

S  
SI

TACOPAYA SI  
97km+033

B  $\beta=250^m$  103km+300  
B  $\beta=40^m$  104km+200  
B  $\beta=20^m$  104km+420  
B  $\beta=80^m$  105km+800  
B  $\beta=40^m$  106km+400  
B  $\beta=80^m$  106km+800  
B  $\beta=150^m$  107km+350  
B  $\beta=80^m$  107km+900

B  $\beta=40^m$  104+700  
CHANGOLLA SI  
107km+050

TUNAZANI SI  
112km+177

COLCHA SI  
113km+651

CANT COLCHA SI  
114km+503

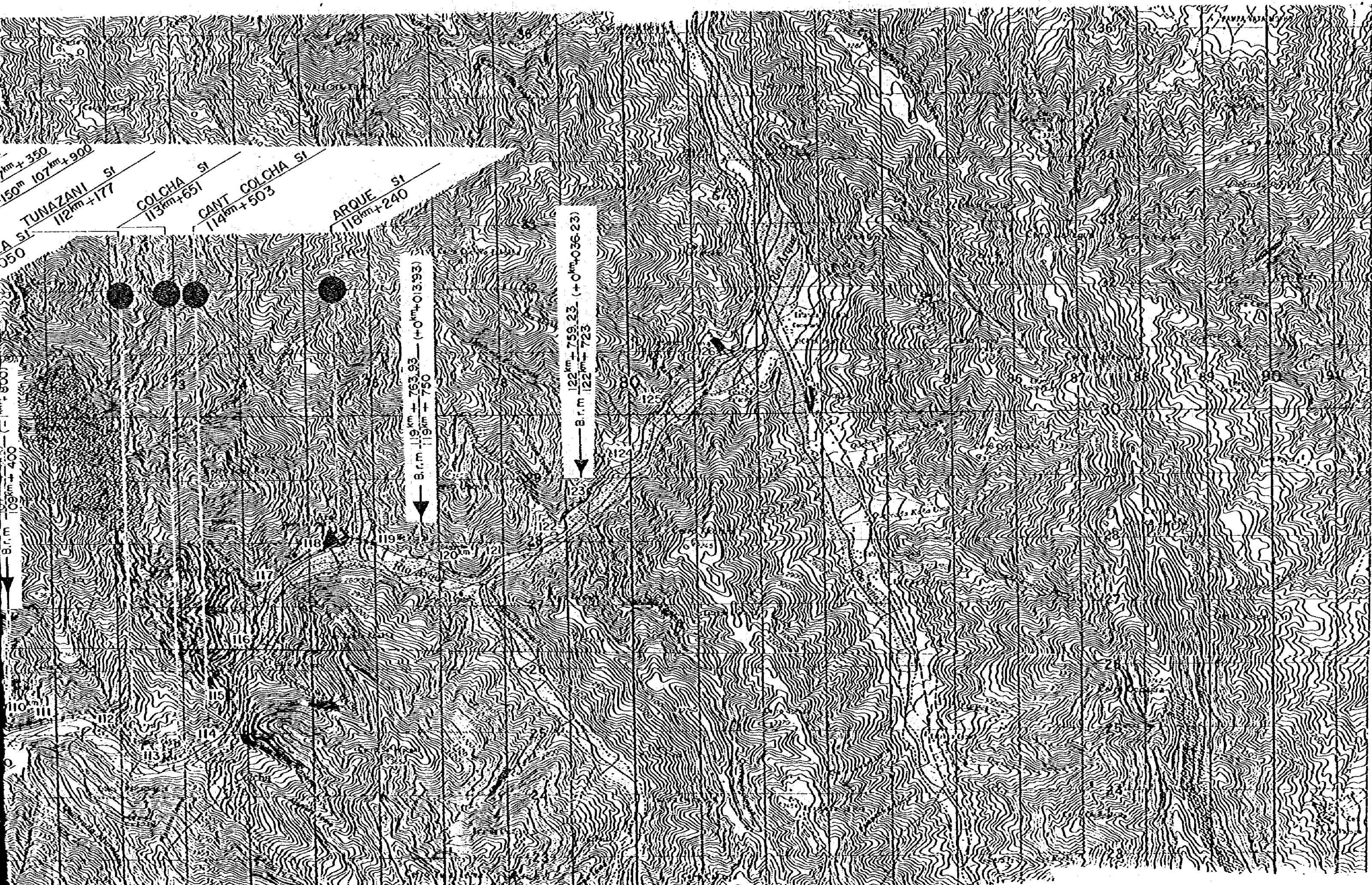
ARQUE SI  
118km+240

B.r.m. 107km+600 (-1km+800)

G1(x0.7) 105km+100  
G1(x0.7) 106km+000

B.r.m. 119km+763.93 (-10km+013.93)



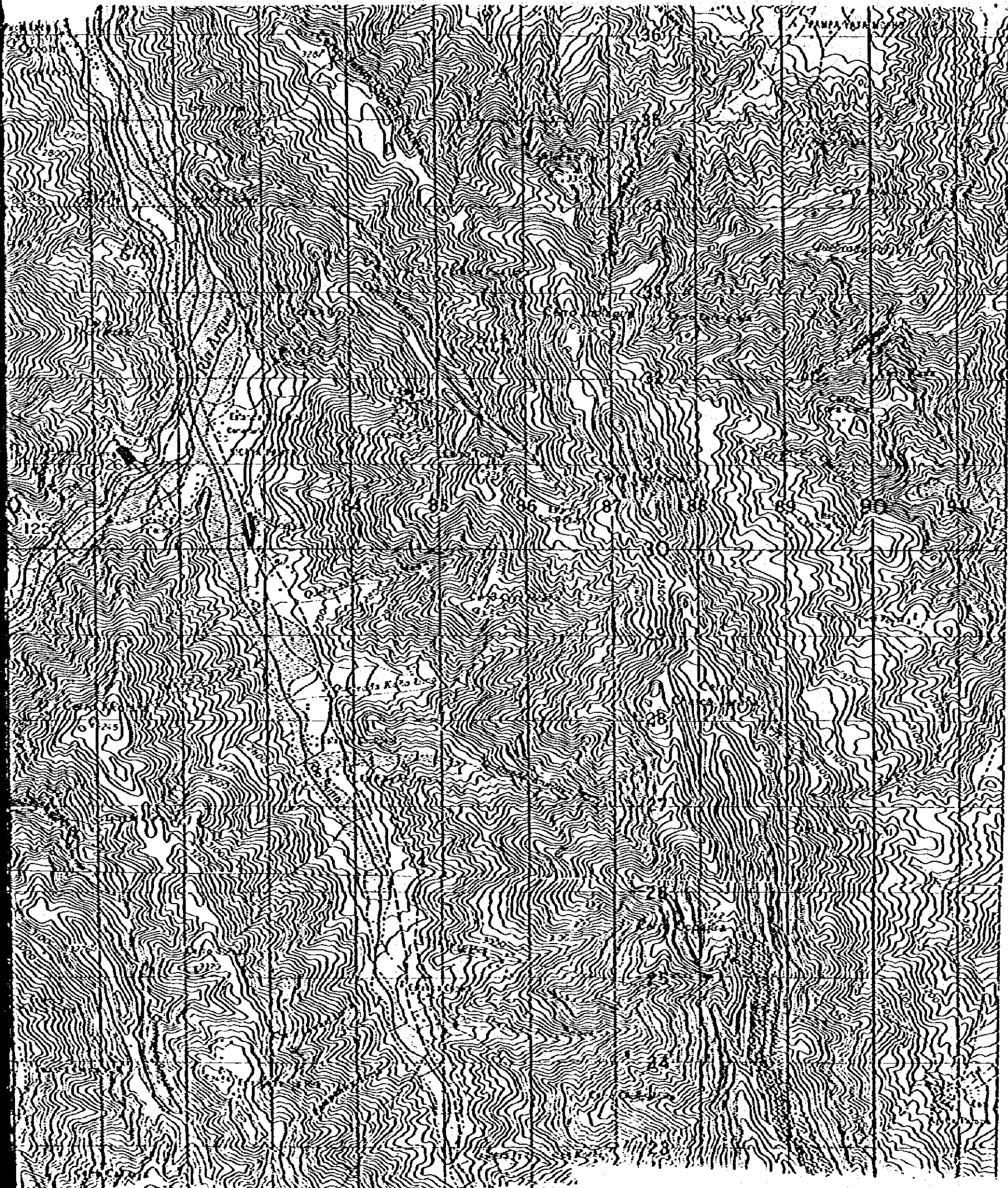


Drawing - 5

Plan of New Detour Line  
 (Alternative B, 103<sup>km</sup>+000<sup>m</sup> ~ 110<sup>km</sup>+000<sup>m</sup>)

(scale 1/50,000)





Drawing - 5

Plan of New Detour Line  
(Alternative B, 103<sup>km</sup>+000<sup>m</sup> ~ 110<sup>km</sup>+000<sup>m</sup>)

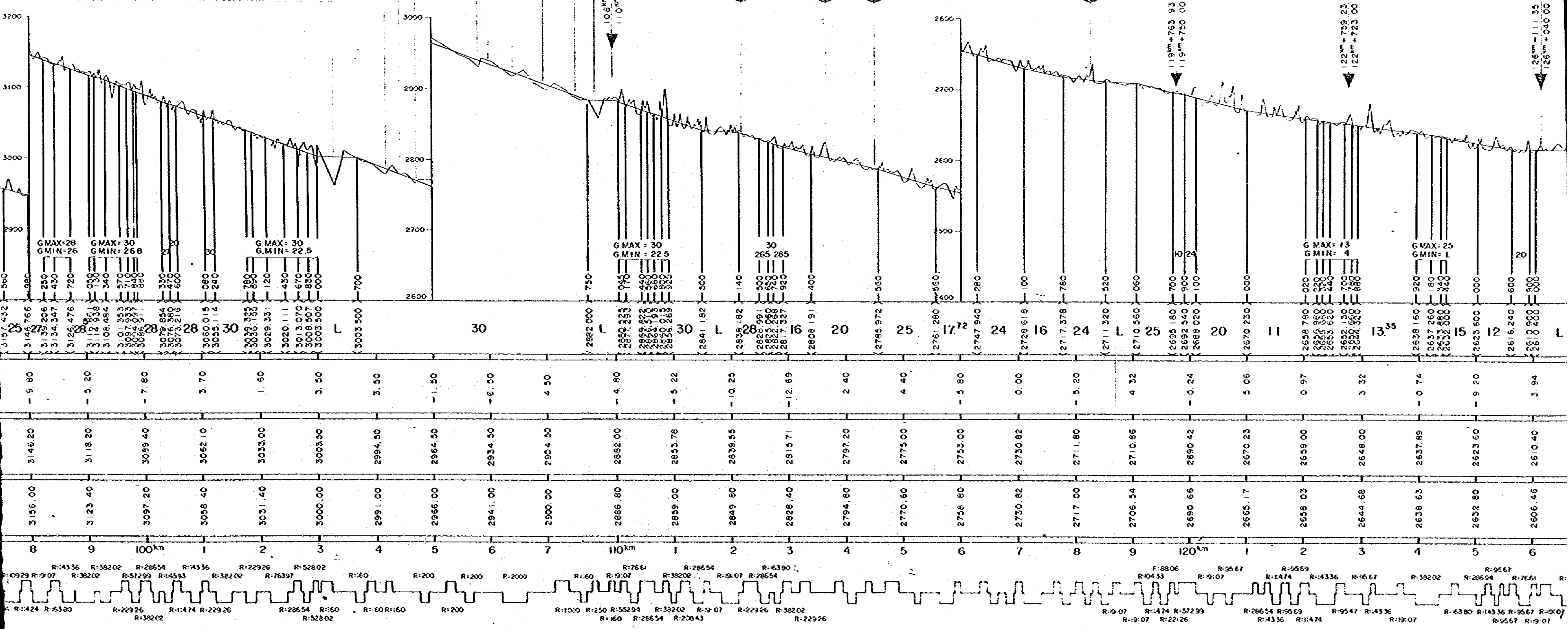
(scale 1/50,000)



