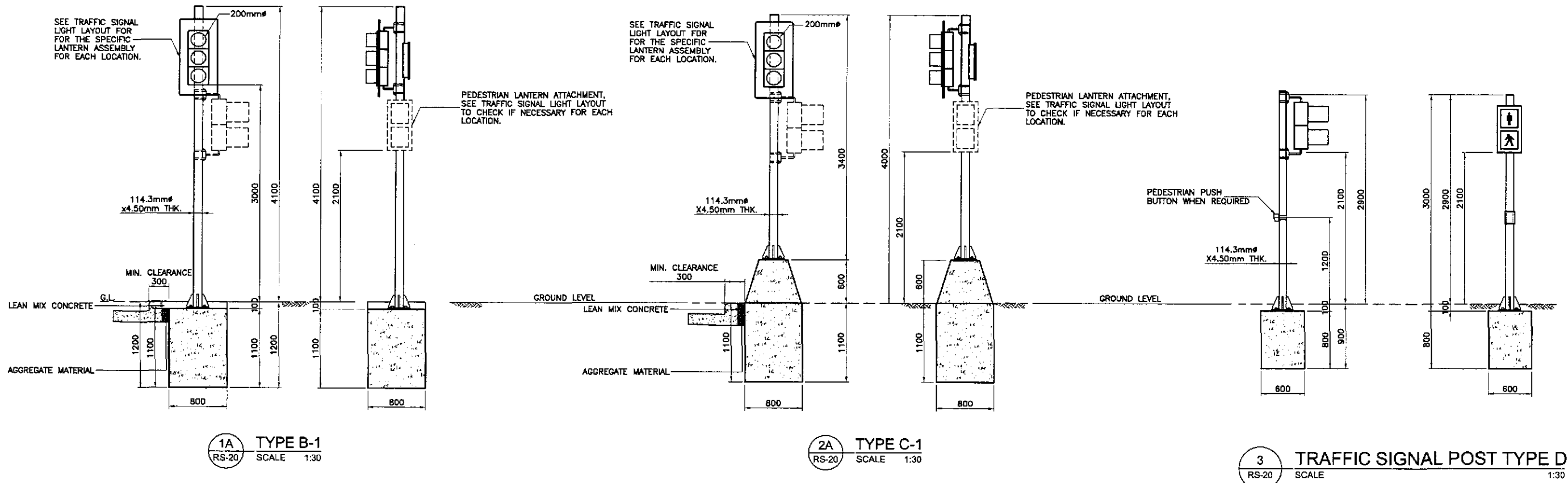
DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			
DESIGNED 9/18/02	S. LUJA	BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
CHECKED 9/20/02	S. ROSE	Submitted By:	Reviewed By:	Recommended By:	Approved By:
SUBMITTED 9/23/02	TEAM LEADER	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONOAN Undersecretary SIMEON A. DATUMANONG Secretary

PROJECT AND LOCATION :
 THE DETAILED DESIGN STUDY ON
 UPGRADING INTER-URBAN HIGHWAY SYSTEM
 ALONG THE PAN-PHILIPPINE HIGHWAY
 (Plaridel, Cabanatuan and San Jose Bypasses)
 PLARIDEL BYPASS - CONTRACT PACKAGE II

SCALE :	SHEET CONTENTS :	SHEET NO. :
AS SHOWN FULL SIZE A1	REFLECTIVE ROAD STUDS AND CONCRETE CHATTER BAR AND DETAILS	RS-18



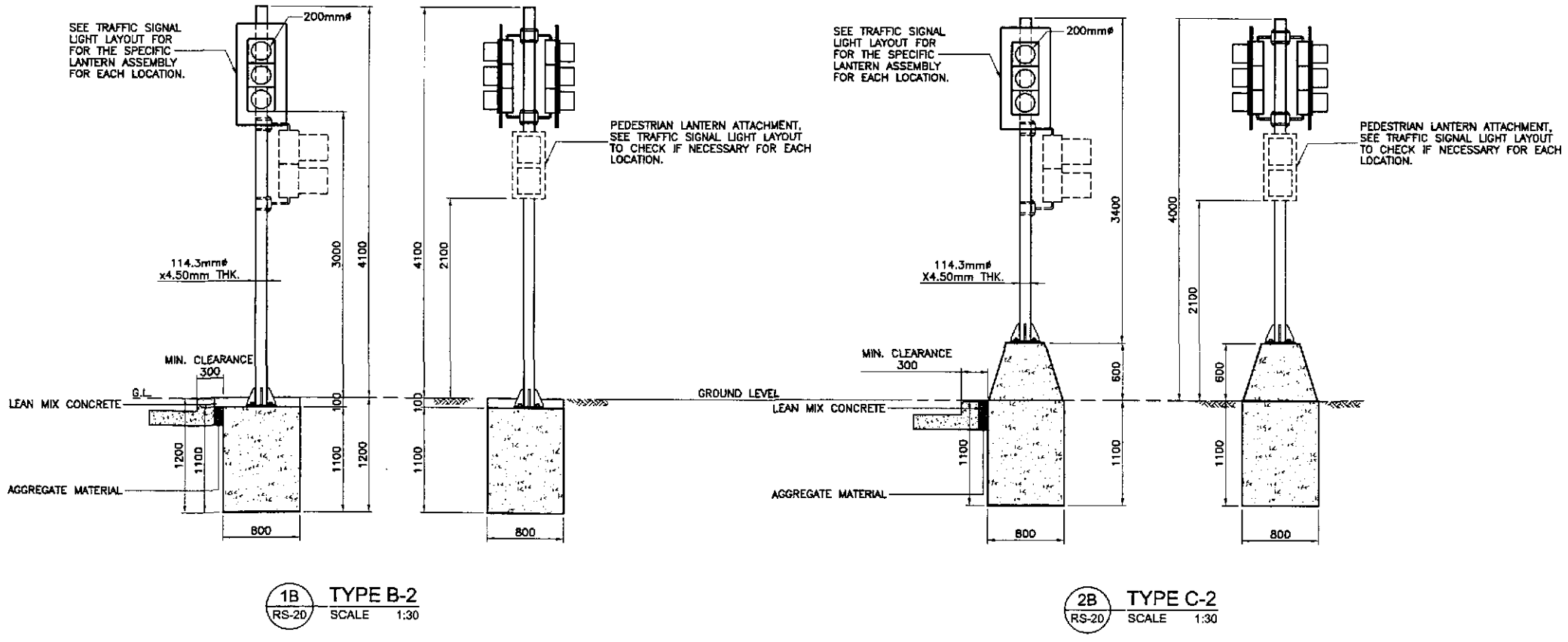
	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES			PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE :	SHEET CONTENTS : TRAFFIC SIGNAL POST TYPE 'A' AND FOUNDATION DETAILS	SHEET NO. : RS-19
	CHECKED	9/20/02	5.900		DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				AS SHOWN		
	SUBMITTED	9/23/02	M. K. K.		Submitted By: DANILLO C. TRAMANO Project Director	Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By: GILBERTO S. REYES OIC, Director IV		Recommended By: MANUEL M. BONDAN Undersecretary		



1A TYPE B-1
RS-20 SCALE 1:30

2A TYPE C-1
RS-20 SCALE 1:30

3 TRAFFIC SIGNAL POST TYPE D
RS-20 SCALE 1:30



1B TYPE B-2
RS-20 SCALE 1:30

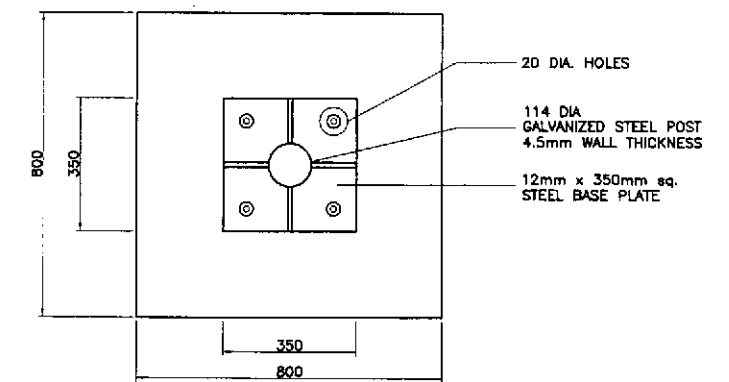
2B TYPE C-2
RS-20 SCALE 1:30

1 TRAFFIC SIGNAL POST TYPE B
RS-20 SCALE 1:30

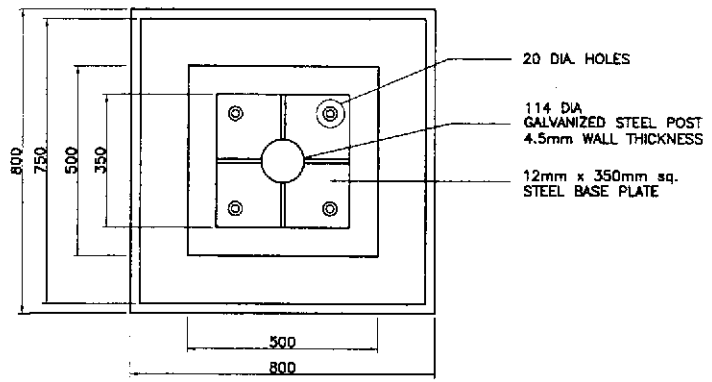
2 TRAFFIC SIGNAL POST TYPE C
RS-20 SCALE 1:30

- NOTES:
1. POST ON SIDEWALKS SHOULD BE LOCATED AT A MINIMUM OF 0.60m (0.75 FOR MAST ARMS) FROM THE FACE OF THE CURB.
 2. POST ON MEDIAN ISLANDS MUST BE OFFSET AT LEAST 1.5m FROM THE NOSE OF THE ISLAND AND MOUNTED ON CONCRETE PEDESTALS AT LEAST 0.60m HIGH.
 3. POST AND MAST ARMS ON CORNER ISLANDS SHOULD BE AT LEAST 1.0m FROM THE FACE OF THE CURB AND MOUNTED ON CONCRETE PEDESTALS 0.60m HIGH.
 4. PEDESTRIAN LANTERN ATTACHMENTS ARE INCLUDED ONLY IF SPECIFIED IN THE TRAFFIC SIGNAL LIGHT LAYOUT.

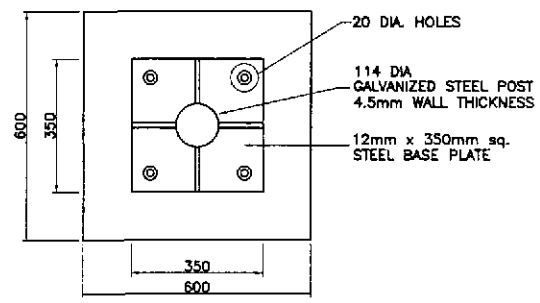
	DESIGNED	9/18/02	CATBAGAN	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN OFFICE OF THE SECRETARY	PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :	
	CHECKED	9/20/02	GOSE		Submitted By: DANILO C. TRAJANO Project Director	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	AS SHOWN	TRAFFIC SIGNAL POST TYPES 'B', 'C' & 'D'	RS-20
	SUBMITTED	9/23/02	Ch. Kusan		Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division Recommended By: GILBERTO S. REYES OIC, Director IV Approved By: MANUEL M. BONGAON Undersecretary SIMEDON A. DATUMANONG Secretary	FULL SIZE A1			



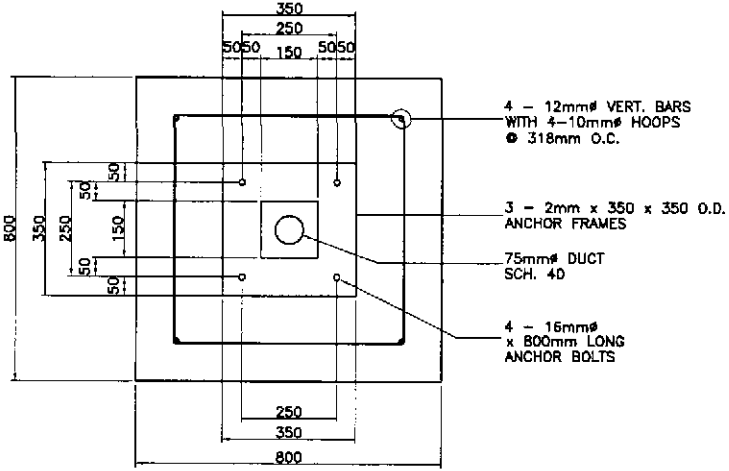
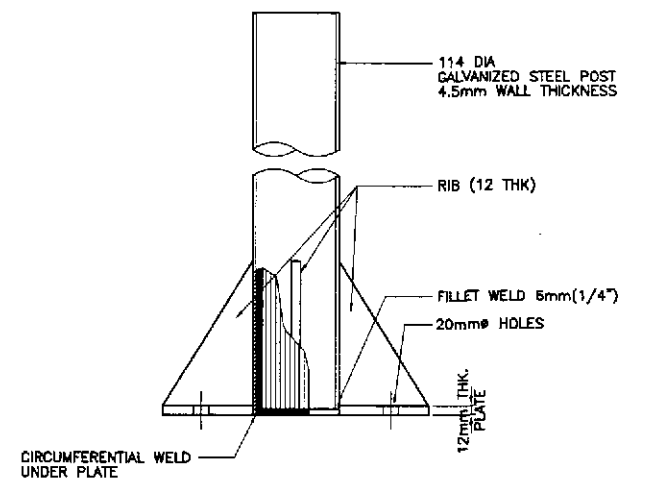
PLAN OF FOOTING