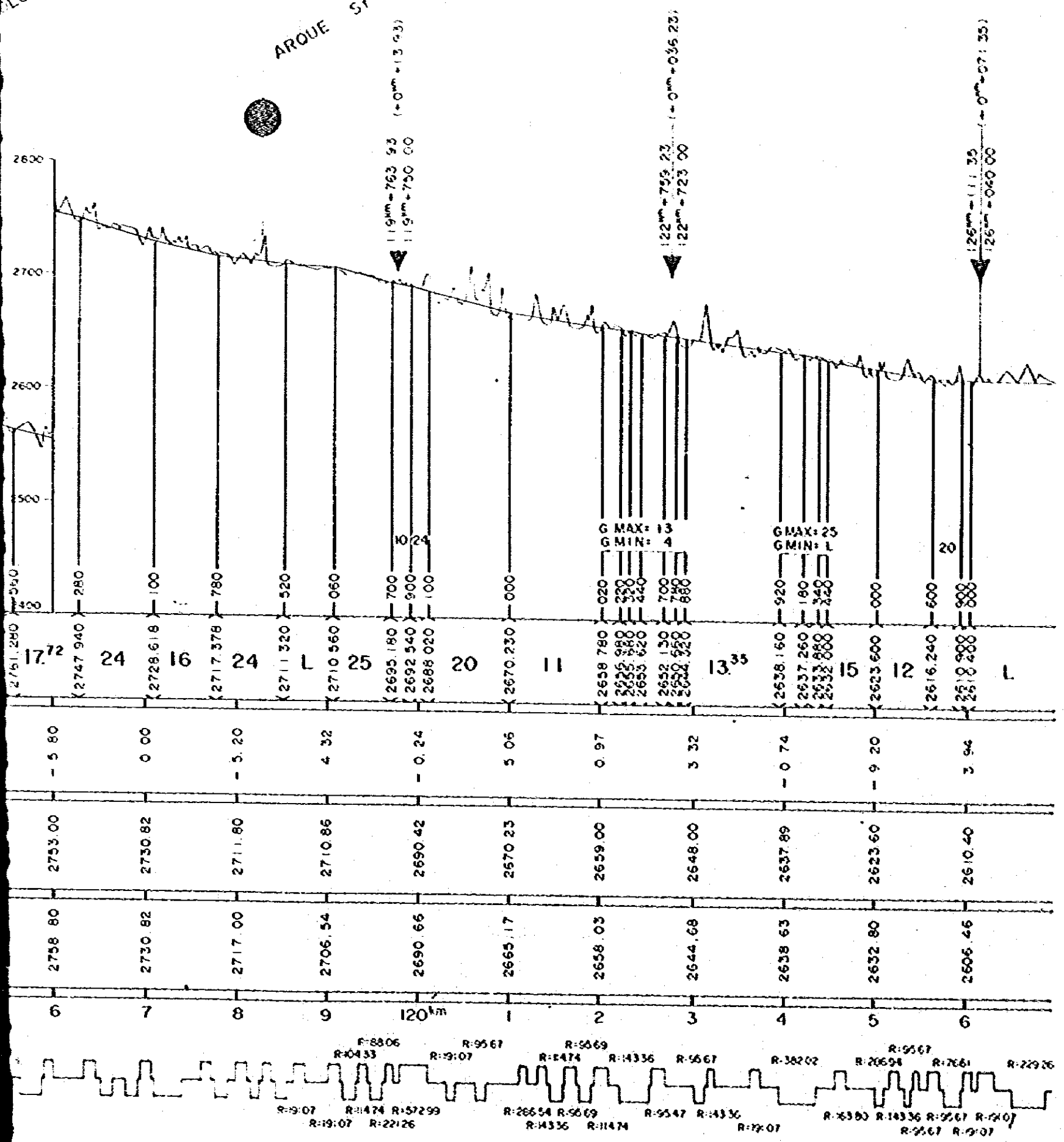
OPAYA St 97<sup>th</sup> + 033

B  $f=250^m$   $103^m + 300$   
 B  $f=40^m$   $104^m + 200$   
 B  $f=20^m$   $104^m + 420$   
 C  $(1 \times 0.7)$   $105^m + 700$   
 B  $f=80^m$   $105^m + 100$   
 C  $(1 \times 0.7)$   $106^m + 800$   
 B  $f=40^m$   $106^m + 400$   
 B  $f=80$   $106^m + 400$   
 B  $f=80^m$   $106^m + 400$   
 B  $f=150^m$   $107^m + 350$   
 B  $f=150^m$   $107^m + 900$

TUNAZANI St 112<sup>th</sup> + 177  
 COLCHA St 112<sup>th</sup> + 651  
 CANT COLCHA St 114<sup>th</sup> + 503  
 AROUE St 118<sup>th</sup> + 240



ALCIA ST 103<sup>km</sup>+500  
 ARQUE ST 110<sup>km</sup>+230

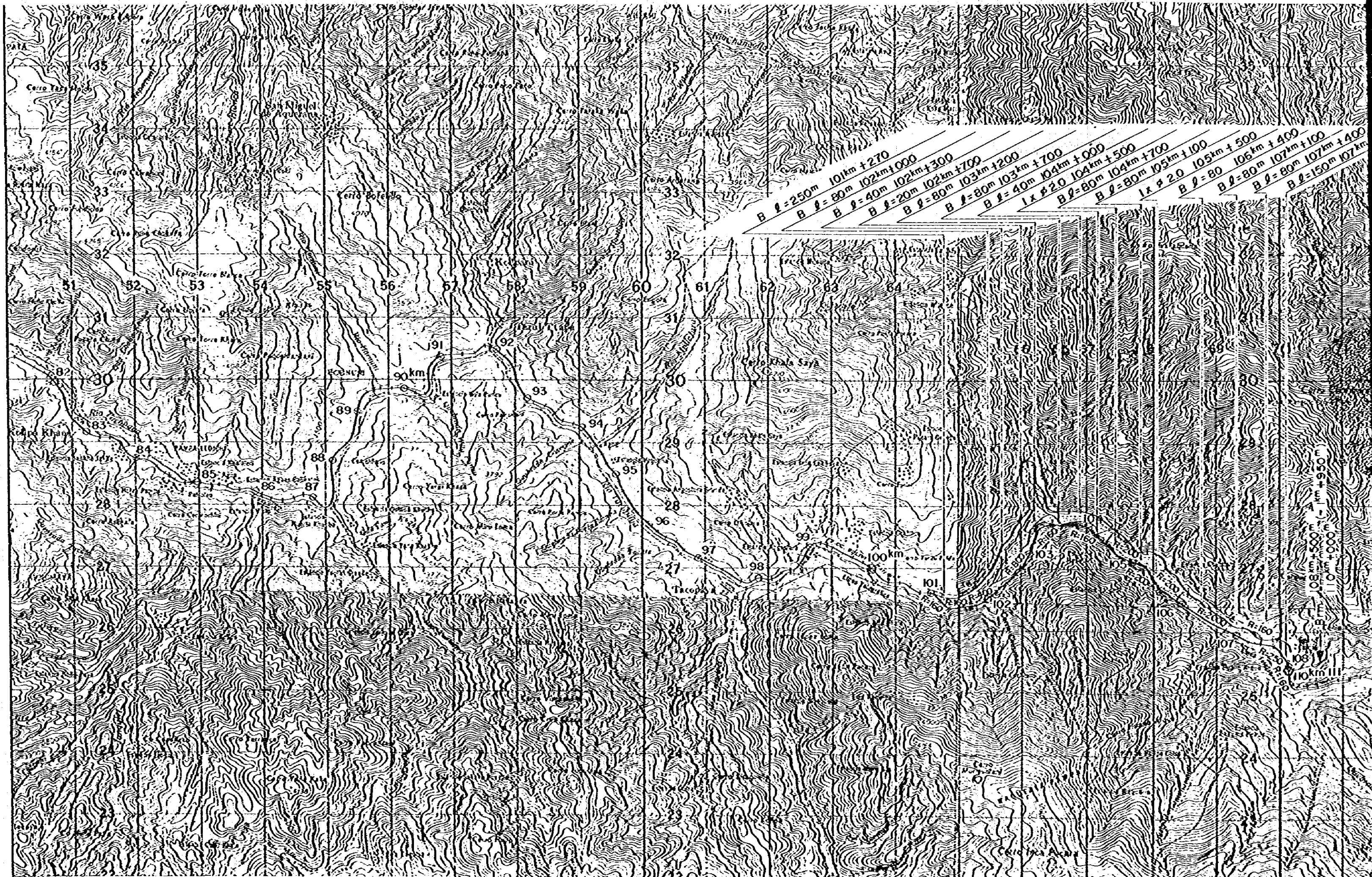


Drawing - 6

Longitudinal Profile of New Detour Line  
 (Alternative B, 103<sup>km</sup>+000<sup>m</sup> ~ 110<sup>km</sup>+000<sup>m</sup>)

(scale 1/50,000, 1/4,000)