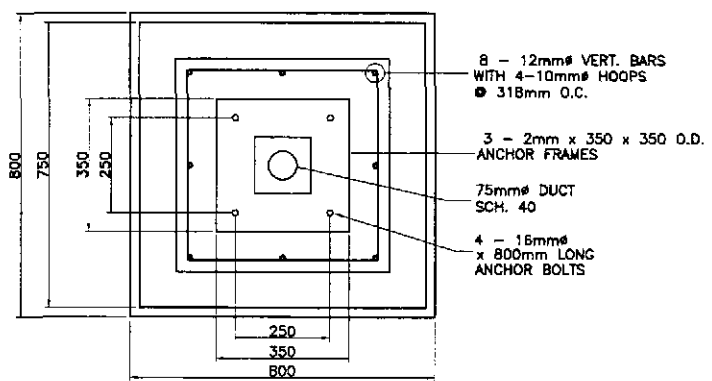
PLAN OF FOOTING



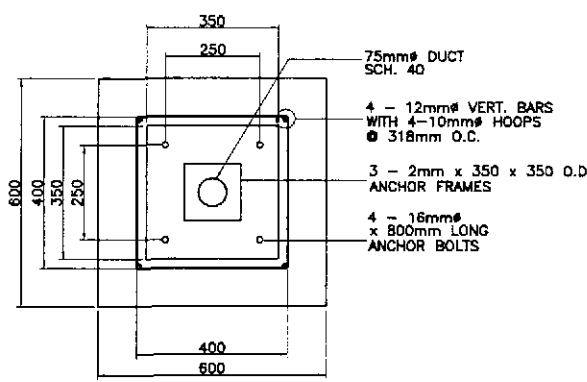
PLAN OF FOOTING



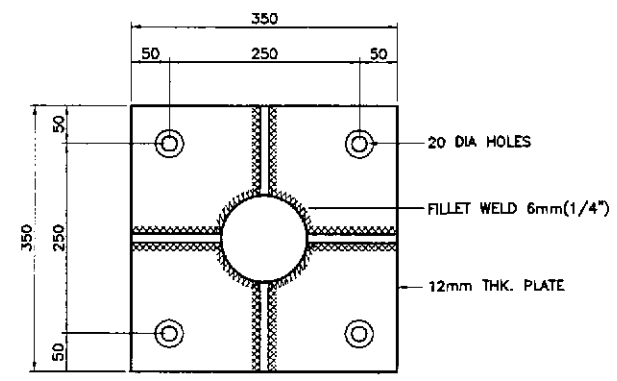
SECTION THRU A OF TYPE B



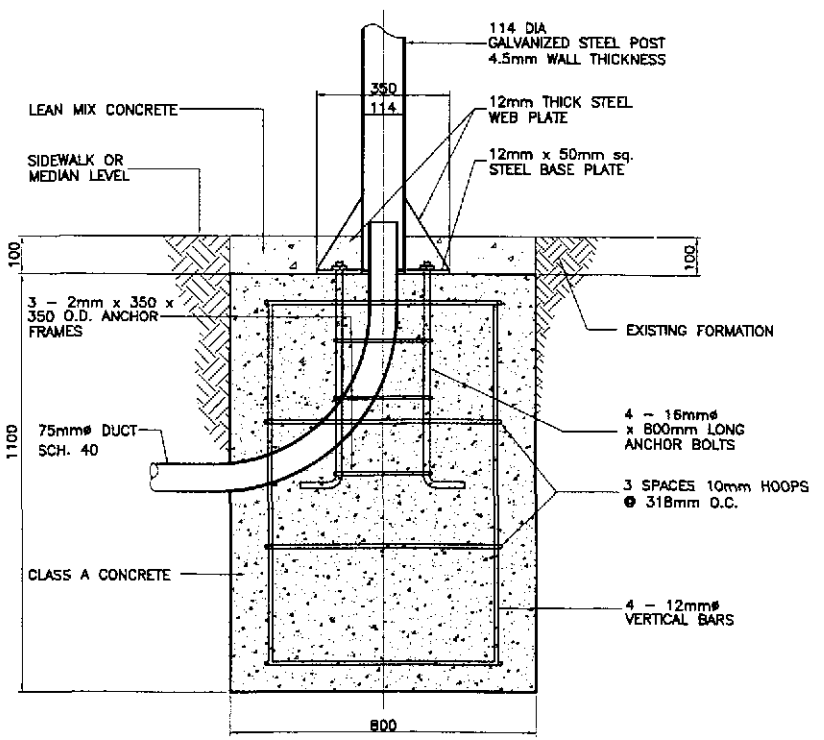
SECTION THRU A OF TYPE C



SECTION THRU A OF TYPE D

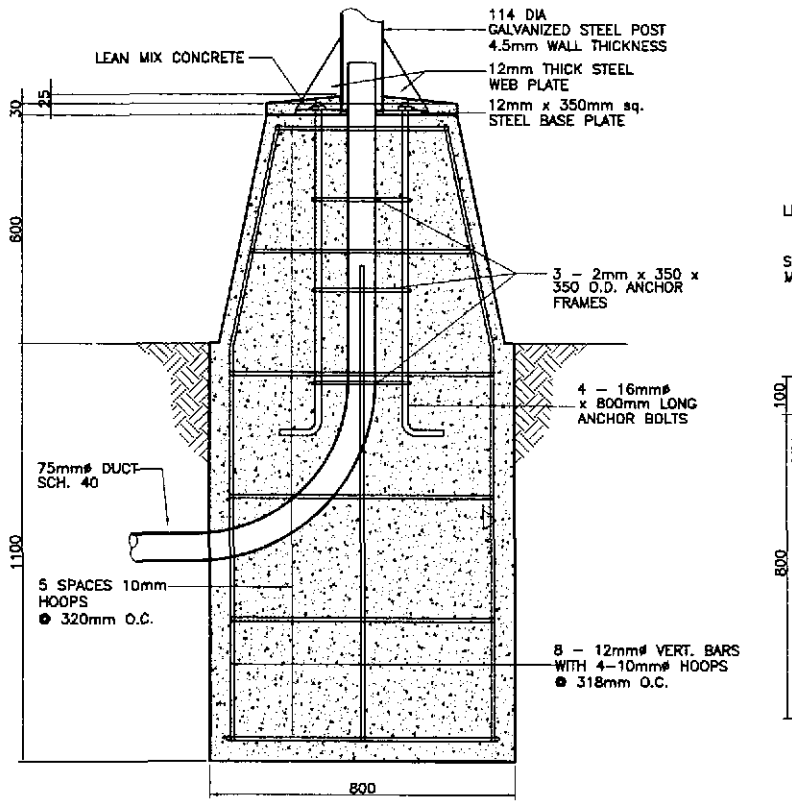


5 POST AND BASE PLATE SCALE 1:5



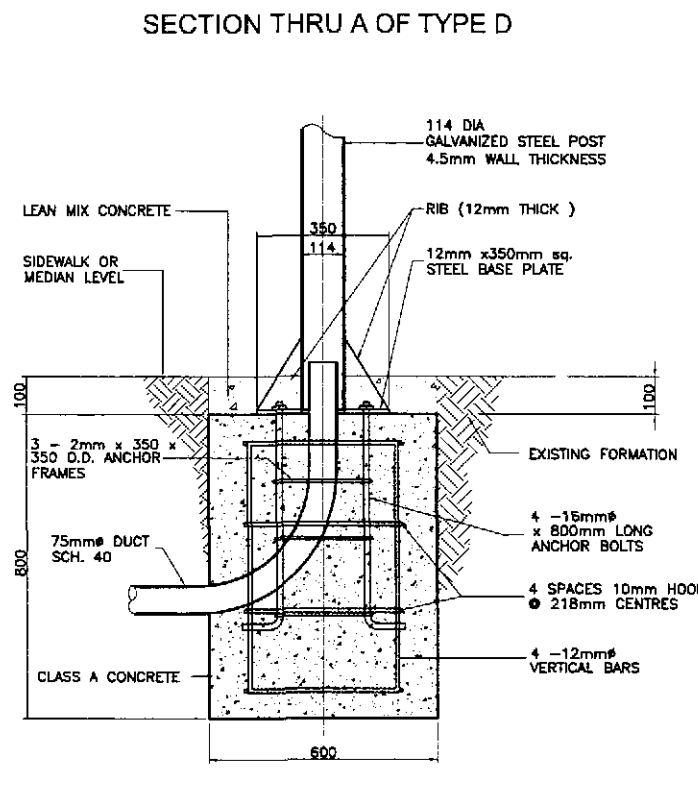
SECTION THROUGH FOUNDATION (4.1 SIGNAL POST)

1 VEHICLE SIGNAL POST FOUNDATION (TYPE B) SCALE 1:10



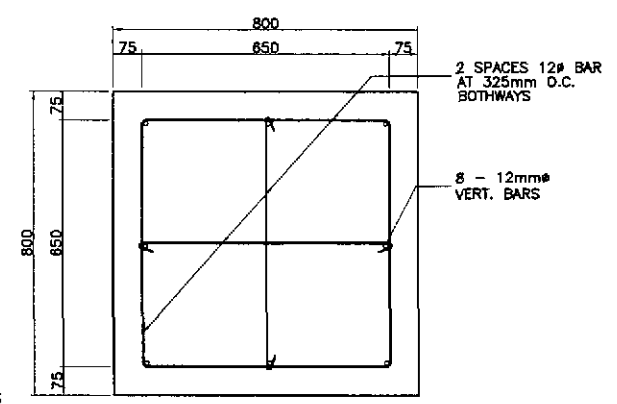
SECTION THROUGH FOUNDATION (4.1 SIGNAL POST)

2 VEHICLE SIGNAL POST FOUNDATION (TYPE C) SCALE 1:10



SECTION THROUGH FOUNDATION (4.1 SIGNAL POST)

3 PEDESTRIAN SIGNAL POST FOUNDATION (TYPE D) SCALE 1:10



4 TYPICAL BOTTOM SECTION OF FOOTING - TYPE C SCALE 1:10

NOTES:
 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
 2. POST AND FOUNDATION DESIGN BASED ON TRAFFIC ENGINEERING CENTER DRAWING NO. 1033.

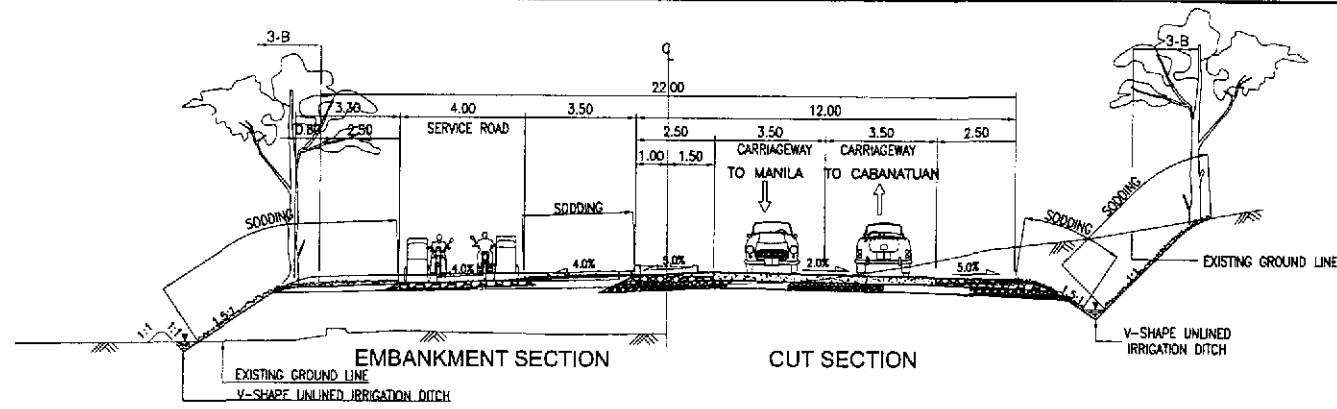
JICA
 JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS INTERNATIONAL
YEO YACHIYO ENGINEERING CO., LTD.

DESIGNED	DATE	SIGNATURE
9/18/02	9/18/02	[Signature]
CHECKED	9/20/02	[Signature]
SUBMITTED	9/23/02	[Signature]

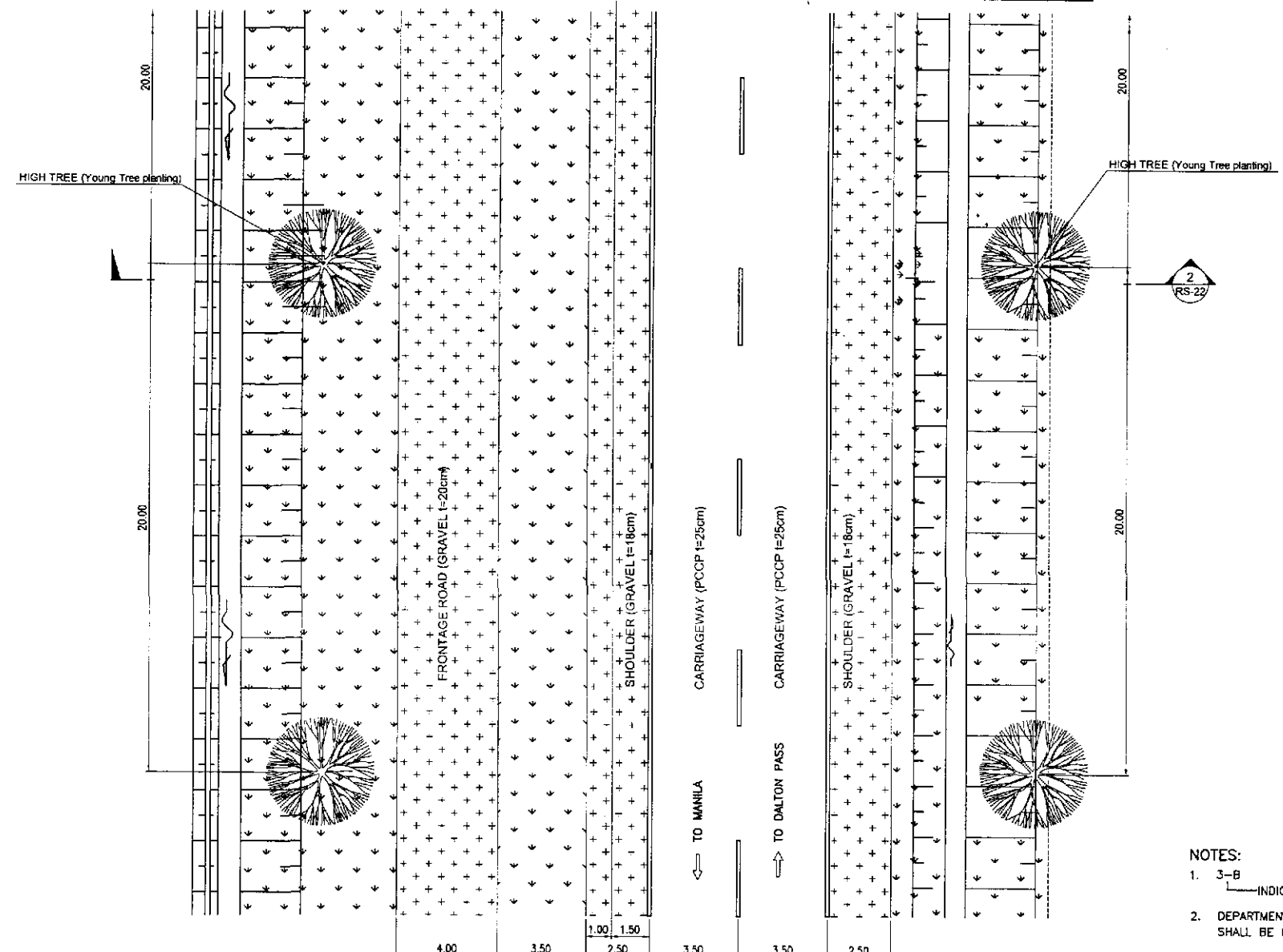
REPUBLIC OF THE PHILIPPINES		DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	
BUREAU OF DESIGN		OFFICE OF THE SECRETARY	
Submitted By:	Reviewed By:	Recommended By:	Approved By:
DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highway Division	GILBERTO S. REYES OC, Director IV	MANUEL M. BONDAN Undersecretary

PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	AS SHOWN	TRAFFIC SIGNAL POST TYPE B, C & D FOUNDATION DETAILS	RS-21
PLARIDEL BYPASS - CONTRACT PACKAGE II	FULL SIZE A1		



2 GENERAL PLANTING LOCATION
RS-22 SCALE 1:120

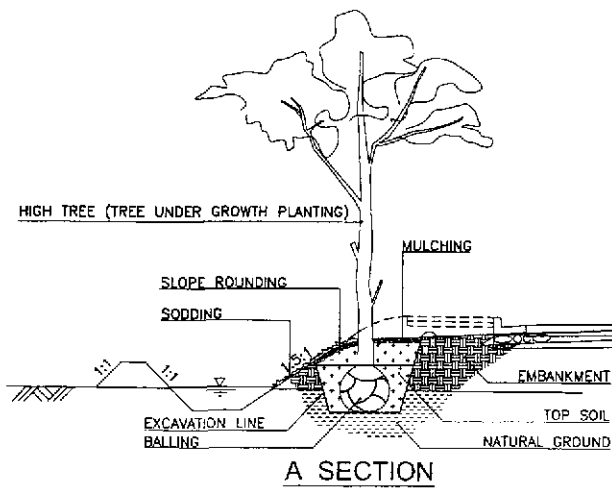
SURFACE	EXISTING GROUND	SIDE DRAIN		PAVEMENT				SLOPE PROTECTION		EXISTING GROUND	
		SLOPE PROTECTION	SOIL DUST PREVENTION	PAVEMENT	SOIL DUST PREVENTION	PAVEMENT	PAVEMENT	SLOPE PROTECTION	EXISTING GROUND		
DISCRIPTION	NATURE	SODDING	SODDING	GRAVEL	SODDING	GRAVEL	PCC	GRAVEL	SODDING	SODDING	NATURE



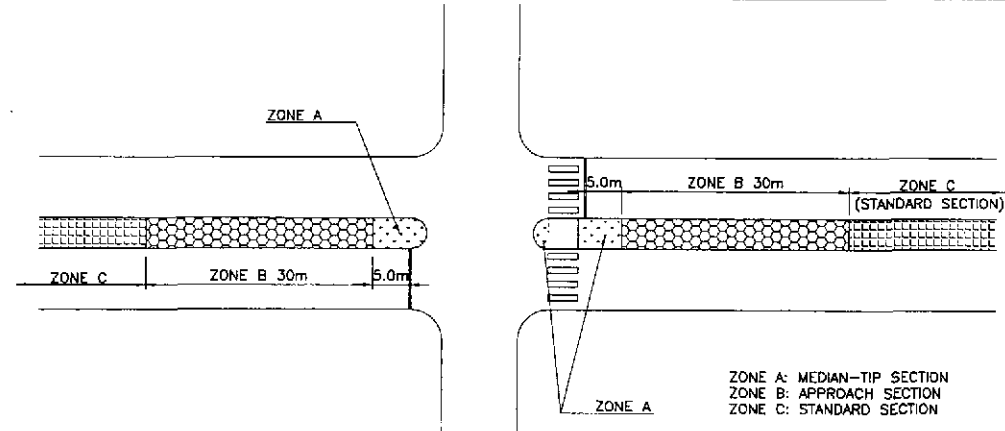
1 TYPICAL PLANTING LAYOUT
RS-22 SCALE 1:120

- NOTES:
- 3-B INDICATE LOCATION AS SPECIFIED IN THE PLANTING LAYOUT.
 - DEPARTMENT ORDER (DO) NO.15, S 2000 AND ITS REQUIREMENTS SHALL BE IMPOSED.