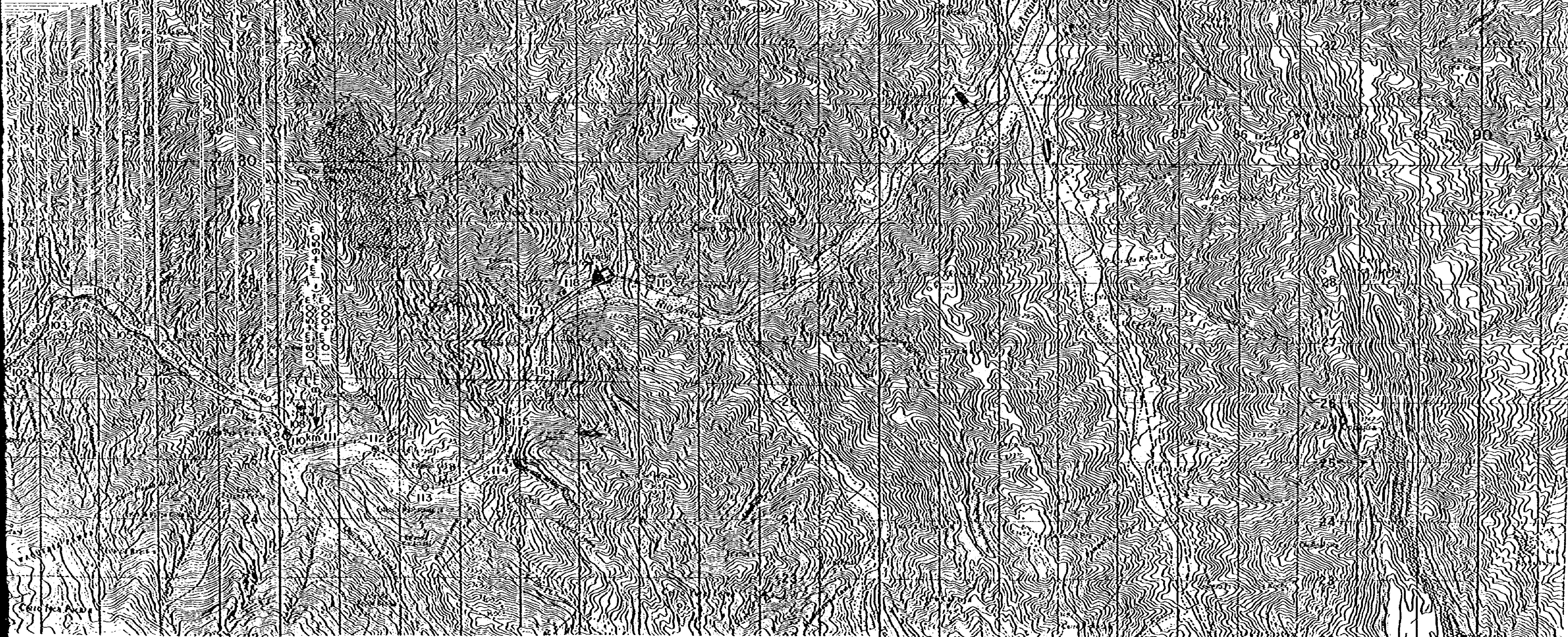


$B \rho = 250m$   $101km \pm 270$   
 $B \rho = 80m$   $102km \pm 1000$   
 $B \rho = 40m$   $102km \pm 300$   
 $B \rho = 20m$   $102km \pm 100$   
 $B \rho = 80m$   $103km \pm 700$   
 $B \rho = 40m$   $103km \pm 200$   
 $1x \rho 20$   $104km \pm 700$   
 $B \rho = 80m$   $104km \pm 500$   
 $B \rho = 80m$   $105km \pm 700$   
 $1x \rho 20$   $105km \pm 100$   
 $B \rho = 80$   $106km \pm 500$   
 $B \rho = 80m$   $106km \pm 400$   
 $B \rho = 80m$   $107km \pm 100$   
 $B \rho = 150m$   $107km$

$108m \pm 500$   $108m \pm 950$   
 $109m \pm 1000$   
 $110km III$

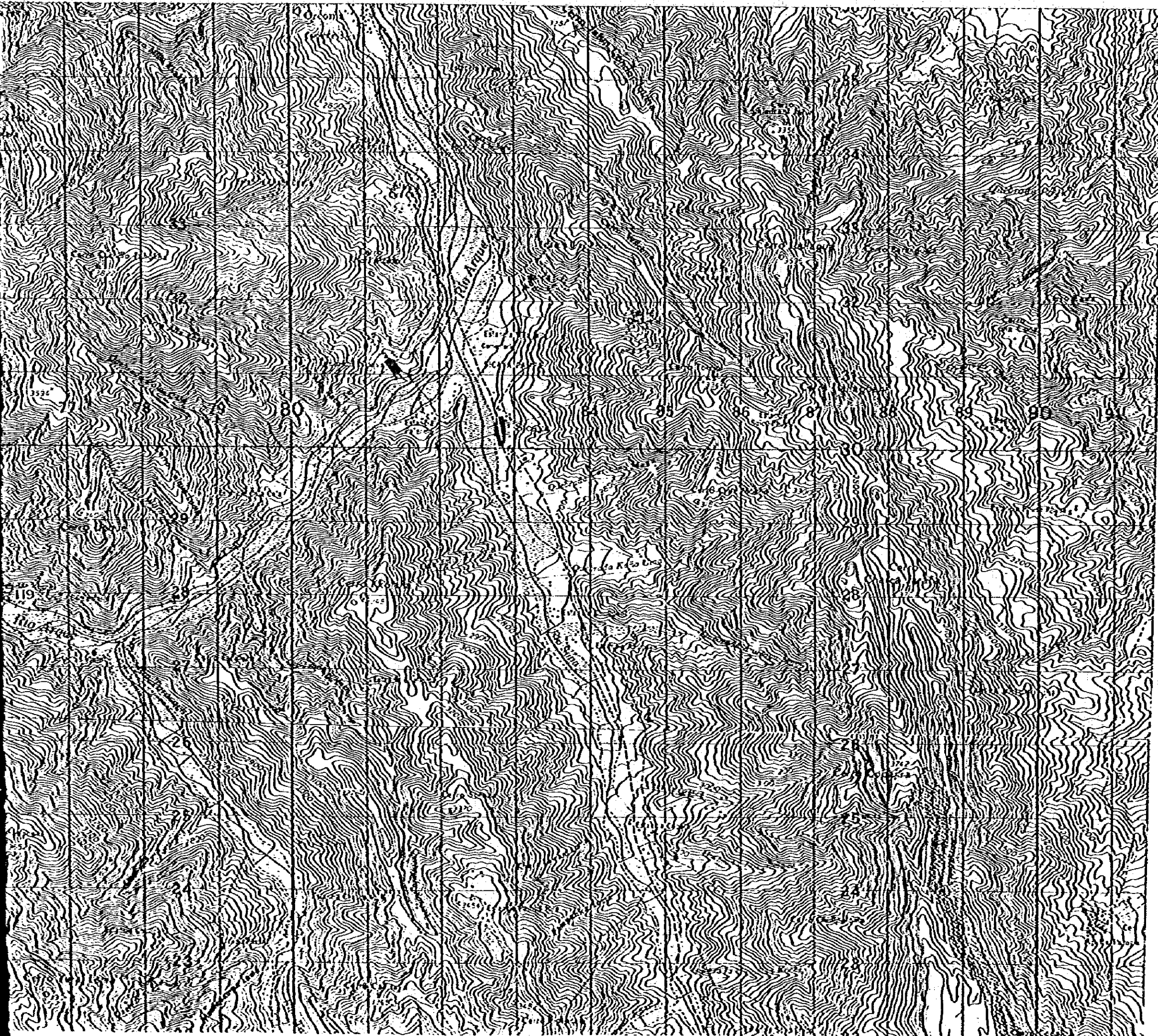


$\rho = 200$   
 $\rho = 103 \text{ km} \pm 700$   
 $\rho = 40 \text{ km} \pm 1000$   
 $\rho = 20 \text{ km} \pm 500$   
 $\rho = 80 \text{ km} \pm 500$   
 $\rho = 80 \text{ km} \pm 700$   
 $\rho = 20 \text{ km} \pm 100$   
 $\rho = 80 \text{ km} \pm 400$   
 $\rho = 80 \text{ km} \pm 500$   
 $\rho = 80 \text{ km} \pm 400$   
 $\rho = 150 \text{ km} \pm 100$   
 $\rho = 80 \text{ km} \pm 400$   
 $\rho = 150 \text{ km} \pm 900$



Draw  
Plan  
(Arte  
(scale





Drawing - 7

Plan of New Detour Line  
(Alternative C, 101<sup>km</sup>+000<sup>m</sup> ~ 110<sup>km</sup>+000<sup>m</sup>)