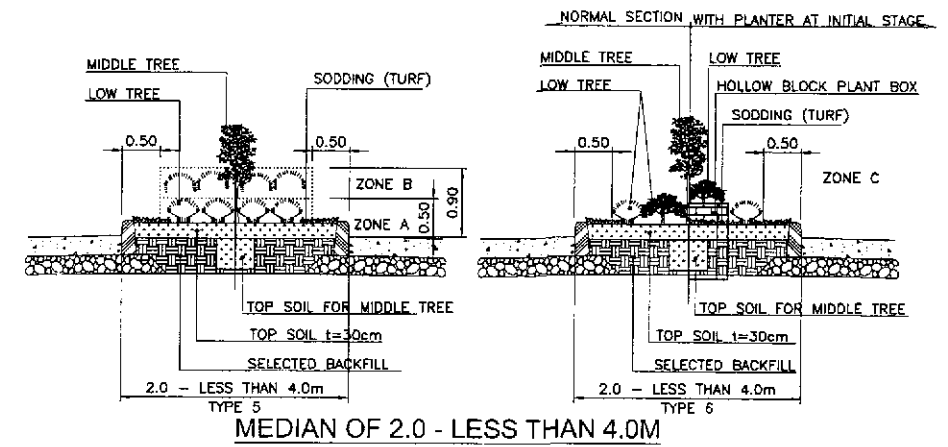
<p>JAPAN INTERNATIONAL COOPERATION AGENCY</p>		<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>				<p>PROJECT AND LOCATION :</p> <p>THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)</p>		<p>SCALE :</p> <p>AS SHOWN</p>	<p>SHEET CONTENTS :</p> <p>TYPICAL PLANTING LAYOUT WITHOUT FRONTAGE ROAD (INITIAL STAGE)</p>	<p>SHEET NO. :</p> <p>RS-22</p>
DESIGNED	DATE	SIGNATURE	BUREAU OF DESIGN		OFFICE OF THE SECRETARY					
CHECKED	9/23/02	[Signature]	Submitted By:	Reviewed By:	Recommended By:	Recommended By:				
SUBMITTED	9/23/02	[Signature]	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONOAN Undersecretary				
			<p>PLARIDEL BYPASS - CONTRACT PACKAGE II</p>				<p>FULL SIZE A1</p>			



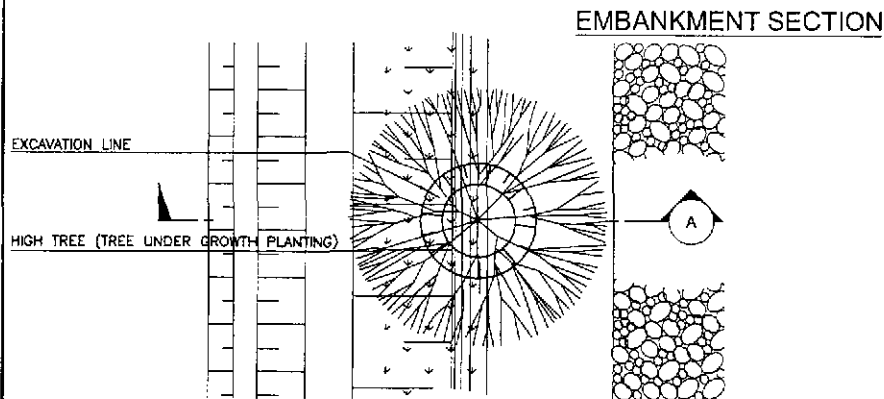
A SECTION



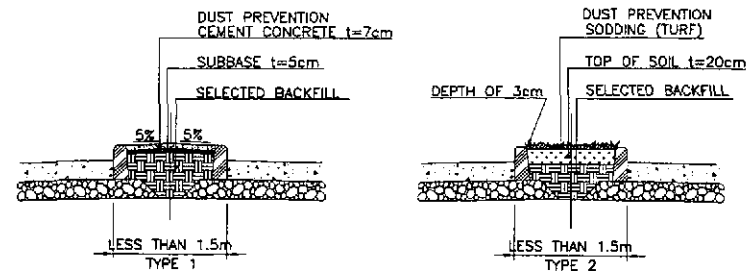
DISTRICT CHART OF PLANTING ARRANGEMENT IN THE MEDIAN



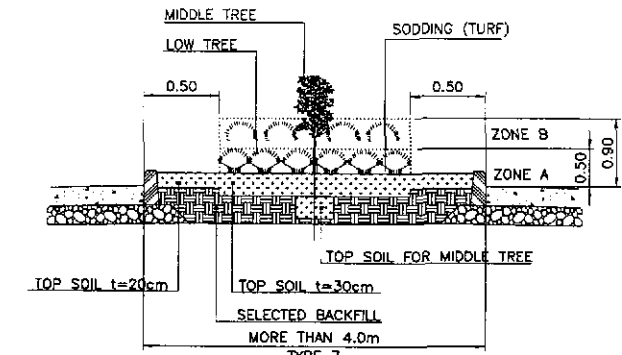
MEDIAN OF 2.0 - LESS THAN 4.0M



EMBANKMENT SECTION

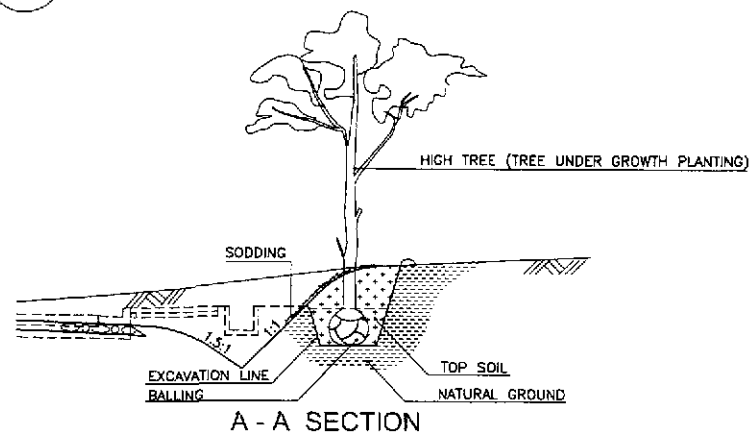


MEDIAN OF LESS THAN 1.5M

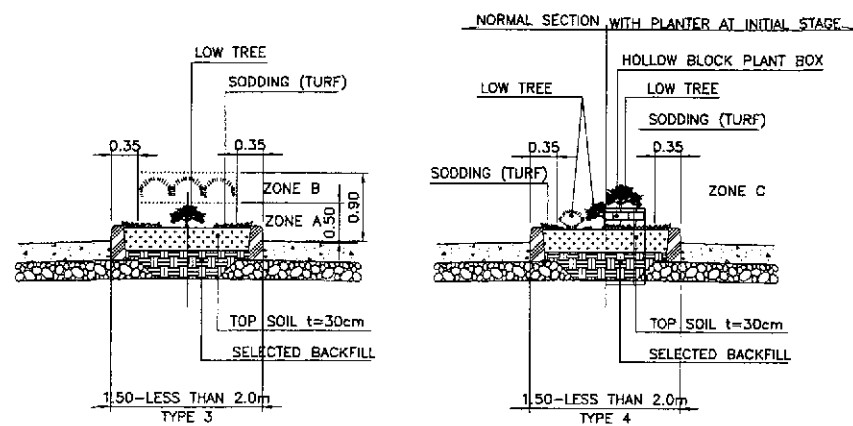


MORE THAN 4.0M

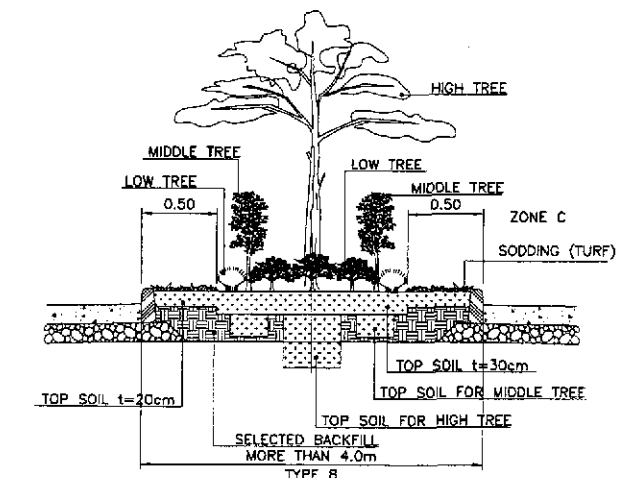
1 PLAN OF ROAD SIDE PLANTATION (OUTSIDE EMBANKMENT SECTION) RS-23 NOT TO SCALE



A-A SECTION

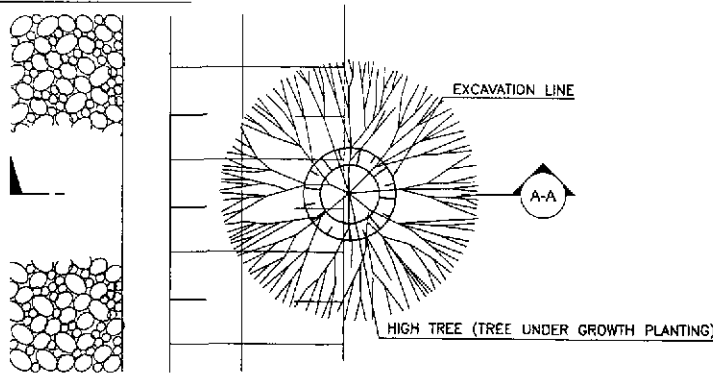


MEDIAN OF 1.5 - LESS THAN 2.0M

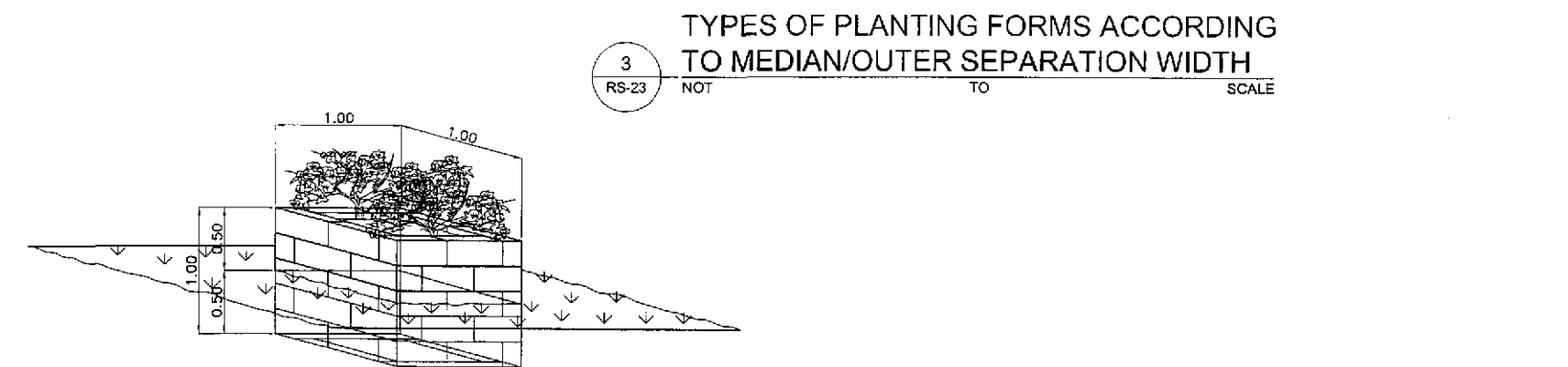


MEDIAN OF MORE THAN 4.0M

EMBANKMENT SECTION



2 PLAN OF ROAD SIDE PLANTATION (OUTSIDE EMBANKMENT SECTION) RS-23 NOT TO SCALE



4 ISOMETRIC VIEW OF HOLLOW BLOCK PLANT BOX RS-23 NOT TO SCALE

3 TYPES OF PLANTING FORMS ACCORDING TO MEDIAN/OUTER SEPARATION WIDTH RS-23 NOT TO SCALE

	DESIGNED	DATE	SIGNATURE	<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :	
	CHECKED	9/12/02	[Signature]		Submitted By:	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	NOT TO SCALE	TYPES OF PLANTING FORMS AND OTHER DETAILS (INITIAL STAGE)	RS-23
	SUBMITTED	9/12/02	[Signature]		Reviewed By: DANILO C. TRAJANO Project Director	PLARIDEL BYPASS - CONTRACT PACKAGE II	FULL SIZE A1		
				Recommended By: JOSEFINA M. ALAGAR Chief, Highways Division					
				Recommended By: GILBERTO S. REYES OIC, Director IV					
				Recommended By: MANUEL M. BONDAN Undersecretary					
				Approved By: SIMEON A. DATUMANONG Secretary					



DRAINAGE

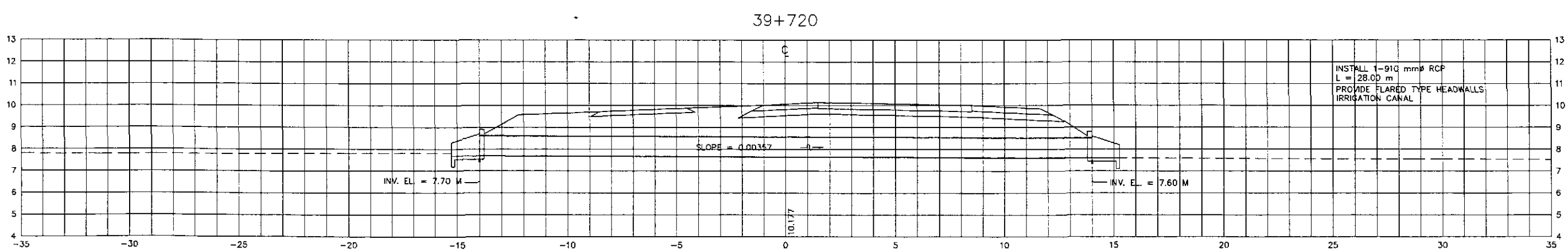
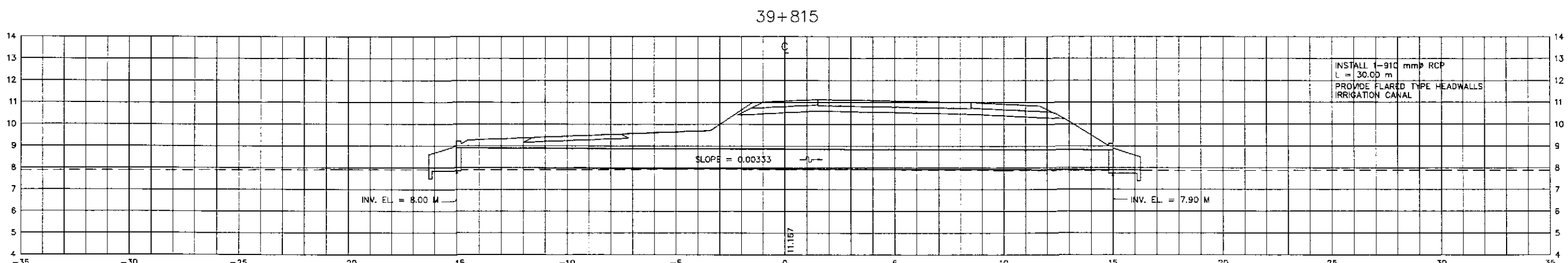
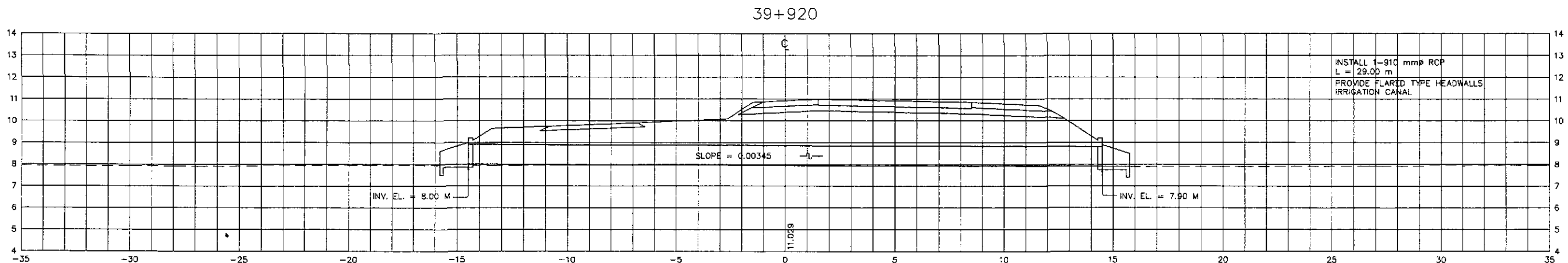
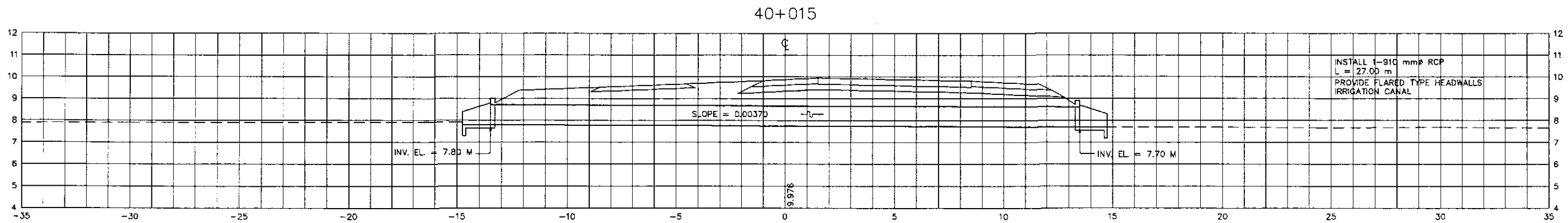
SCHEDULE OF SIDE DITCH AND OUTER SEPARATOR DITCHES