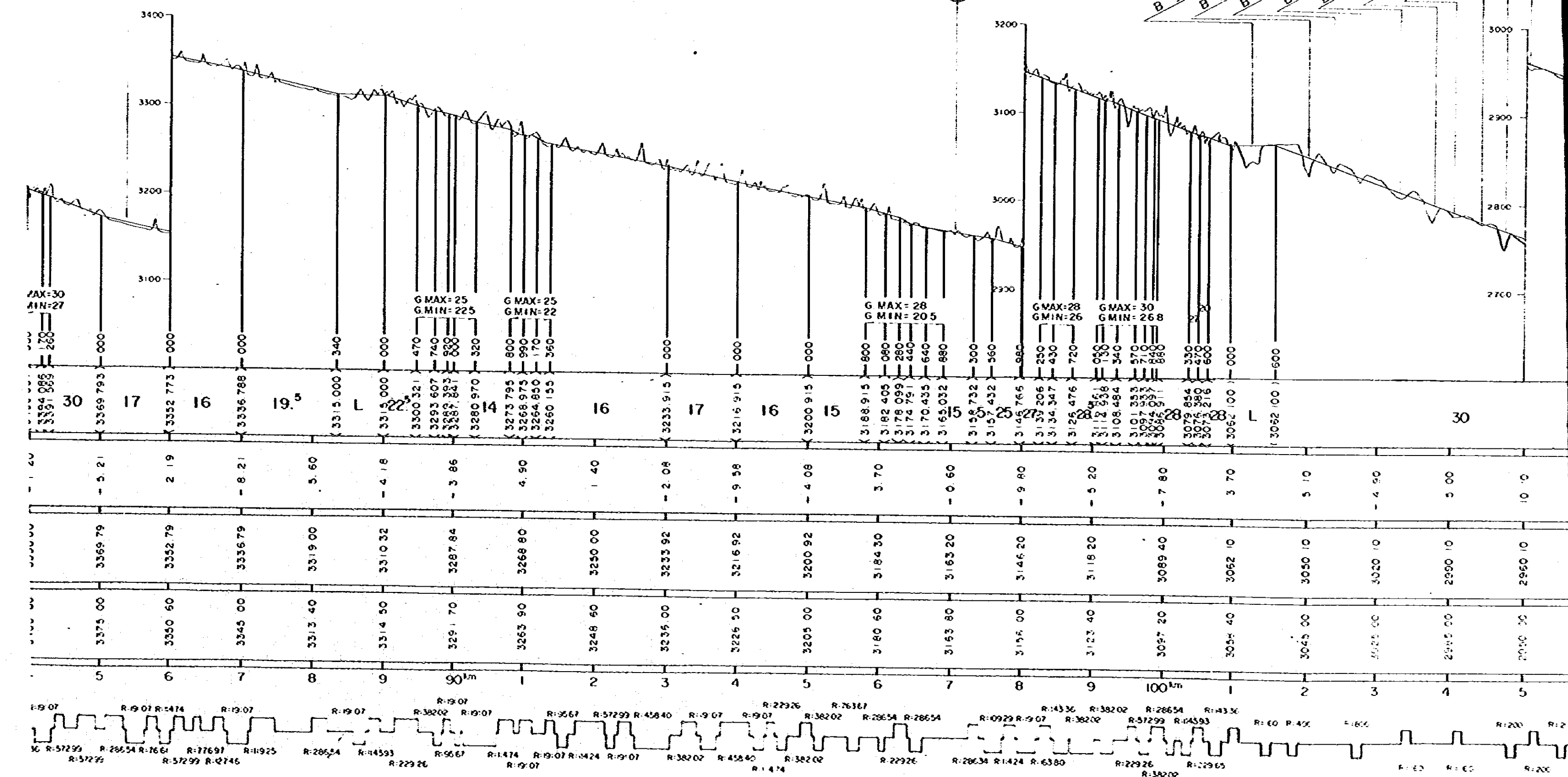
(scale 1/50,000)



AGUAS CALIENTES St 85 km + 388

TACOPAYA St 97 km + 033

B  $\beta$  = 250m 10 km + 270  
 B  $\beta$  = 80m 102 km + 000  
 B  $\beta$  = 40m 102 km + 300  
 B  $\beta$  = 20m 102 km + 300  
 B  $\beta$  = 80m 103 km + 700  
 B  $\beta$  = 80m 103 km + 200  
 1 x  $\beta$  20 104 km + 000  
 B  $\beta$  = 80m 104 km + 500  
 B  $\beta$  =

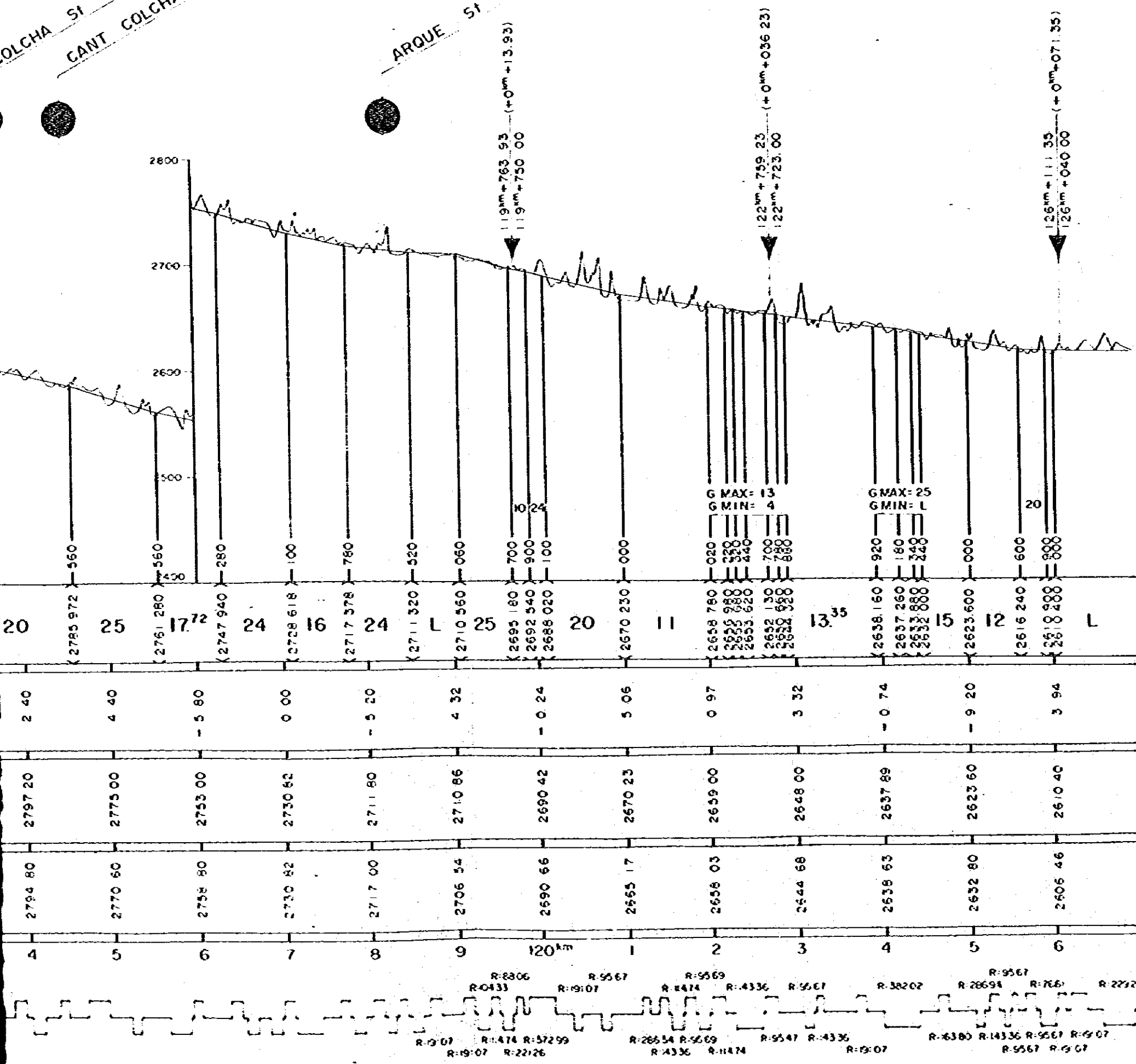








112km + 177  
 COLCHA St 113km + 651  
 CANT COLCHA St 114km + 503  
 AROQUE St 118km + 240



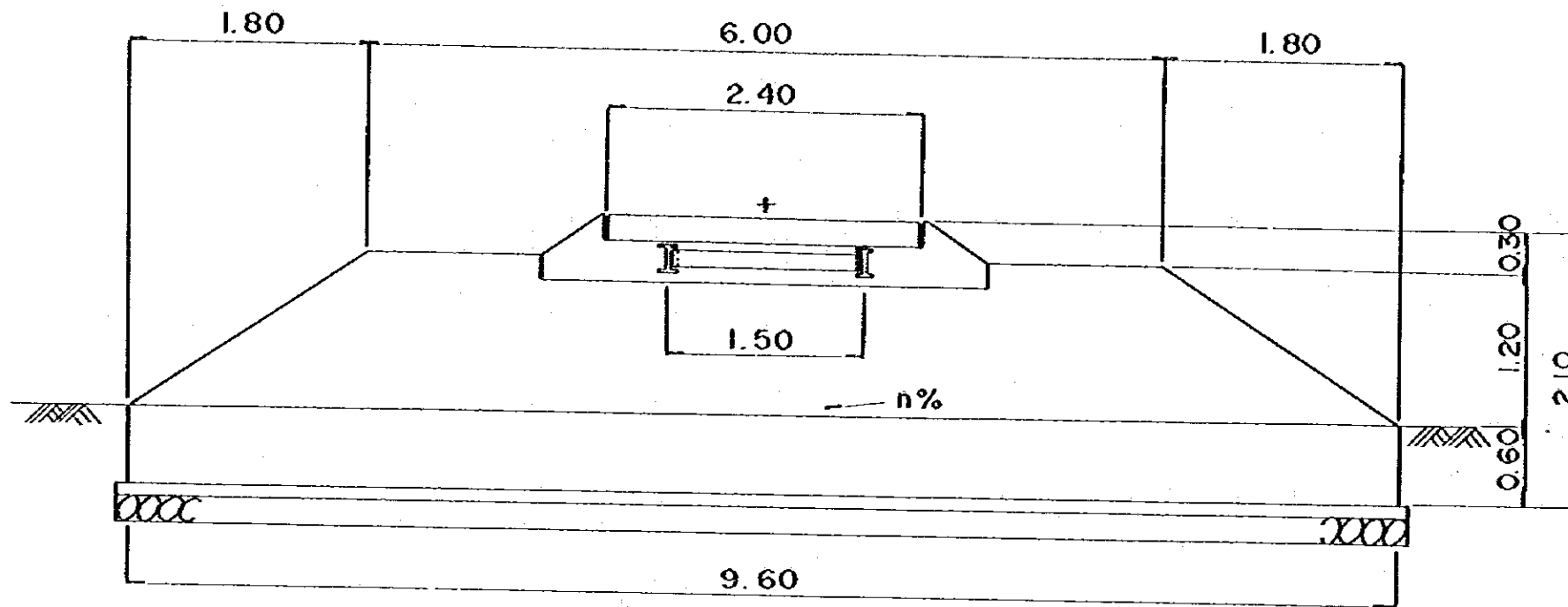
Drawing - 8

Longitudinal Profile of New Detour Line  
 (Alternative C, 101km + 000m ~ 110km + 000m)