STATION		LENGTH (m)	TYPE	LOCATION	REMARKS
FROM	TO				
SIDE DITCH (MAIN BYPASS)					
40+540	40+590	50.00	E-4	RIGHT SIDE	UNLINED
40+590	40+710	100.00	E-3	LEFT SIDE	UNLINED
41+680	41+740	60.00	E-4	LEFT SIDE	UNLINED
41+680	41+960	280.00	C-1	RIGHT SIDE	LINED
41+740	41+860	120.00	E-4	LEFT SIDE	UNLINED
41+860	41+960	100.00	C-2	LEFT SIDE	LINED
42+010	42+060	50.00	C-2	LEFT SIDE	LINED
42+010	42+060	50.00	C-1	RIGHT SIDE	LINED
42+574	42+605	31.00	E-3	RIGHT SIDE	UNLINED
42+605	42+650	45.00	E-4	LEFT SIDE	UNLINED
43+030	43+140	110.00	C-1	RIGHT SIDE	LINED
43+055	43+140	85.00	E-4	LEFT SIDE	UNLINED
44+015	44+235	220.00	E-3	LEFT SIDE	UNLINED
44+476	44+520	44.00	C-3	LEFT SIDE	LINED
45+160	45+260	100.00	E-3	LEFT SIDE	UNLINED
44+650	45+110	460.00	E-4	LEFT SIDE	UNLINED
44+900	45+110	210.00	E-3	LEFT SIDE	UNLINED
45+615	45+730	95.00	E-4	RIGHT SIDE	UNLINED
45+635	45+760	125.00	E-3	LEFT SIDE	UNLINED
46+220	46+370	150.00	E-3	LEFT SIDE	UNLINED
46+230	46+360	130.00	E-4	RIGHT SIDE	UNLINED
46+550	46+640	90.00	E-4	RIGHT SIDE	UNLINED
46+794	47+080	286.00	E-3	LEFT SIDE	UNLINED
SIDE DITCH (ACCESS ROAD)					
ROAD INTERSECTION A-10					
1+050	1+120	70.00	E-4	LEFT SIDE	UNLINED
1+050	1+120	70.00	E-4	RIGHT SIDE	UNLINED
ROAD INTERSECTION A-13					
0+940	0+985	45.00	E-4	LEFT SIDE	UNLINED
1+016	1+050	34.00	E-4	LEFT SIDE	UNLINED

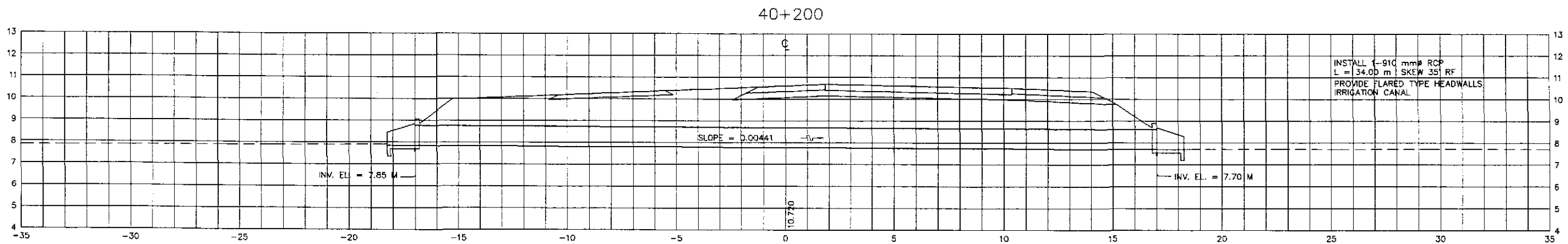
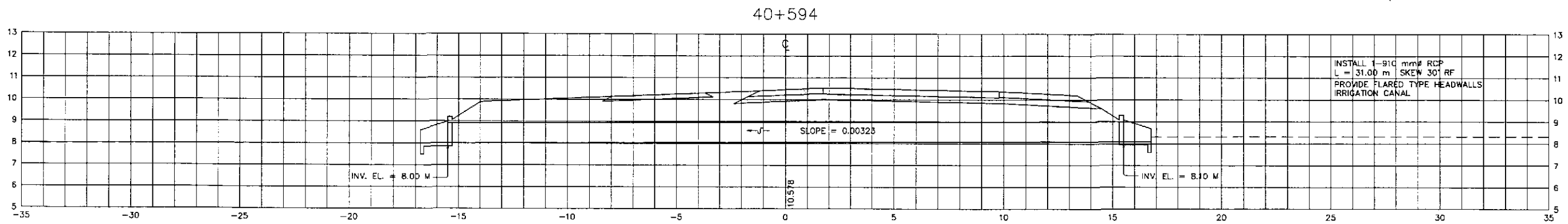
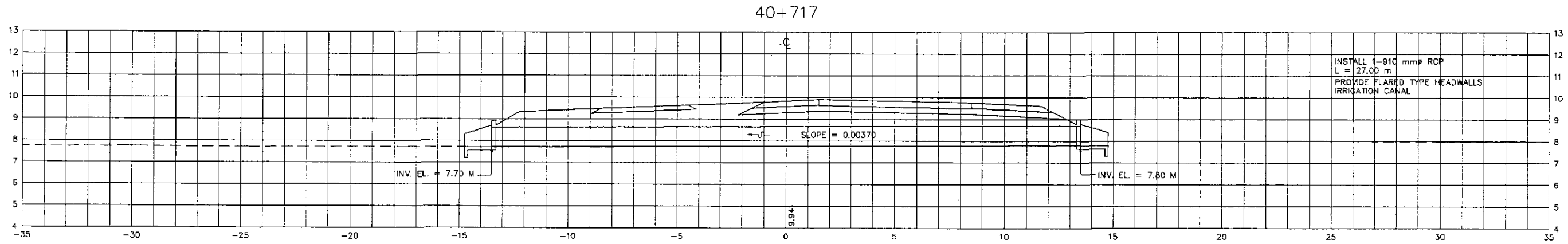
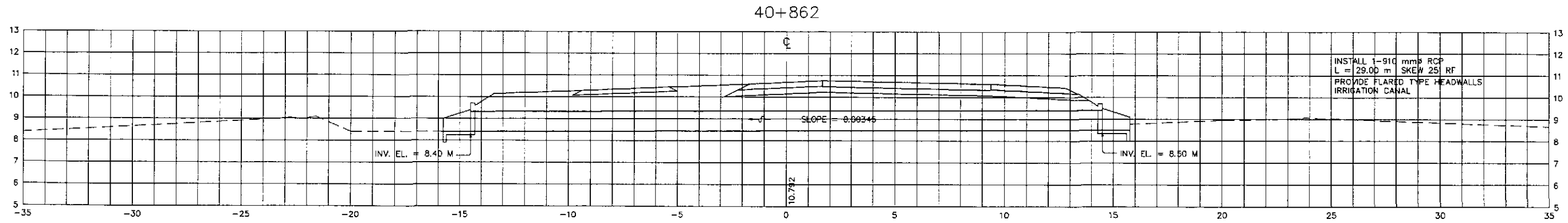
QUANTITIES FOR RCBC

STATION	SIZE	Item 103(1) Structural Excavation (m ³)	Item 103(3)a Gravel Foundation Fill (m ³)		Item 404(1) Reinforcing Bar (Grade 40) (kg)		Item 405(1)a Structural Conc. Class "A" (m ³)		Item 405(6) Lean Concrete (m ³)	
		RCBC & WW	RCBC	WW	RCBC	WW	RCBC	WW	RCBC	WW
43+678	2-3.00 x 2.75	313.29	18.49	10.05	18,910.08	1,980.00	177.42	35.88	9.25	5.03
44+240	1-1.20 x 0.60	27.13	9.33	0.30	4,215.45	62.86	25.91	1.76	4.66	0.26
44+265	1-1.20 x 0.60	22.50	7.74	0.30	3,495.59	62.86	21.49	1.76	3.87	0.26
44+660	1-2.40 x 1.80	142.89	9.90	3.56	8,999.10	780.00	67.32	14.16	4.95	1.78
45+262	2-3.00 x 2.40	448.58	29.39	8.44	27,775.20	1,640.00	268.38	29.66	12.14	4.22
TOTAL		954.39	74.84	22.65	63,395.41	4,525.72	560.52	83.22	34.87	11.56

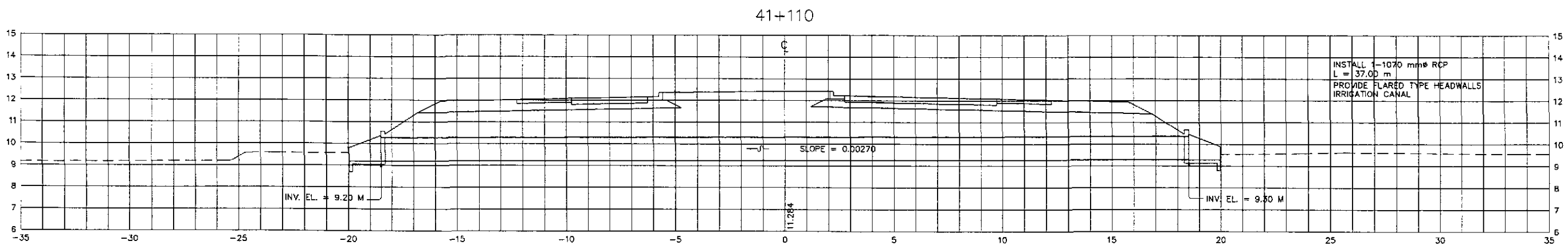
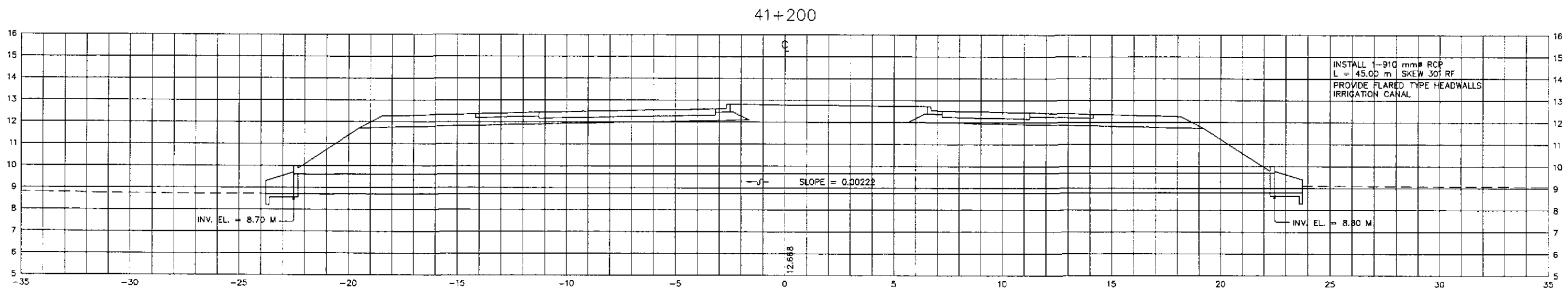
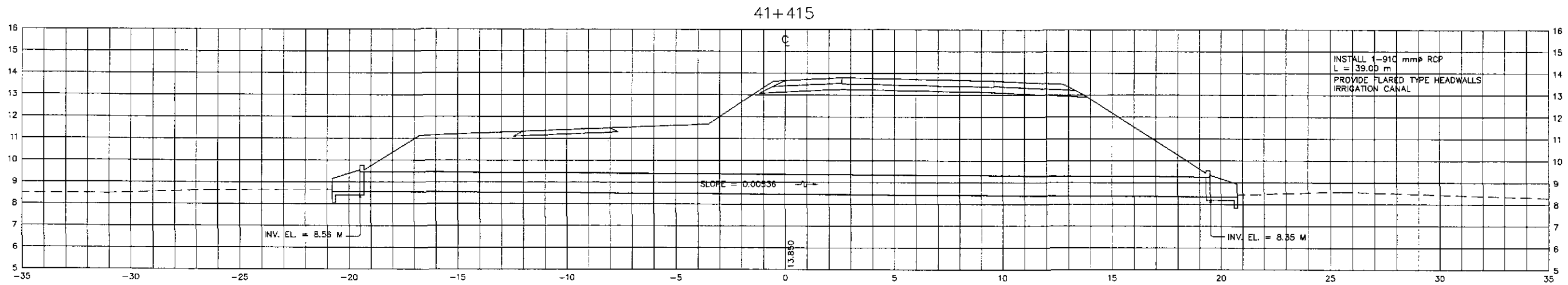
		DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :		
	DESIGNED	9/12/02	<i>[Signature]</i>	PJHL - PMO	BUREAU OF DESIGN				OFFICE OF THE SECRETARY					
	CHECKED	9/20/02	<i>[Signature]</i>	Submitted By:	Reviewed By:	Recommended By:	Recommended By:	Approved By:	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)					
SUBMITTED	9/20/02	<i>[Signature]</i>	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES DIC, Director IV	MANUEL M. BONGAON Undersecretary	SIMEON A. DATUMANONG Secretary	PLARIDEL BYPASS - CONTRACT PACKAGE II				FULL SIZE A1	SCHEDULE OF SIDE DITCH AND QUANTITIES OF RCBC	DG-02



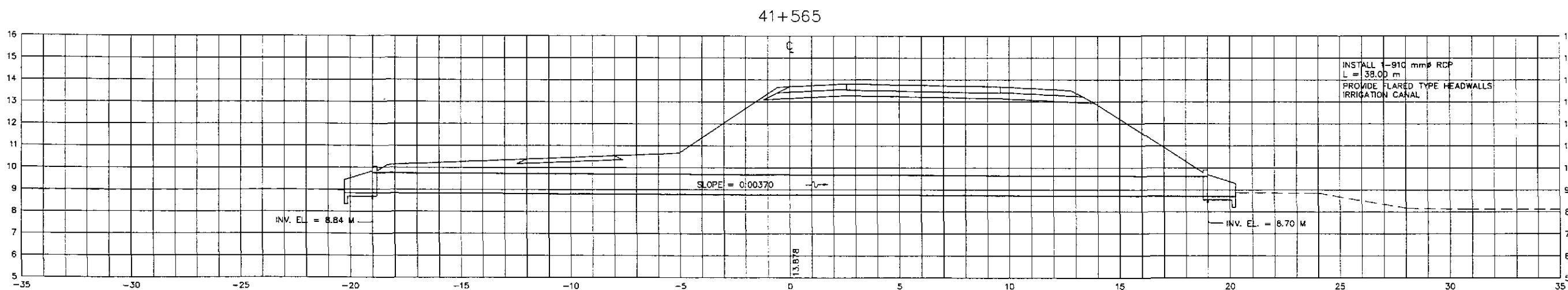
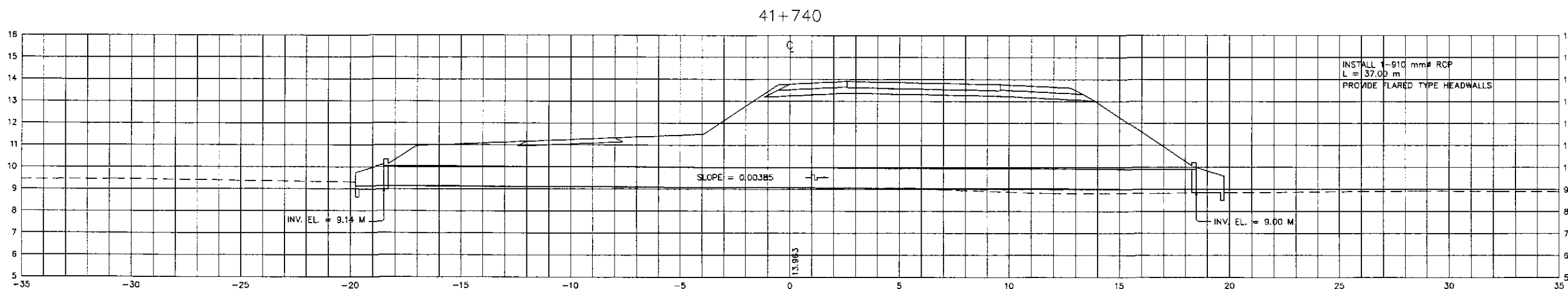
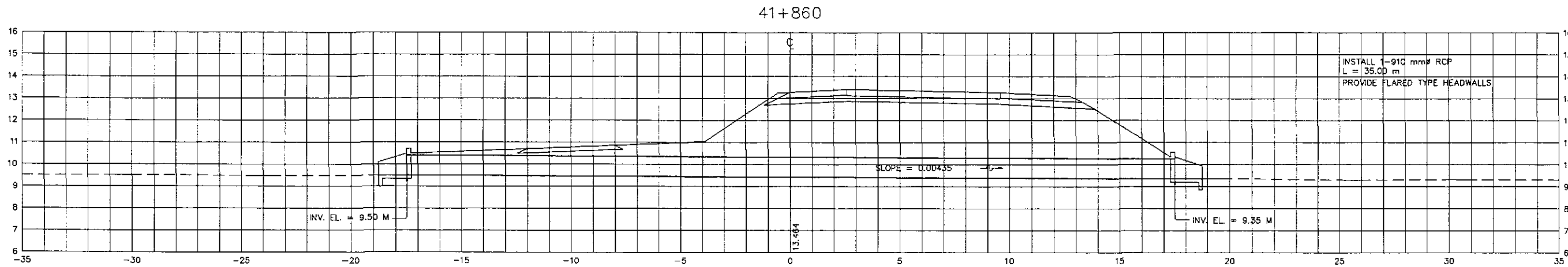
		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : 1:100 FULL SIZE A1	SHEET CONTENTS : DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 39+720 - STA. 40+015	SHEET NO. : DC-01	
	DESIGNED <i>9/18/02</i> CHECKED <i>9/20/02</i> SUBMITTED <i>9/29/02</i>	SIGNATURE <i>[Signatures]</i> STA. WORKER TEAM LEADER	BUREAU OF DESIGN Submitted By: DANILO C. TRAJANO Project Director	OFFICE OF THE SECRETARY Recommended By: JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By: GILBERTO S. REYES CEC, Director IV	Recommended By: MANUEL M. BONDAN Undersecretary	Approved By: SIMEON A. DATUMANONG Secretary
	P.J.H. - P.M.O.			PLARIDEL BYPASS - CONTRACT PACKAGE II			



		DATE: 9/18/02 SIGNATURE: <i>[Signature]</i> F. S. S. LARRA		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : 1:100 FULL SIZE A1	SHEET CONTENTS : DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 40+200 - STA. 40+862	SHEET NO. : DC-02	
	DESIGNED	P.J.H.L. - P.W.D.	BUREAU OF DESIGN	OFFICE OF THE SECRETARY	Recommended By: (See cover sheet for Signature/Approval)	Approved By: (See cover sheet for Signature/Approval)			
	CHECKED	Submitted By:	Reviewed By:	Recommended By:	(See cover sheet for Signature)	Approved By: (See cover sheet for Signature/Approval)			
SUBMITTED	DANILLO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONGAON Undersecretary	SIMEON A. DATUMANONG Secretary	PLARIDEL BYPASS - CONTRACT PACKAGE II			

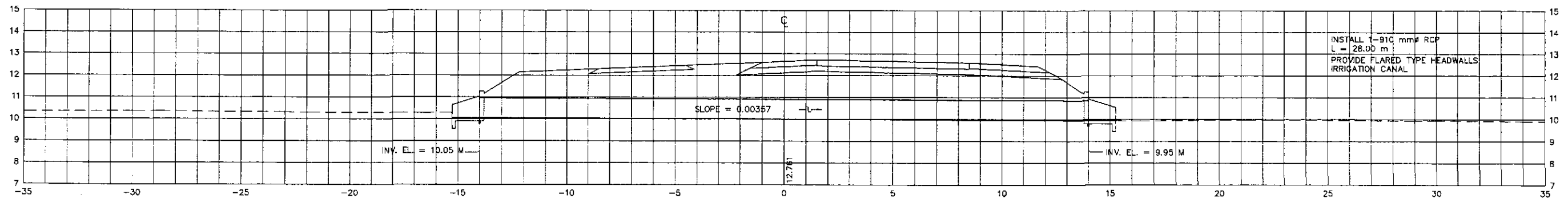


			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : 1:100 FULL SIZE A1	SHEET CONTENTS : DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 41+110 - STA. 41+415	SHEET NO. : DC-03	
	DESIGNED <i>9/18/02</i> CHECKED <i>9/20/02</i> SUBMITTED <i>9/23/02</i>	SIGNATURE <i>[Signatures]</i> STAFF ENGINEER TEAM LEADER	PUHL - PMO Submitted By: DANILO C. TRAJANO Project Director	BUREAU OF DESIGN Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	OFFICE OF THE SECRETARY Recommended By: MANUEL M. BONGAON Undersecretary	Approved By: <i>[Signature]</i> SIMEON A. DATUMANONG Secretary		
	PLARIDEL BYPASS - CONTRACT PACKAGE II							

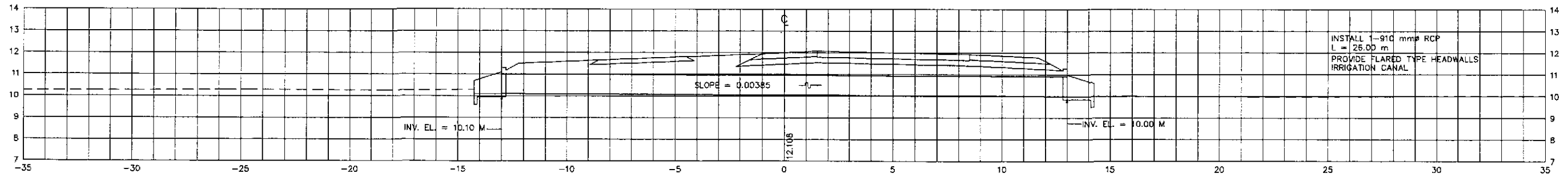


			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : 1:100 FULL SIZE A1	SHEET CONTENTS : DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 41+565 - STA. 41+860	SHEET NO. : DC-04	
	DESIGNED: 9/19/02 CHECKED: 9/20/02 SUBMITTED: 9/22/02	SIGNATURE: <i>[Handwritten Signatures]</i> P. STAN MARRA A. HAKIM TEAM LEADER	Submitted By: DANILLO C. TRAJANO Project Director	Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By: GILBERTO S. REYES CEC, Director IV	Recommended By: MANUEL M. BONDAN Undersecretary	Approved By: SIMEON A. DATUMANONG Secretary	
	BUREAU OF DESIGN: PJHL - PMO				OFFICE OF THE SECRETARY			

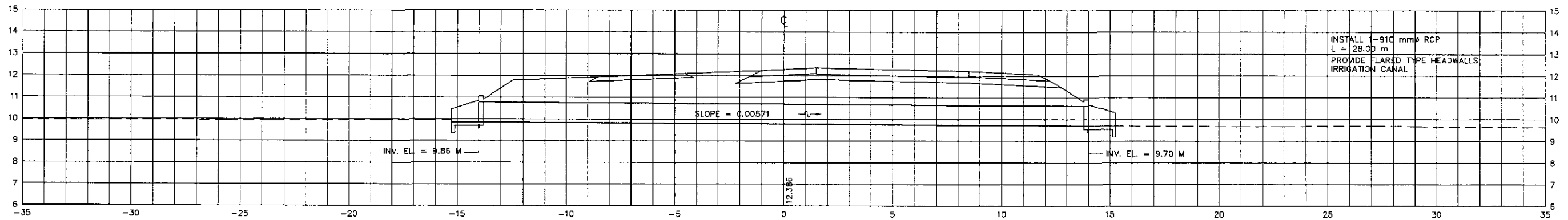
42+455



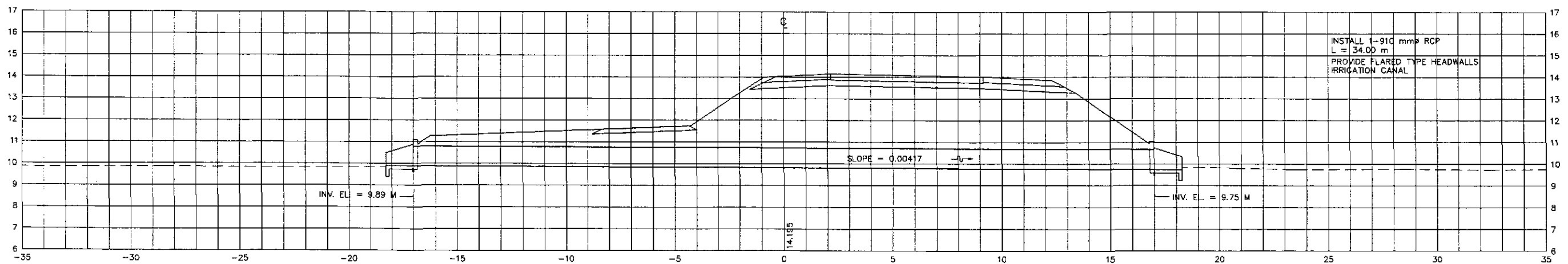
42+305



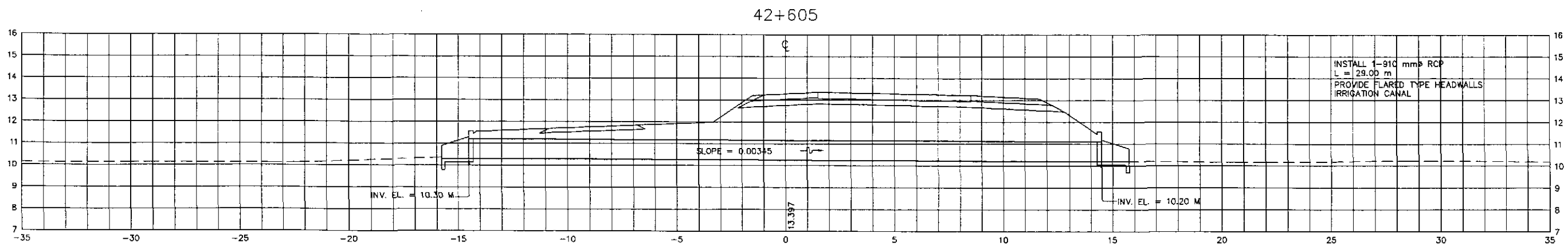
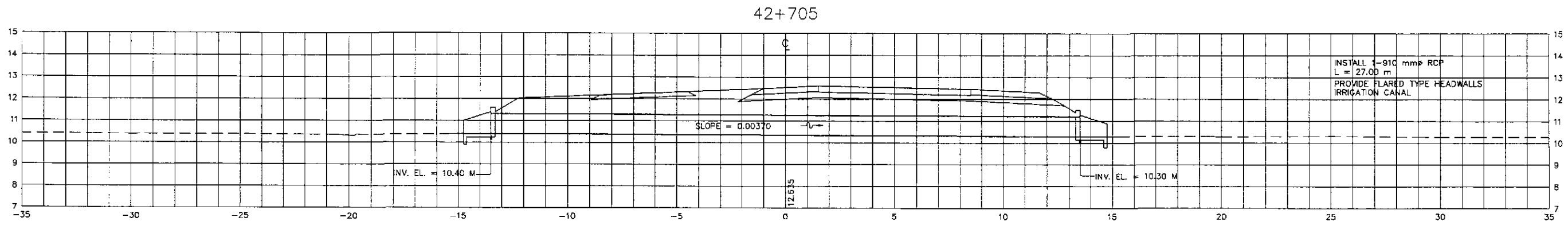
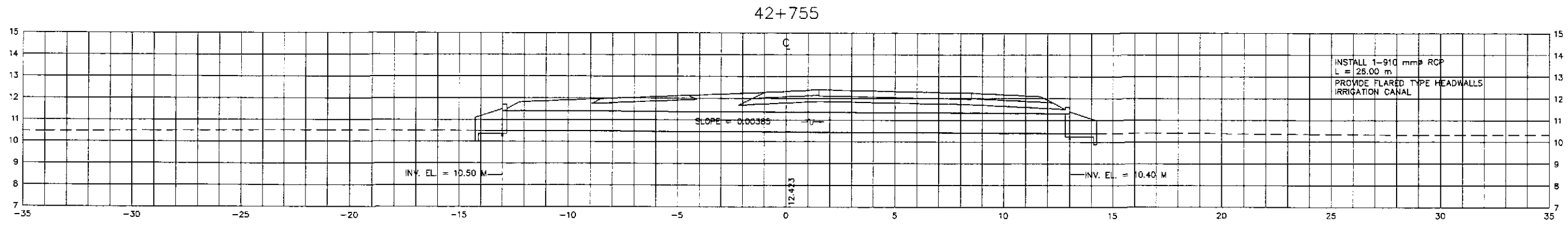
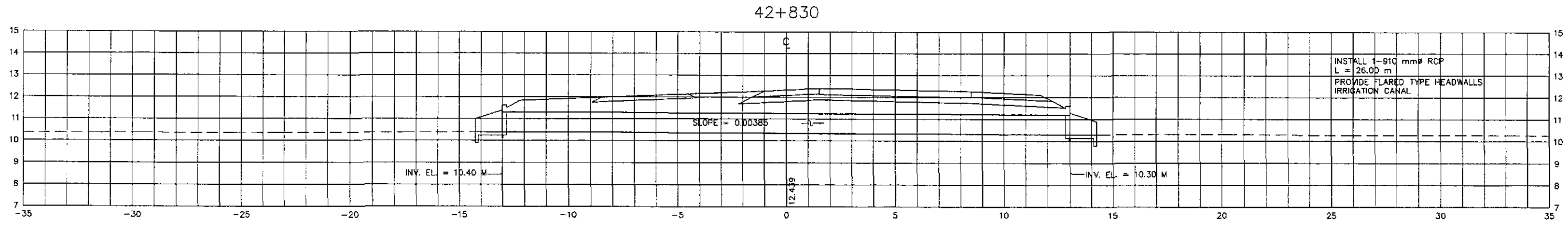
42+180



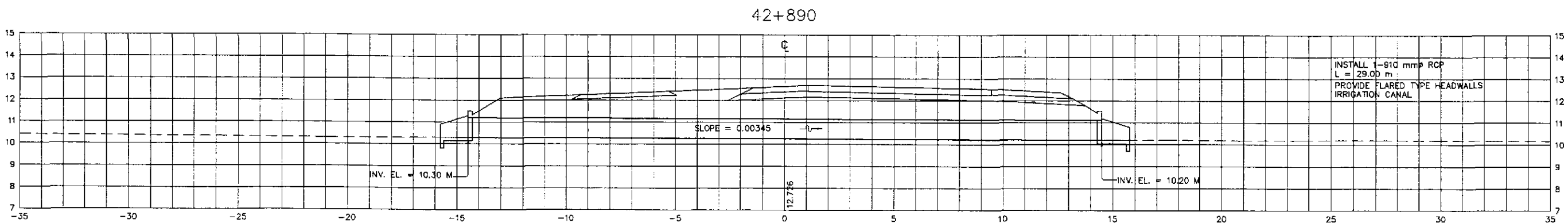
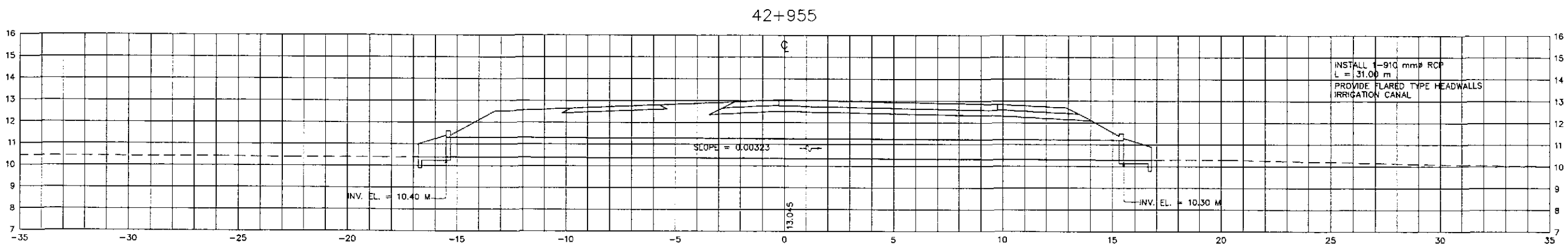
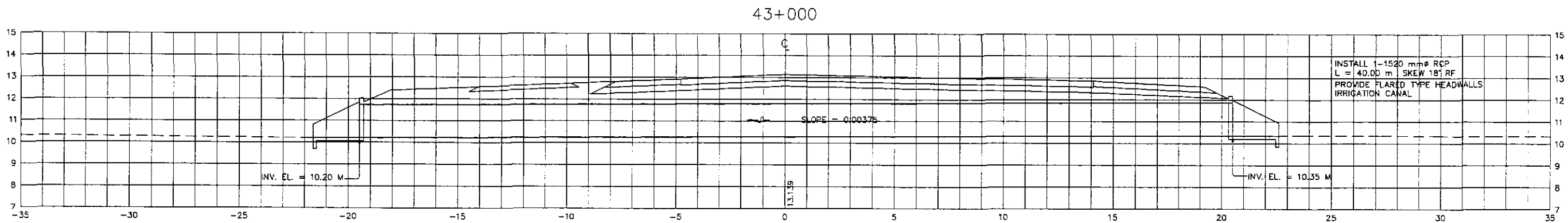
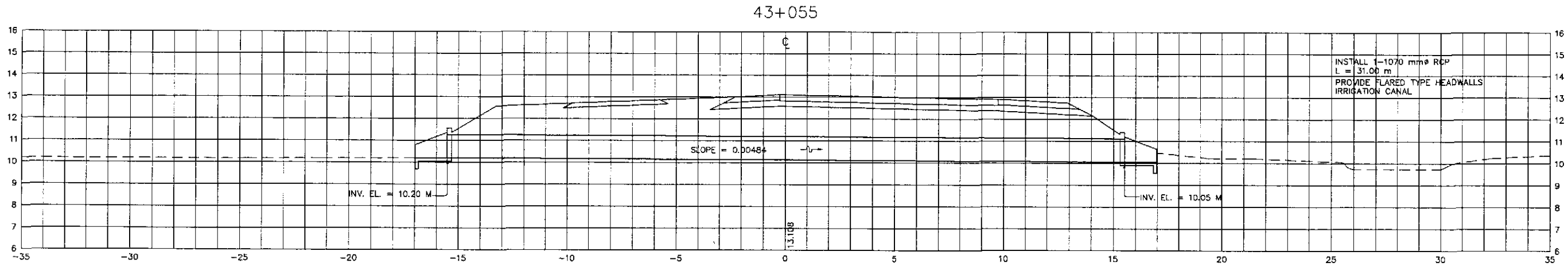
42+060