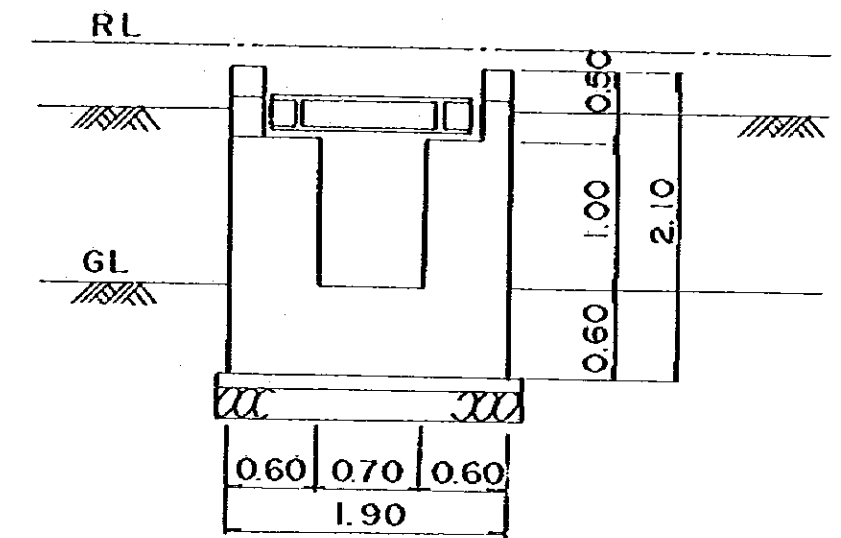
(scale 1/50,000, 1/4,000)



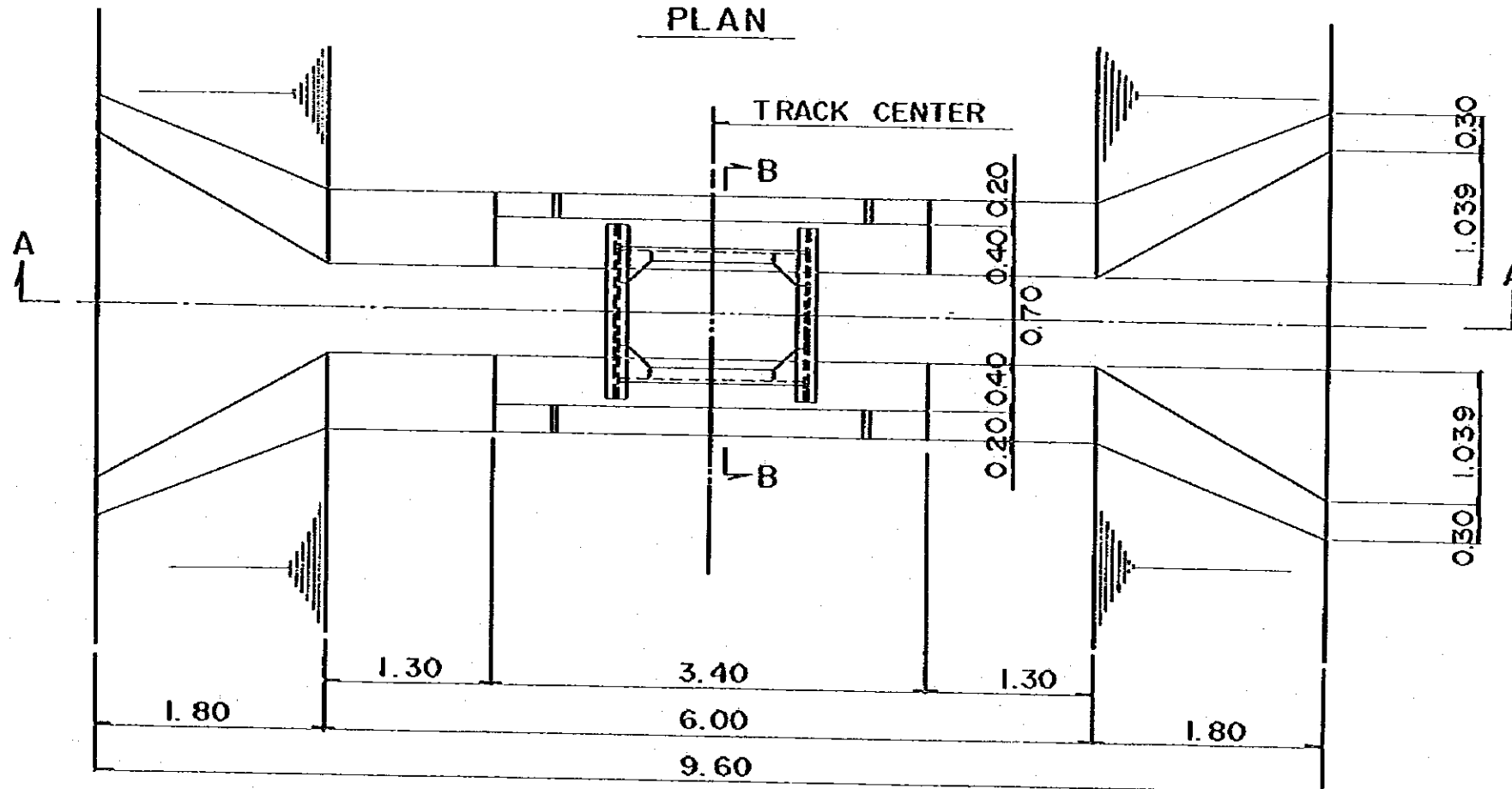
SECTION A-A



SECTION B-B



PLAN

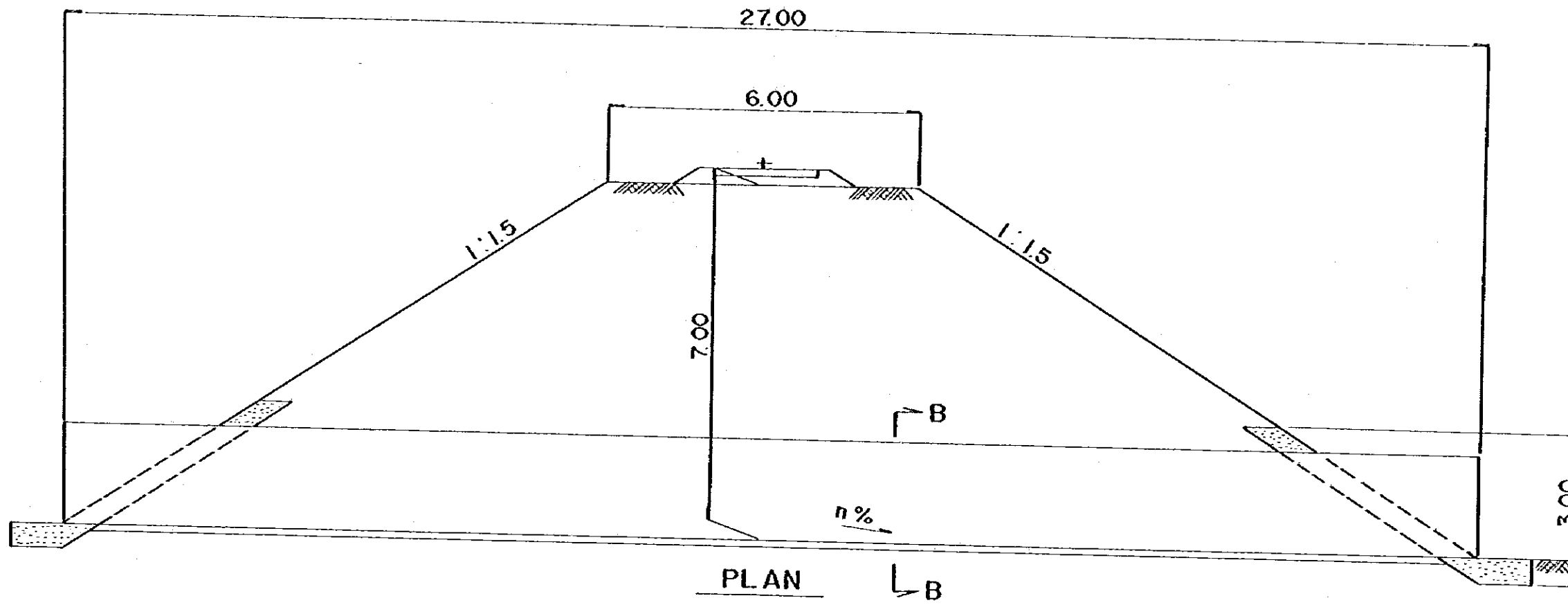


Drawing - 9

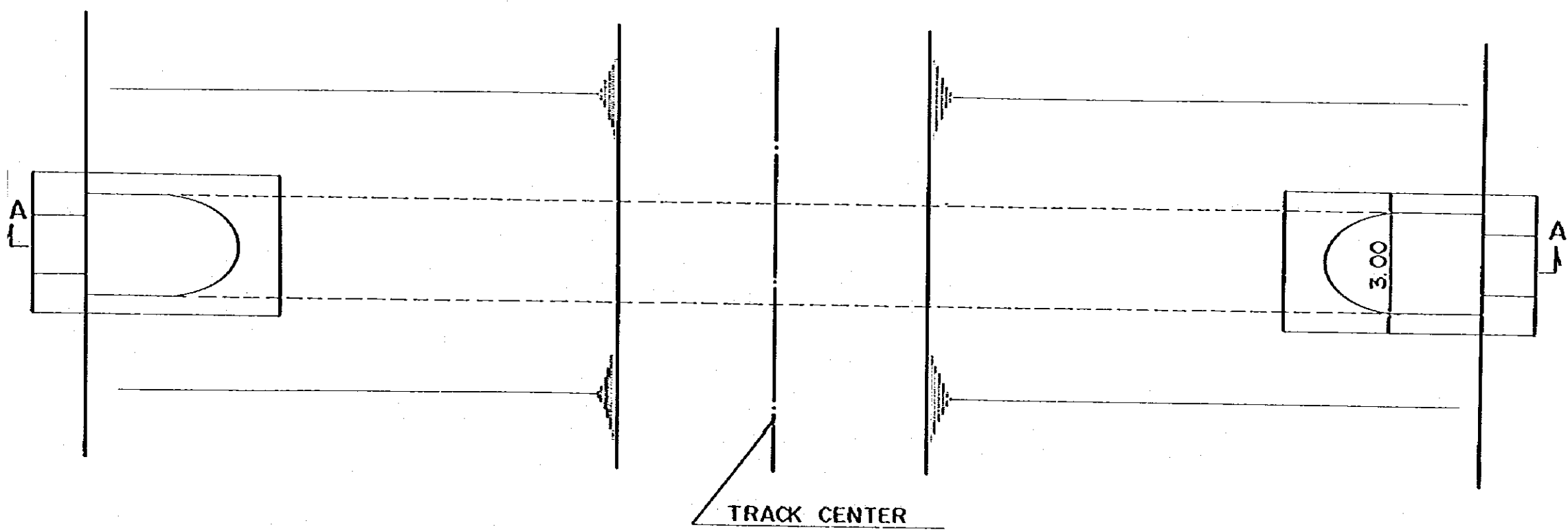
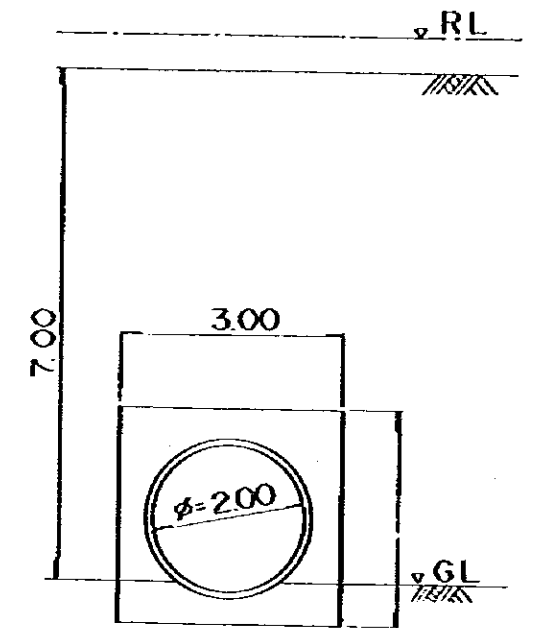
Typical Design of Open Culvert

Scale 1/50

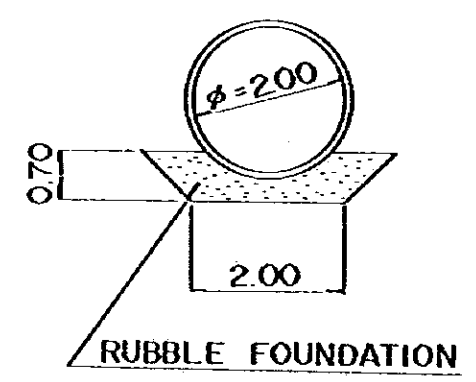
SECTION A-A



SIDE VIEW

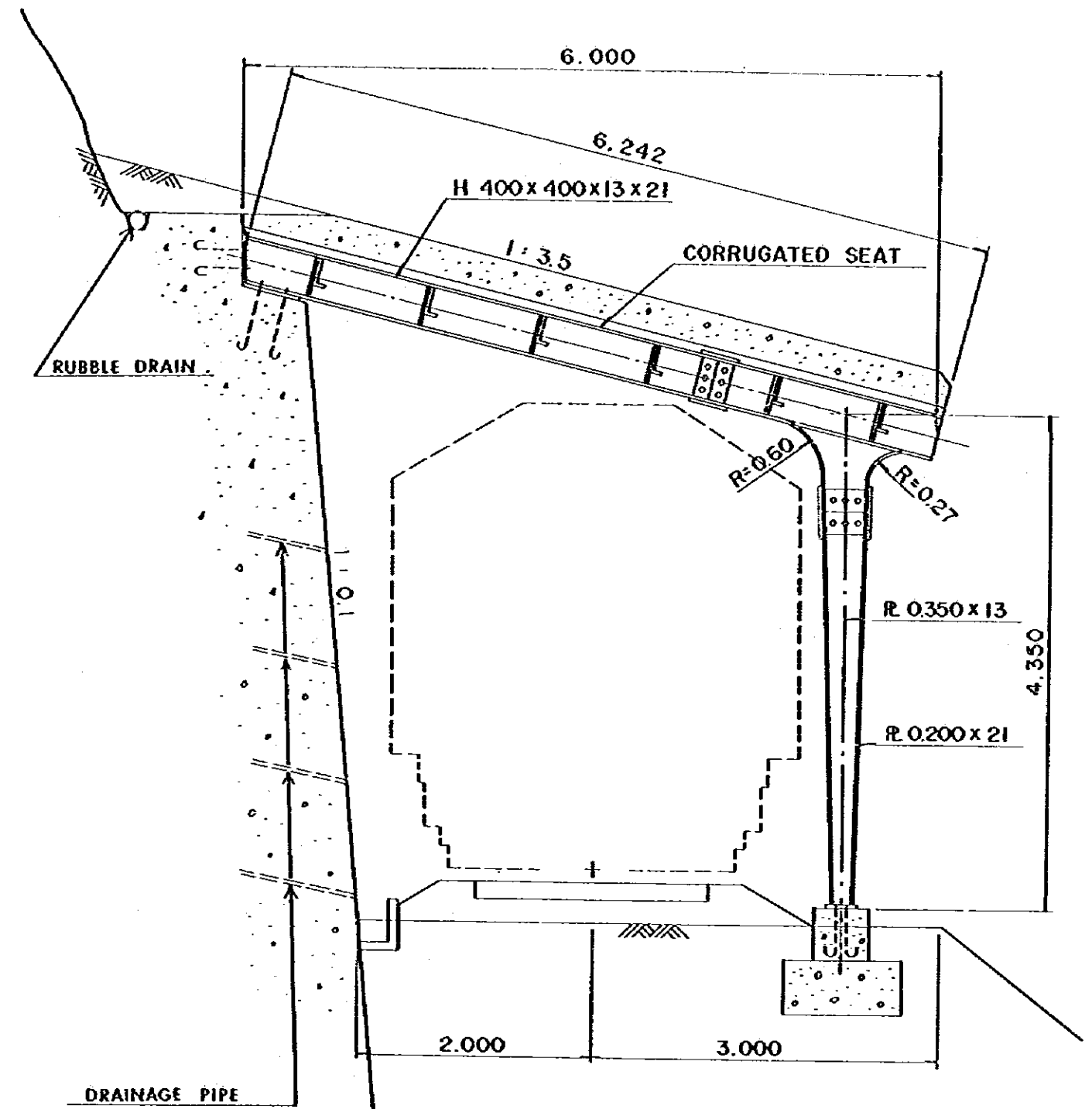


SECTION B-B

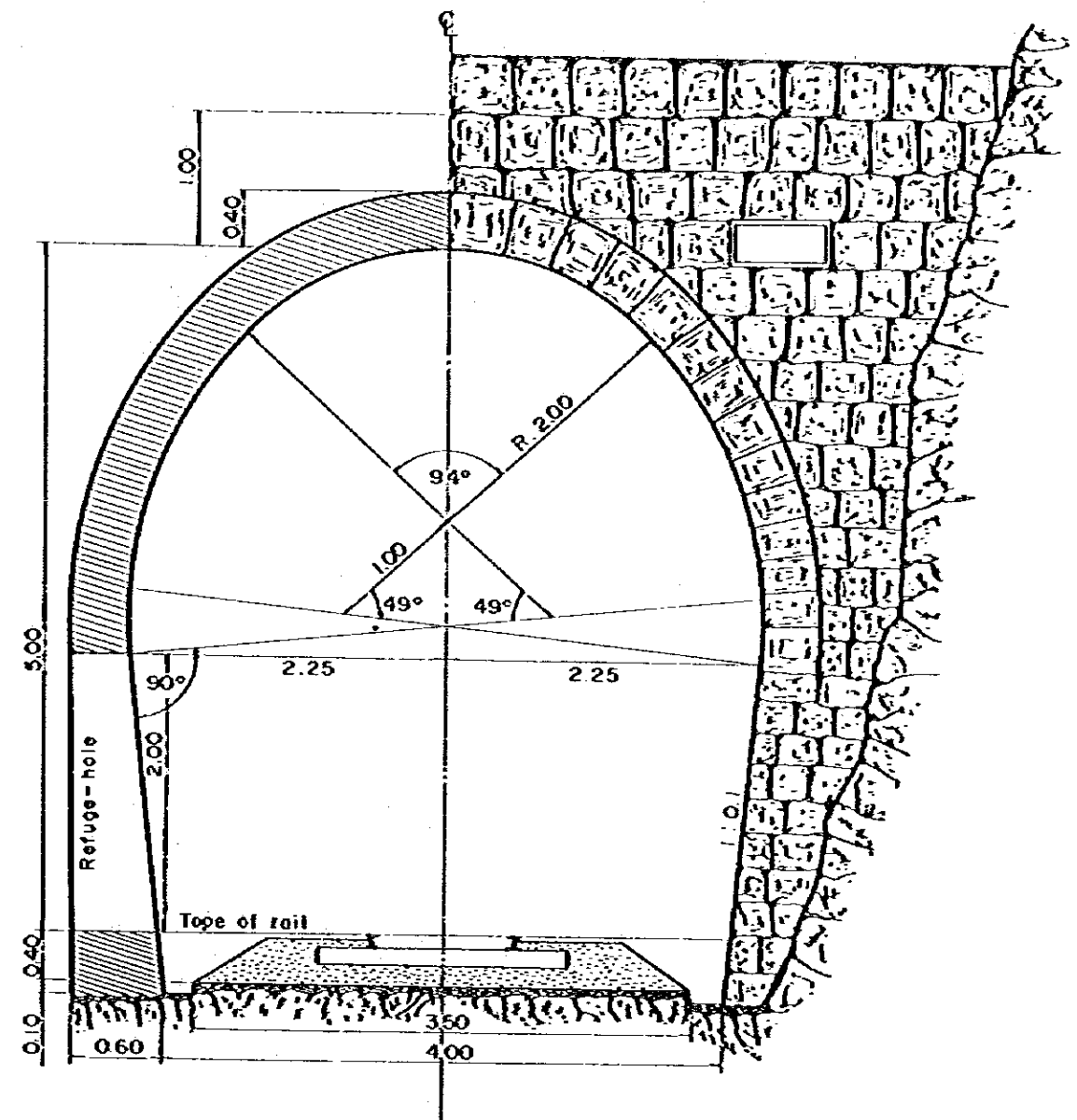


Drawing - 10  
Typical Design of corrugated Steel pipe  
scale 1/100





Drawing - II  
 Design of Rock Fall Shed  
 Scale 1 / 50



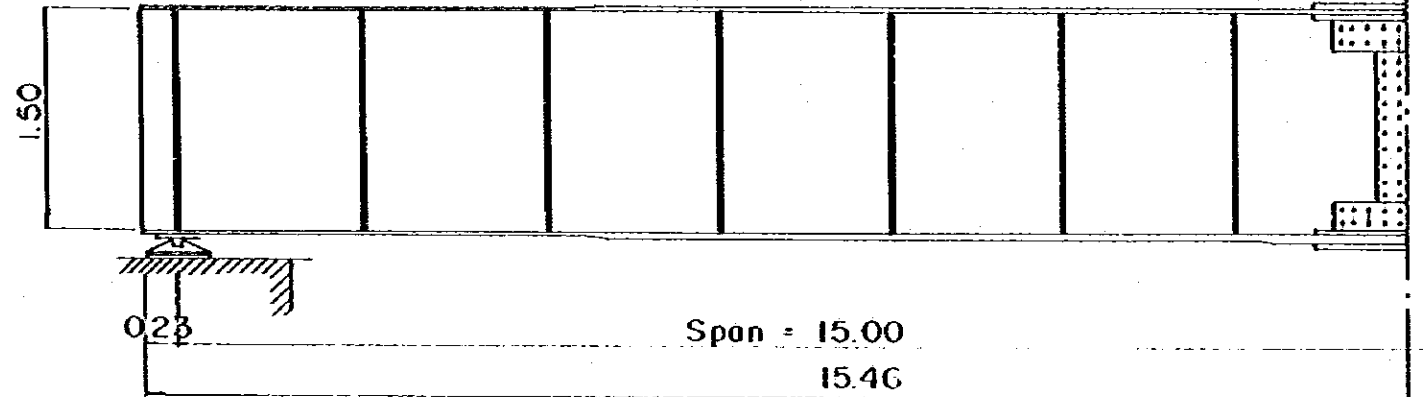
Drawing - 12