	DESIGNED	DATE	SIGNATURE	<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	PROJECT AND LOCATION :			SCALE :	SHEET CONTENTS :	SHEET NO. :	
	CHECKED	9/20/02	<i>[Signature]</i>		BUREAU OF DESIGN	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)			1:100	DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 42+060 - STA. 42+455	DC-05
	SUBMITTED	9/23/02	<i>[Signature]</i>		OFFICE OF THE SECRETARY	PLARIDEL BYPASS - CONTRACT PACKAGE II			FULL SIZE A1		
				Submitted By:	Reviewed By:	Recommended By:	Approved By:				
				DANILO C. TRAJANG Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES DIC, Director IV	MANUEL M. BONGAN Undersecretary	SIMEON A. DATUMANONG Secretary			

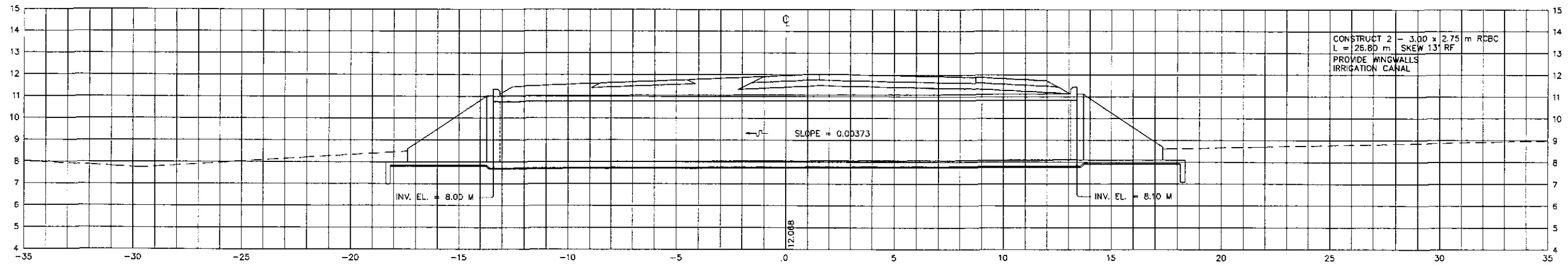


			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : 1:100 FULL SIZE A1	SHEET CONTENTS : DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 42+605 - STA. 42+830	SHEET NO. : DC-06	
	DESIGNED <i>9/18/02</i> CHECKED <i>9/30/02</i> SUBMITTED <i>9/23/02</i>	SIGNATURE <i>[Signature]</i> F. S. MARIA Submitted By: <i>[Signature]</i> TEAM LEADER	PUHL - PMO DANILDO C. TRAJANO Project Director	BUREAU OF DESIGN Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	OFFICE OF THE SECRETARY Recommended By: (See cover sheet for Signature/Approval) MANUEL M. BONDAN Undersecretary	Approved By: (See cover sheet for Signature/Approval) SIMEDN A. DATUMANONG Secretary		
	BUREAU OF DESIGN				PLARIDEL BYPASS - CONTRACT PACKAGE II			

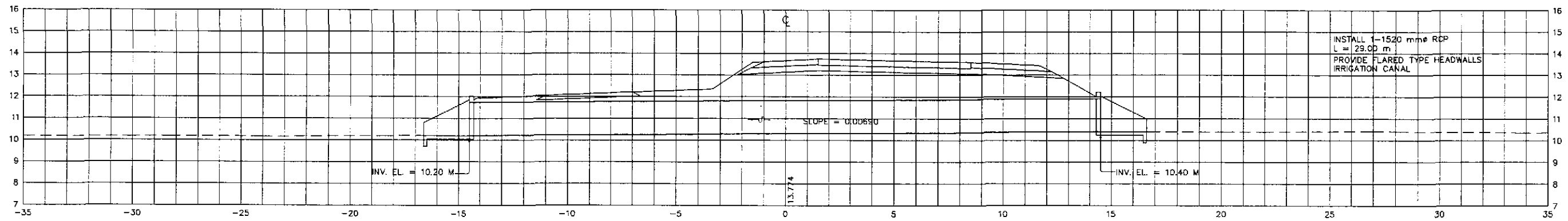


	DATE	SIGNATURE	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :	
	DESIGNED	7/18/02	<i>[Signature]</i>	BUREAU OF DESIGN			THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	1:100 FULL SIZE A1	DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 42+890 - STA. 43+055	DC-07
	CHECKED	7/20/02	<i>[Signature]</i>	Submitted By:	Reviewed By:	Recommended By:				
SUBMITTED	7/23/02	<i>[Signature]</i>	DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONDAN Undersecretary	SIMEON A. DATUMANDONG Secretary	PLARIDEL BYPASS - CONTRACT PACKAGE II		

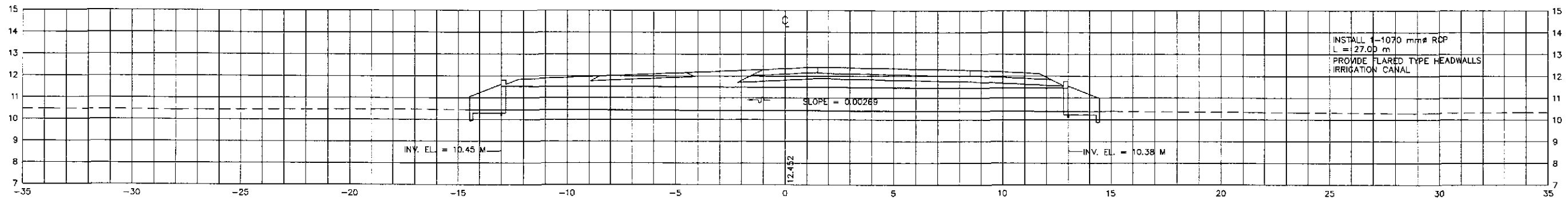
43+678



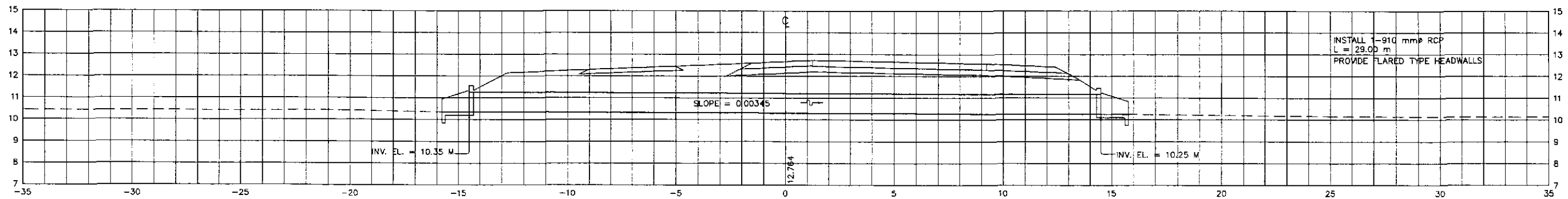
43+500



43+225

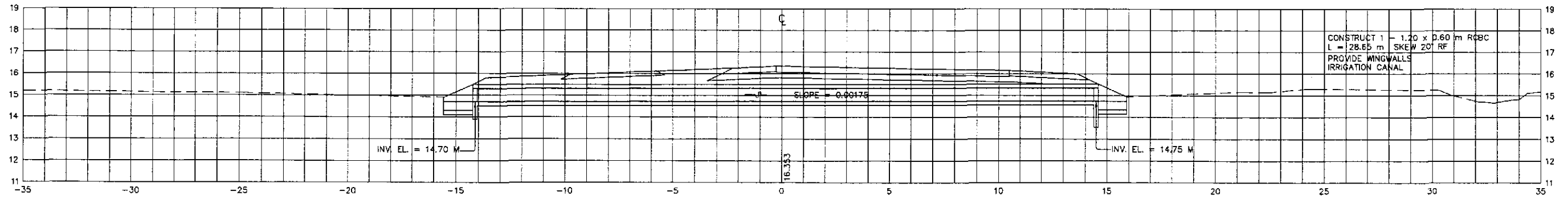


43+140

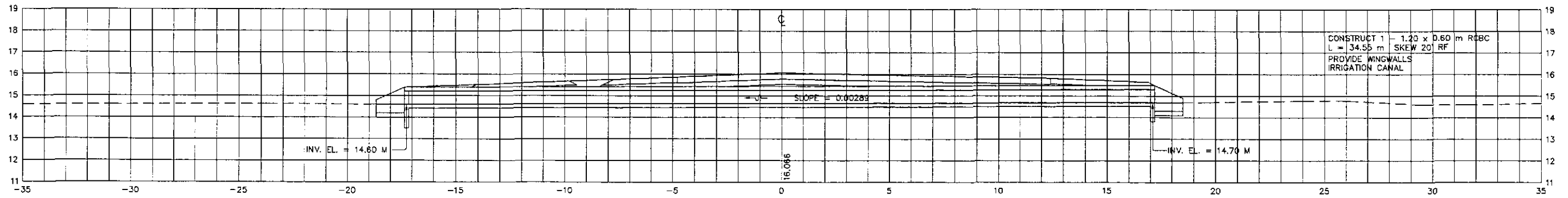


	DESIGNED	DATE	SIGNATURE	<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	PROJECT AND LOCATION :			SCALE :	SHEET CONTENTS :	SHEET NO. :	
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	SUBMITTED	9/23/02	<i>[Signature]</i>		OFFICE OF THE SECRETARY	PLARIDEL BYPASS - CONTRACT PACKAGE II			FULL SIZE A1		
				Submitted By:	Reviewed By:	Recommended By:	Approved By:				
				DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONDAN Undersecretary	SIMON A. DATUMANONG Secretary			

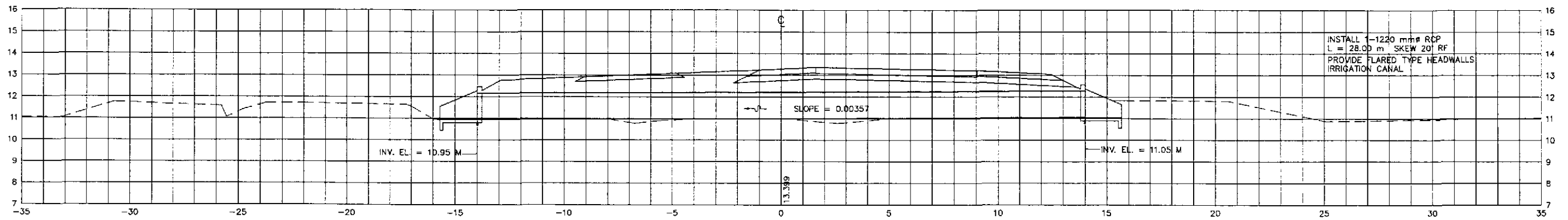
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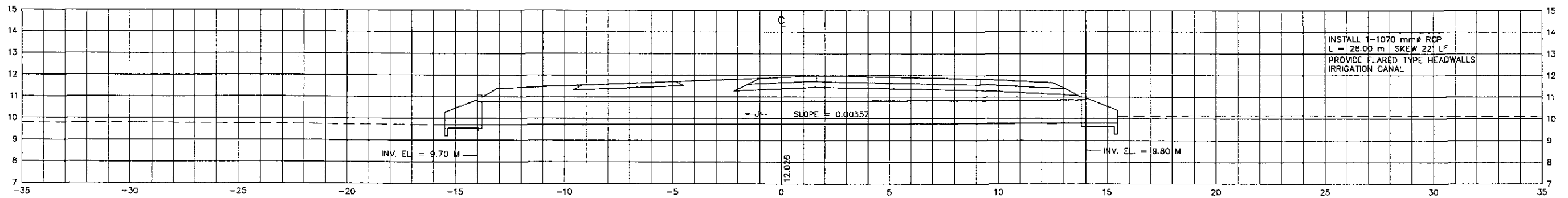
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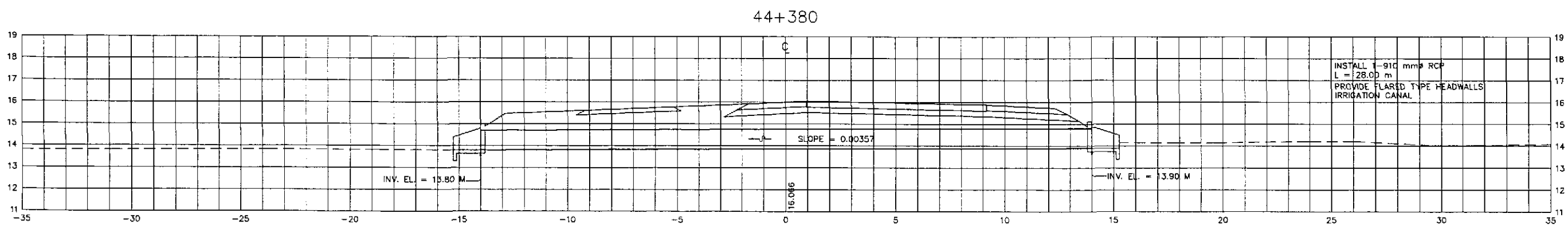
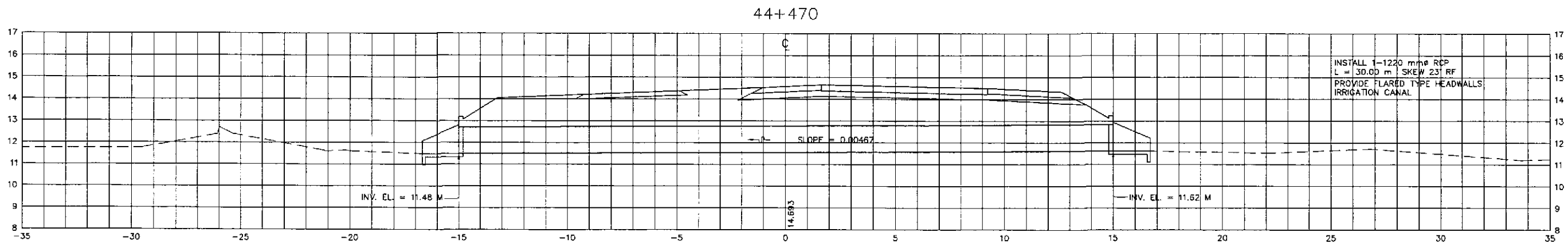
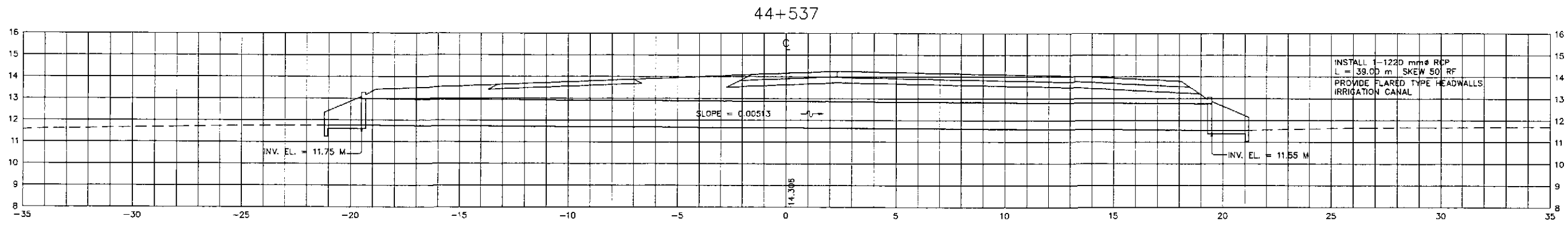
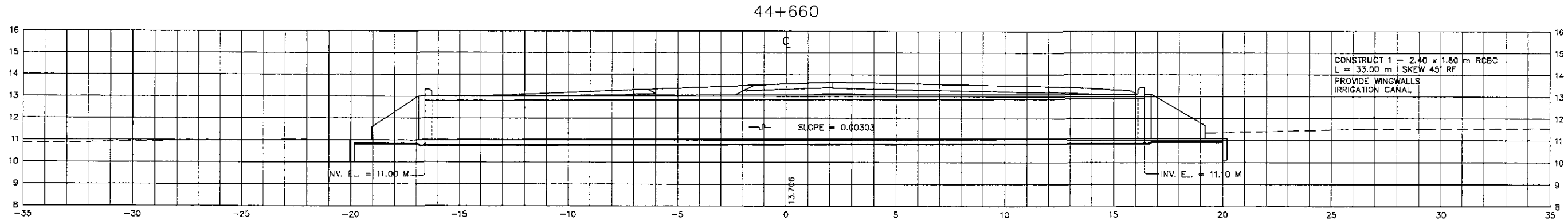
44+015