Typical Design of Tunnel

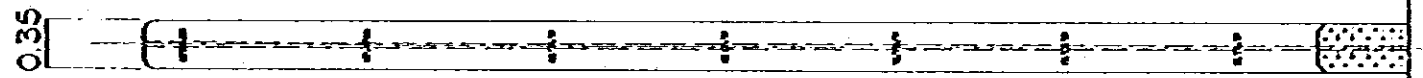
Scale 1/50



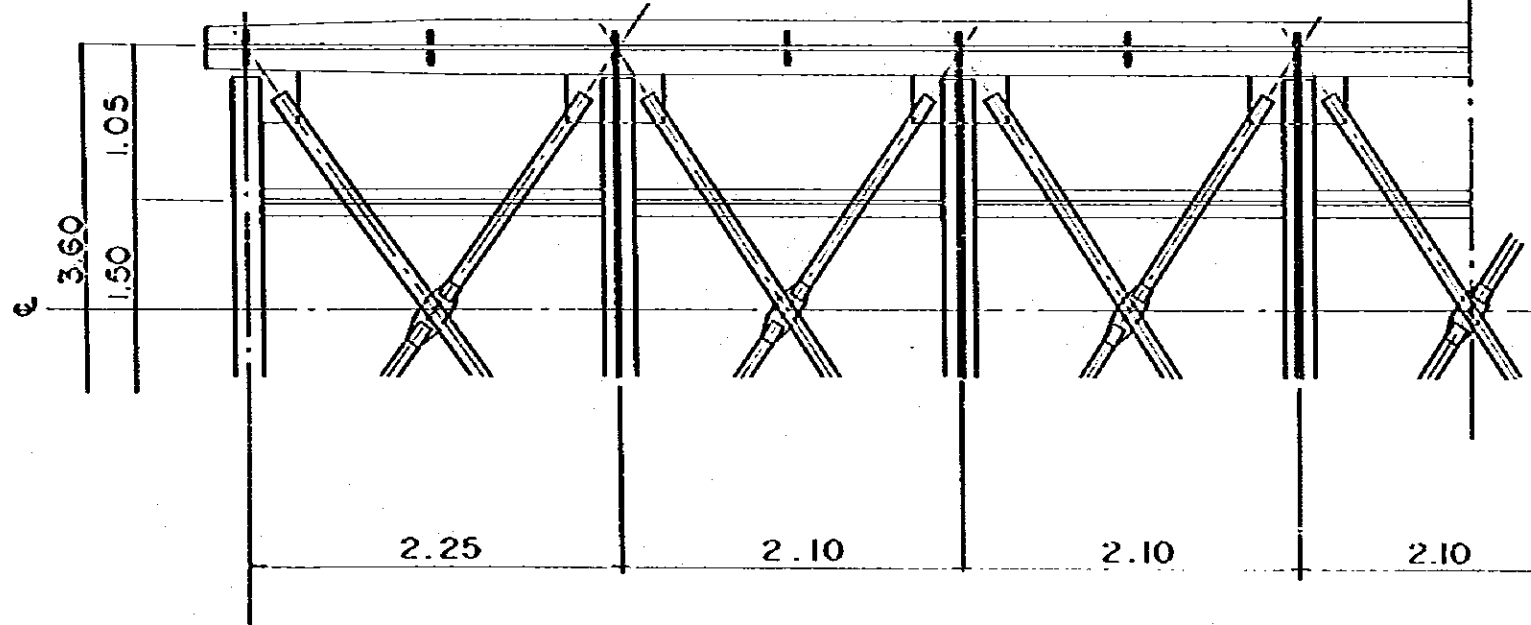
MAIN GIRDER SIDE VIEW



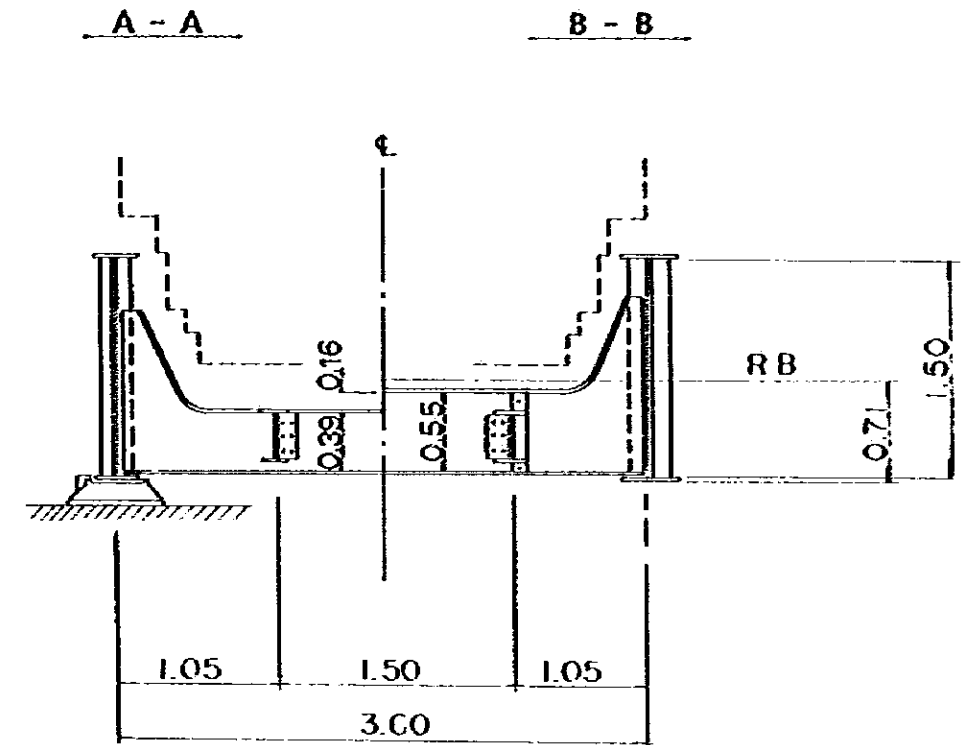
MAIN GIRDER PLAN



FLOOR SYSTEM



SECTION



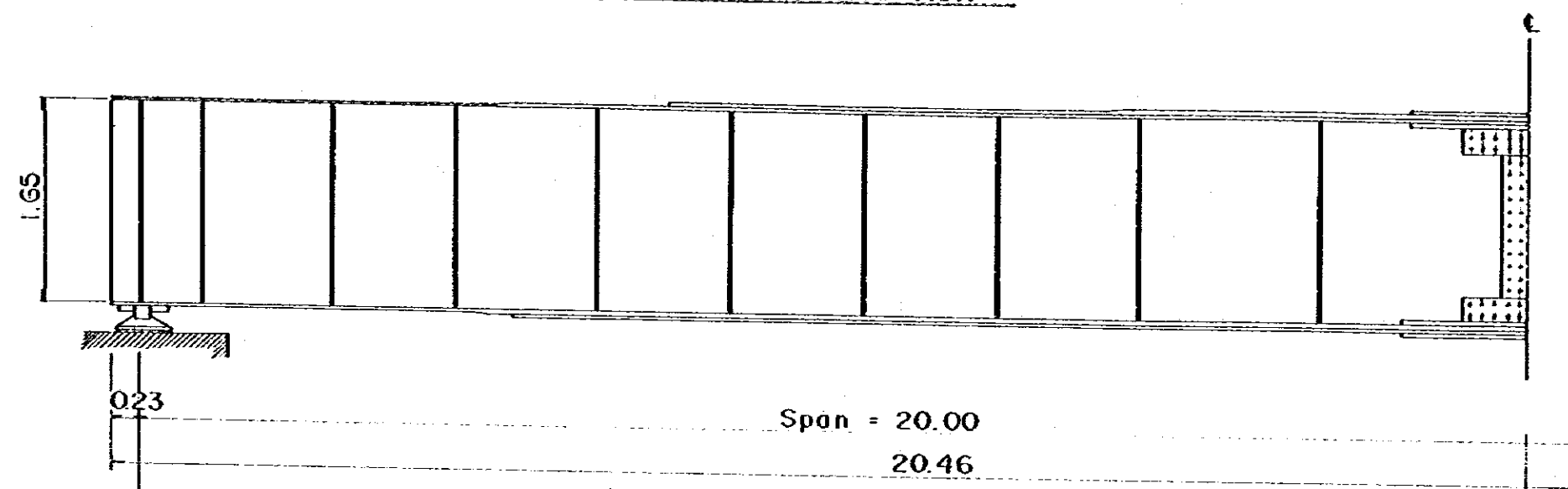
Drawing - 13

Typical Design of Through Girder

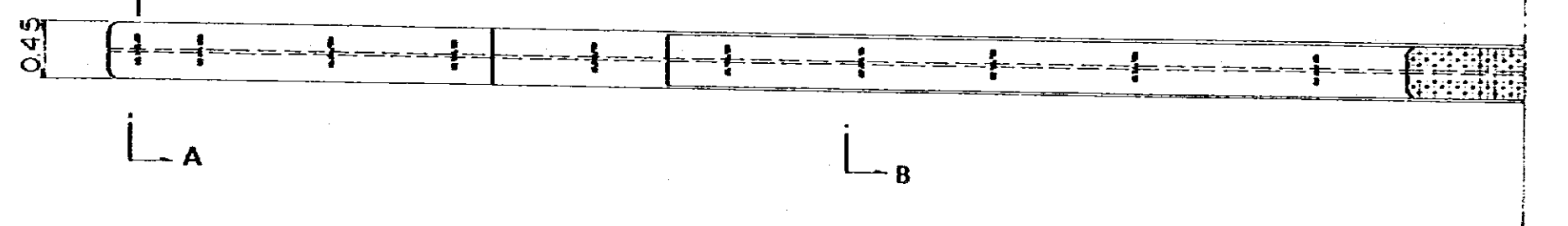
( TG - 15 )