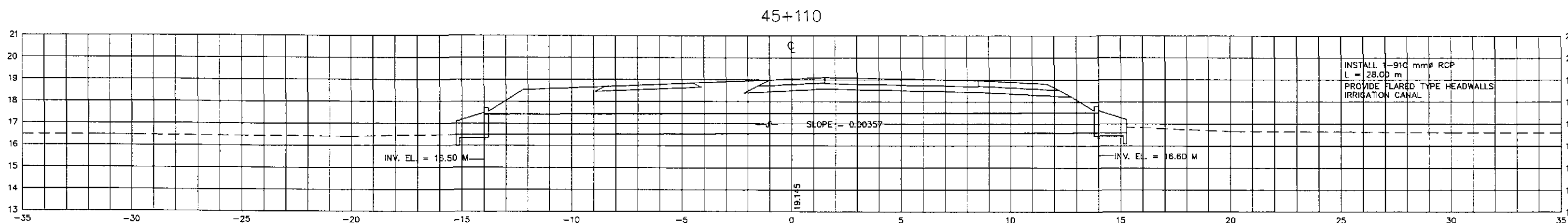
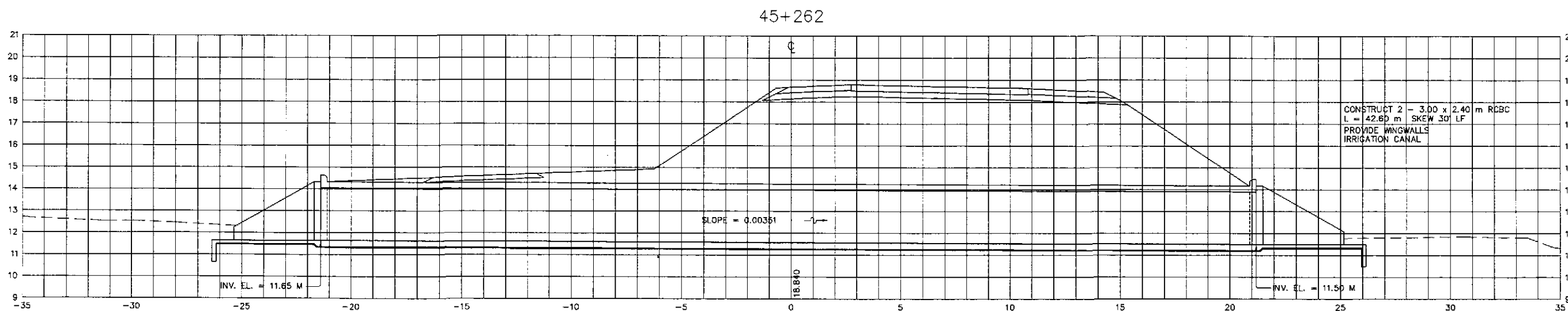
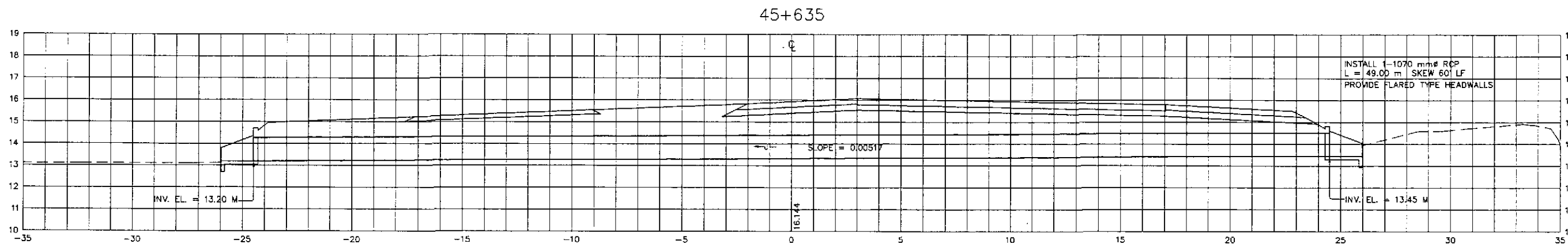
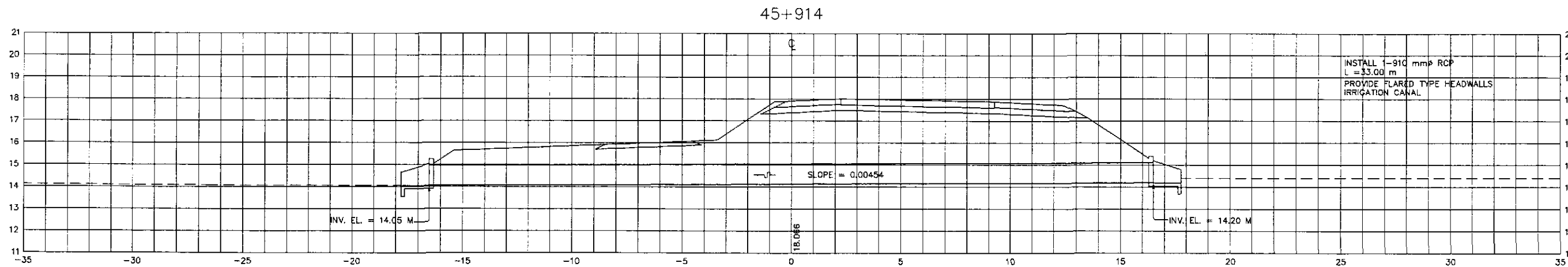
43+774



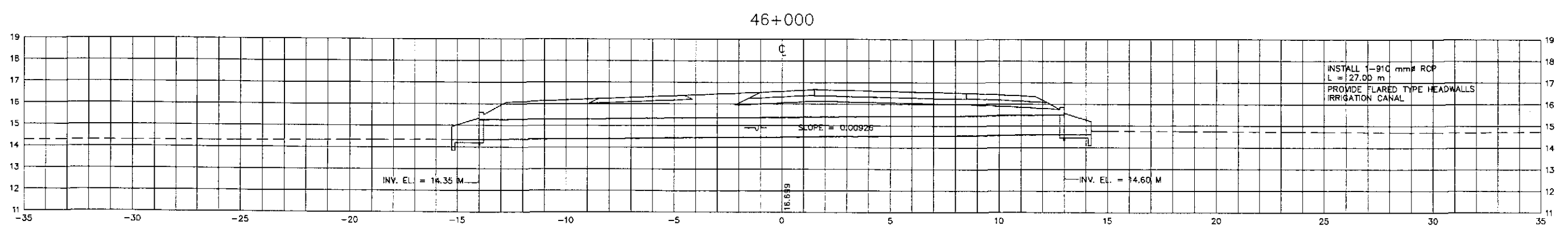
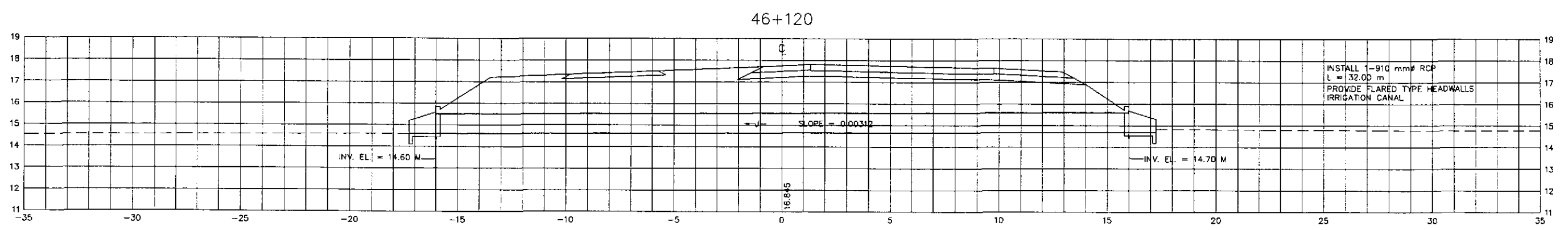
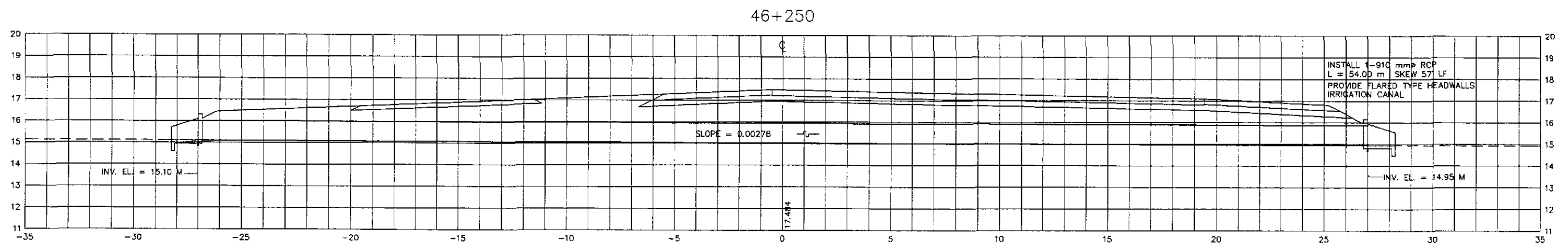
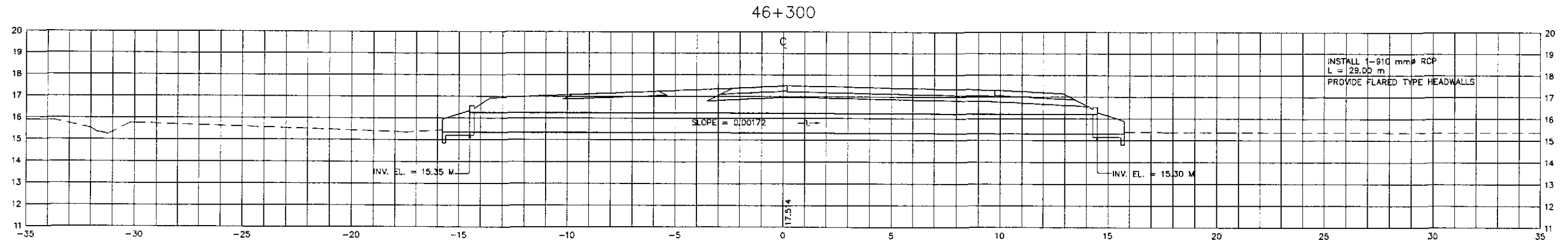
	DATE	SIGNATURE	<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</p>	PROJECT AND LOCATION :			SCALE :	SHEET CONTENTS :	SHEET NO. :	
	DESIGNED	9/18/01		[Signature]	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)			1:100	DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 43+774 - STA. 44+265	DC-09
	CHECKED	9/20/01		[Signature]	PLARIDEL BYPASS - CONTRACT PACKAGE II			FULL SIZE A1		
	SUBMITTED	9/23/01		[Signature]						
	Submitted By:	PJHL - PMO	BUREAU OF DESIGN	OFFICE OF THE SECRETARY						
	Reviewed By:	JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By:	CILBERTO S. REYES OIC, Director IV	Recommended By:	MANUEL M. BONDAN Undersecretary	Approved By:	SIMEON A. DATUMANONG Secretary		



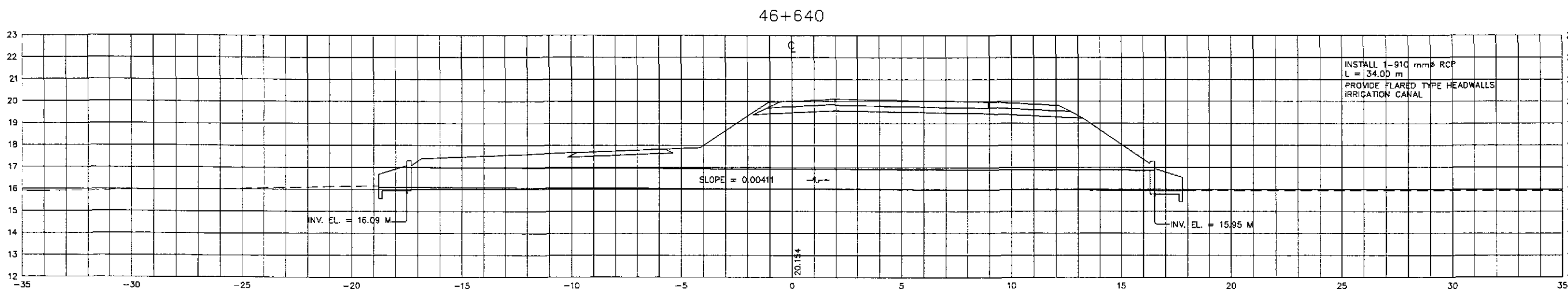
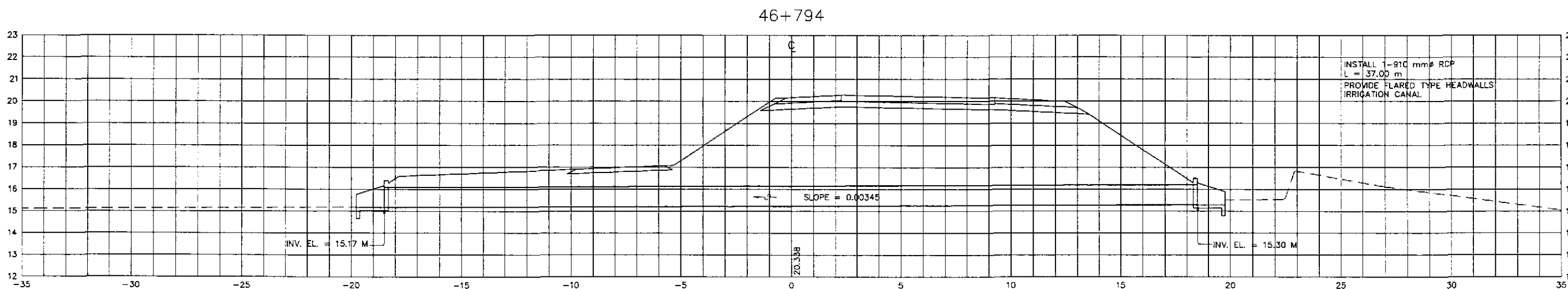
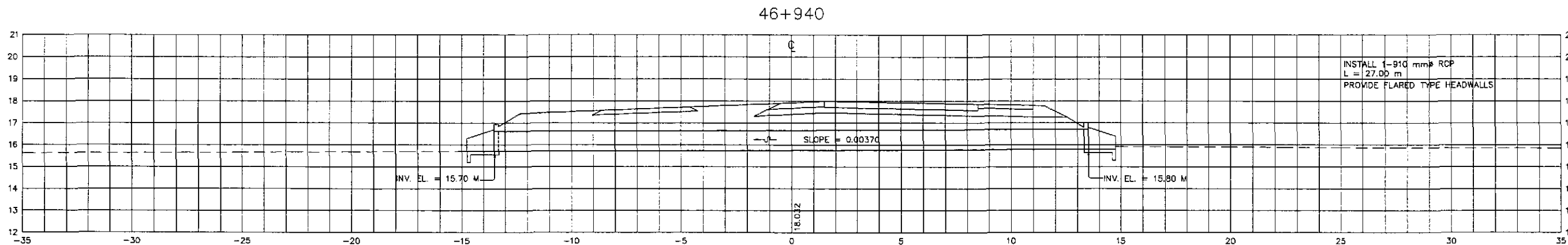
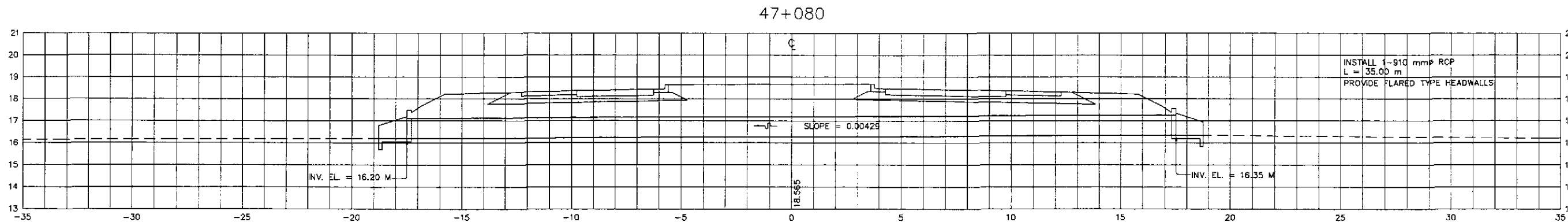
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	DESIGNED <i>9/18/02</i> CHECKED <i>9/20/02</i> SUBMITTED <i>9/23/02</i>	SIGNATURE <i>[Signatures]</i> Submitted By: DANILO C. TRAJANO Project Director	BUREAU OF DESIGN Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	OFFICE OF THE SECRETARY Recommended By: GILBERTO S. REYES O.C. Director IV	Recommended By: MANUEL M. BONGAON Undersecretary	Approved By: SIMEON A. DATUMANONG Secretary		
	PLARIDEL BYPASS - CONTRACT PACKAGE II							



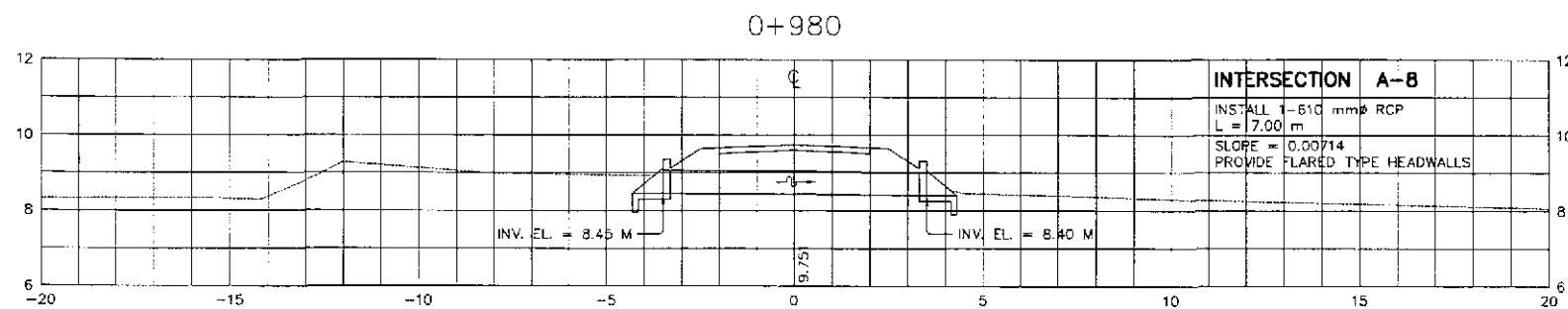
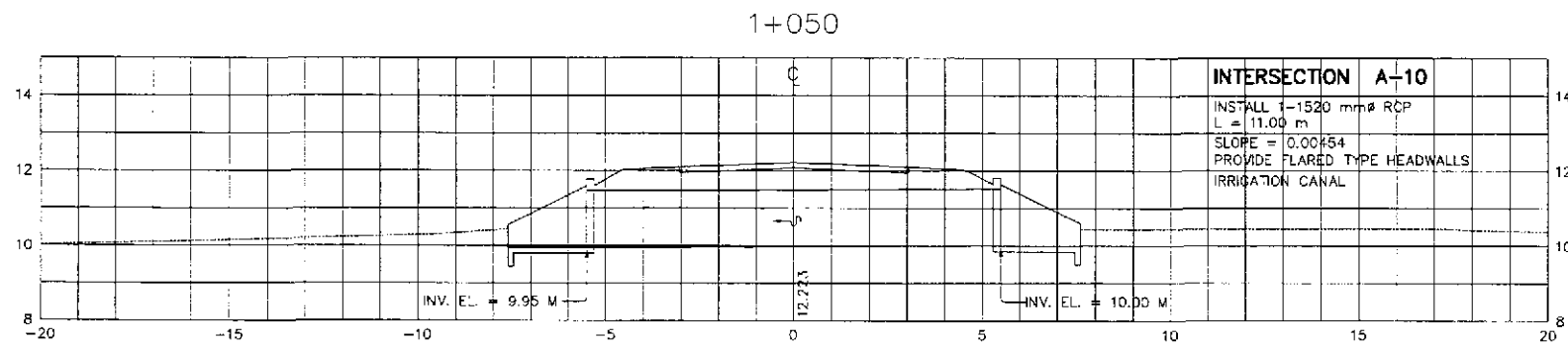
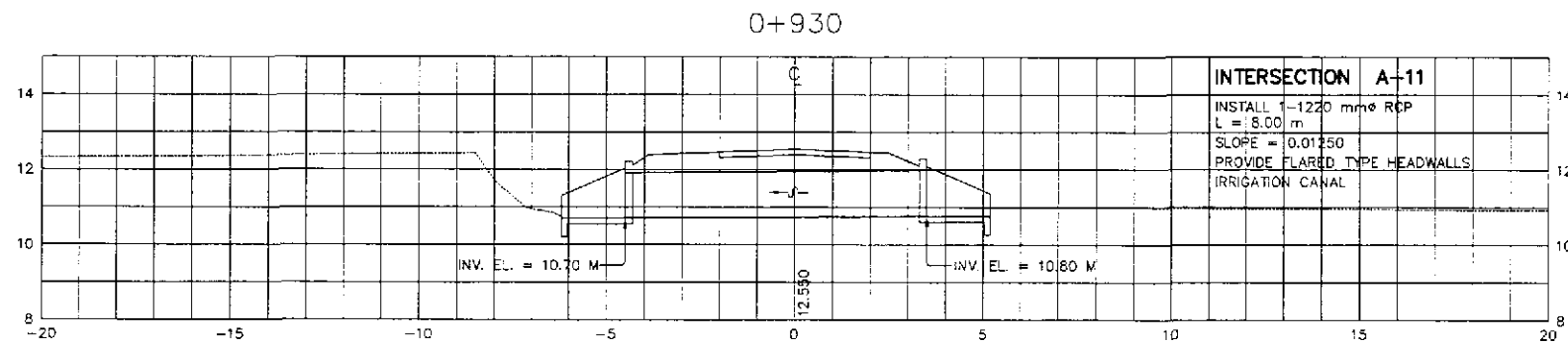
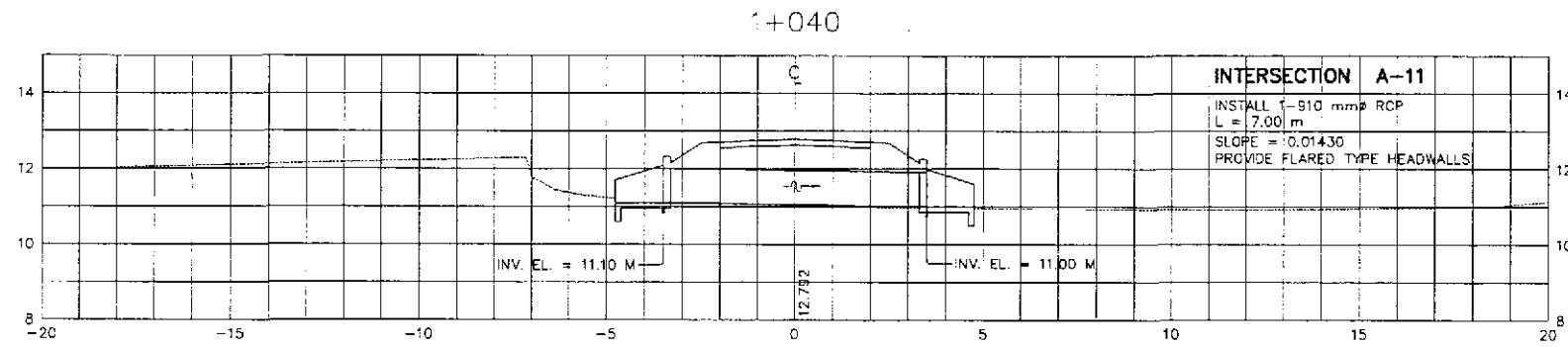
	DESIGNED	DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE : 1:100 FULL SIZE A1	SHEET CONTENTS : DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 45+110 - STA. 45+914	SHEET NO. : DC-11
	CHECKED	9/10/01	<i>[Signature]</i>		BUREAU OF DESIGN						
	SUBMITTED	7/23/02	<i>[Signature]</i> TEAM LEADER		Submitted By: DANILO C. TRAJANO Project Director	Reviewed By: JOSEFINA M. ALAGAR Chief, Highways Division	Recommended By: GILBERTO S. REYES OIC, Director IV				



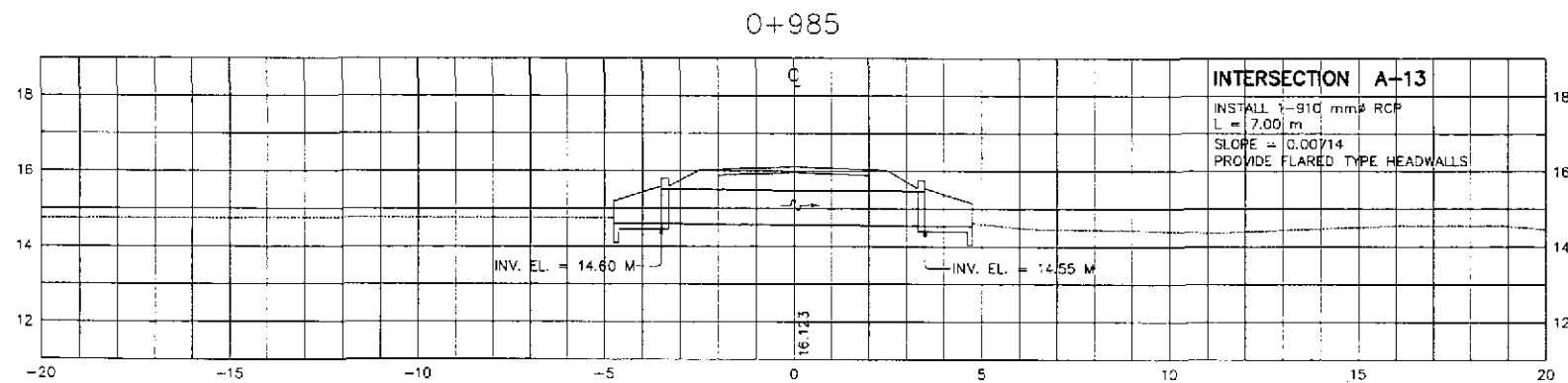
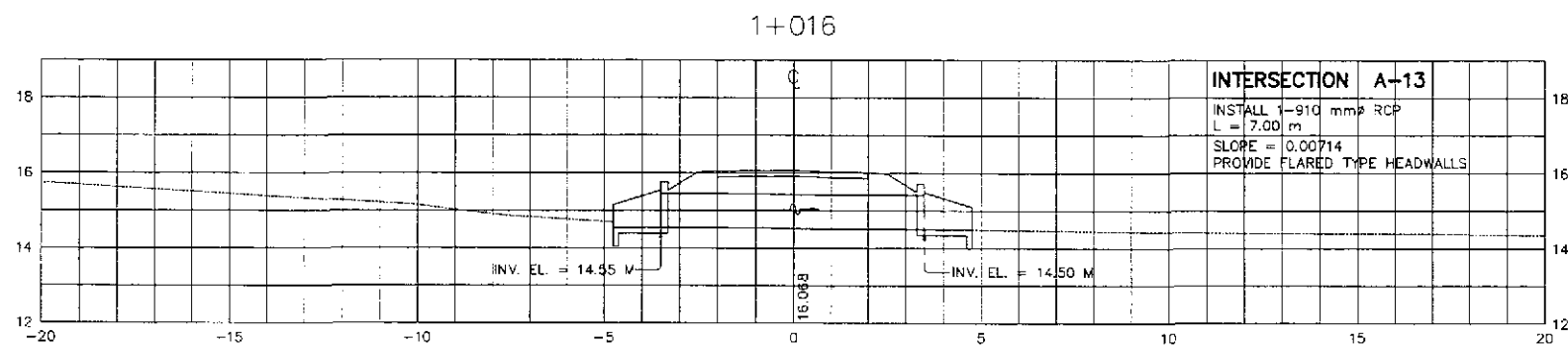
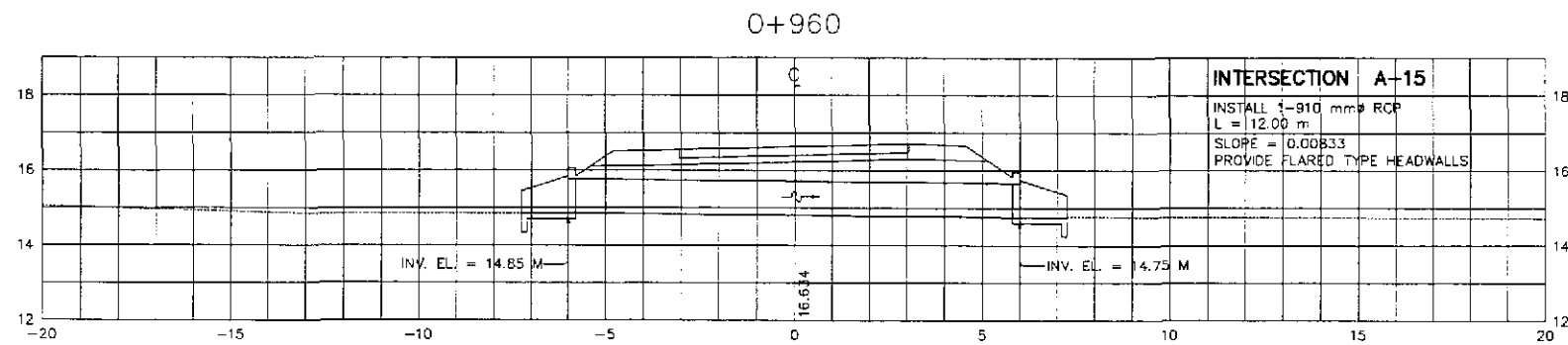
			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	SCALE : 1:100 FULL SIZE A1	SHEET CONTENTS : DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 46+000 - STA. 46+300	SHEET NO. : DC-12
	DESIGNED <i>7/18/02</i> <i>[Signature]</i> CHECKED <i>7/23/02</i> <i>[Signature]</i> SUBMITTED <i>7/23/02</i> <i>[Signature]</i>	SIGNATURE P.J.H. - PWD Submitted By:	BUREAU OF DESIGN Reviewed By:	OFFICE OF THE SECRETARY Recommended By:	OFFICE OF THE SECRETARY Approved By:		
		DANILLO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONDAN Undersecretary		



		DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS			PROJECT AND LOCATION : THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses) PLARIDEL BYPASS - CONTRACT PACKAGE II	SCALE : 1:100 FULL SIZE A1	SHEET CONTENTS : DRAINAGE CROSS-SECTION ALONG BYPASS (INITIAL STAGE) STA. 46+640 - STA. 47+080	SHEET NO. : DC-13
	DESIGNED	9/18/02			BUREAU OF DESIGN	OFFICE OF THE SECRETARY					
	CHECKED	9/20/02			Submitted By:	Reviewed By:	Recommended By:				
SUBMITTED	9/23/02		DANILLO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highways Division	GILBERTO S. REYES OIC, Director IV	MANUEL M. BONOAN Undersecretary	SIMEON A. DATUMANONG Secretary				



		DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				
	DESIGNED	9/18/02	<i>[Signature]</i>	BUREAU OF DESIGN	OFFICE OF THE SECRETARY	PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	CHECKED	9/20/02	<i>[Signature]</i>	SUBMITTED BY:	REVIEWED BY:	RECOMMENDED BY:	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	1:100	DRAINAGE CROSS-SECTION ALONG ACCESS ROAD INTERSECTION A-8, A-10, A-11
SUBMITTED	9/23/02	<i>[Signature]</i>	DANILO C. TRAJANO Project Director	JOSEFINA M. ALACAR Chief, Highways Division	GILBERTO S. REYES DIC, Director IV	MANUEL M. BONDAN Undersecretary	SIMON A. DATUMANONG Secretary	FULL SIZE A1	



		DATE	SIGNATURE		REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	PROJECT AND LOCATION :	SCALE :	SHEET CONTENTS :	SHEET NO. :
	DESIGNED	9/18/02		BUREAU OF DESIGN	OFFICE OF THE SECRETARY	THE DETAILED DESIGN STUDY ON UPGRADING INTER-URBAN HIGHWAY SYSTEM ALONG THE PAN-PHILIPPINE HIGHWAY (Plaridel, Cabanatuan and San Jose Bypasses)	1:100	DRAINAGE CROSS-SECTION ALONG ACCESS ROAD INTERSECTION A-13, A-15	DC-15
	CHECKED	9/20/02		Submitted By:	Reviewed By:	Recommended By:	FULL SIZE A1		
SUBMITTED	9/23/02		DANILO C. TRAJANO Project Director	JOSEFINA M. ALAGAR Chief, Highway Division	GILBERTO S. REYES DIC, Director IV	MANUEL M. BONDAN Undersecretary	SIMON A. DATUMANONG Secretary		