Scale 1 / 50

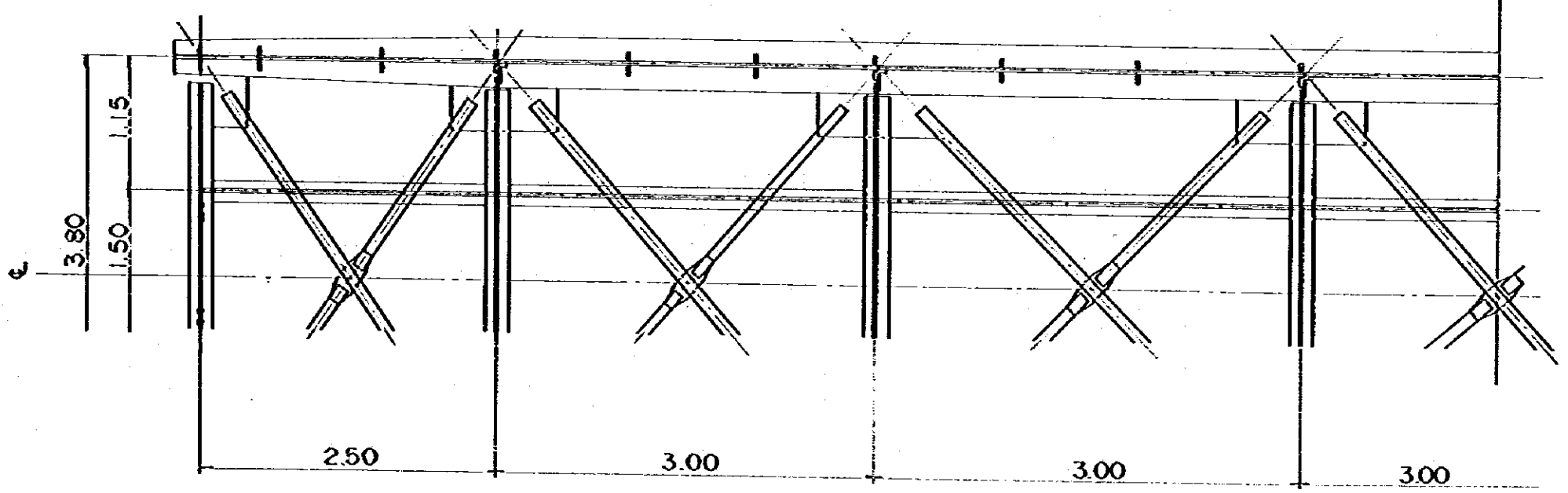
MAIN GIRDER SIDE VIEW



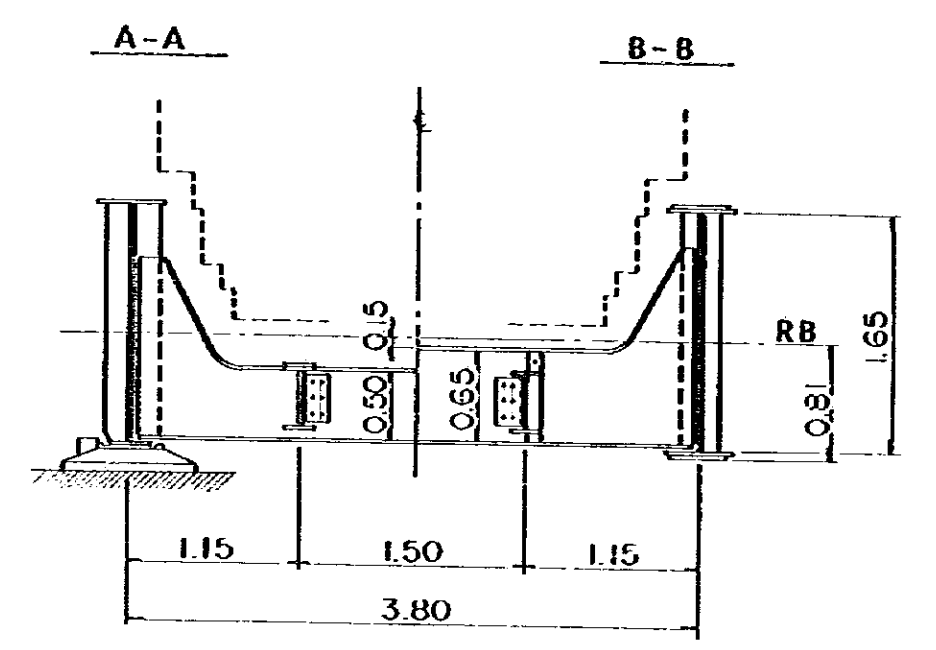
MAIN GIRDER PLAN



FLOOR SYSTEM



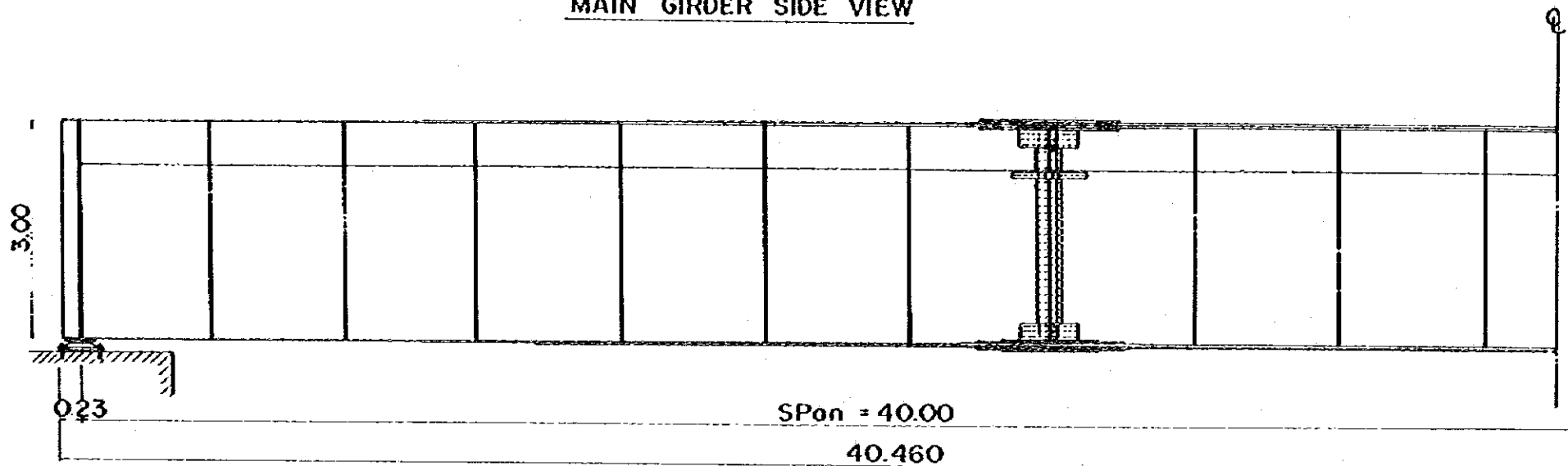
SECTION



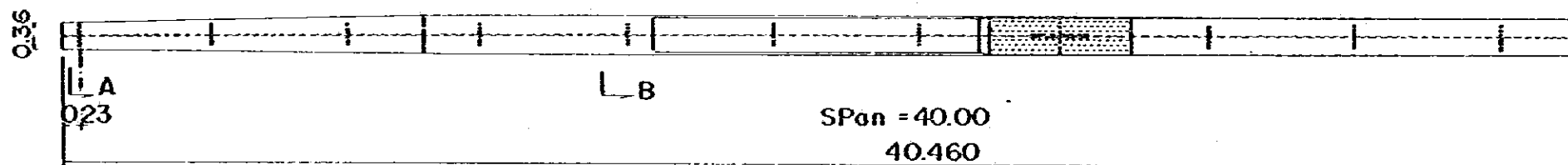
Drawing - 14  
Typical Design of Through Girder  
(TG - 20)  
Scale 1/50



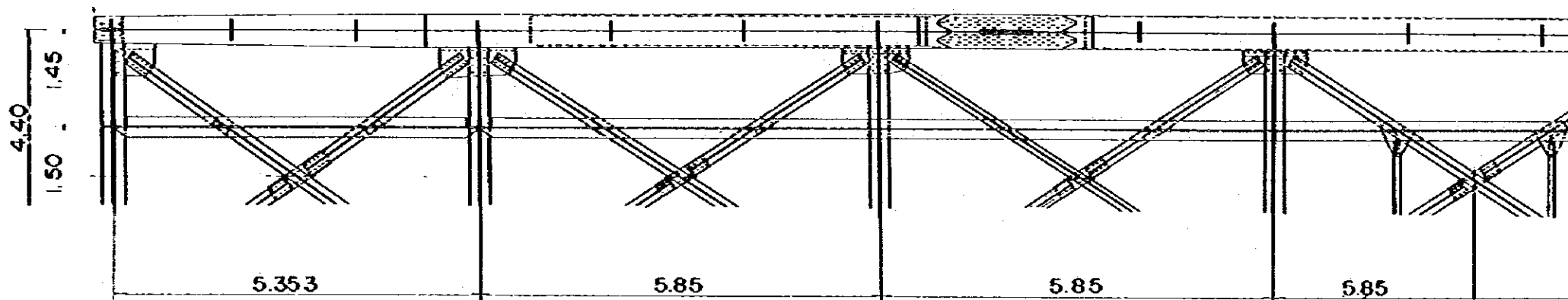
MAIN GIRDER SIDE VIEW



MAIN GIRDER PLAN

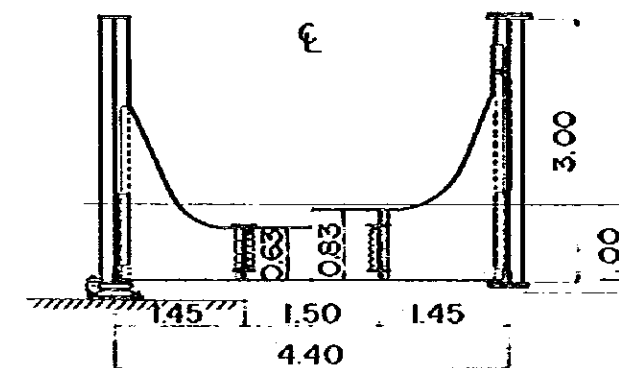


FLOOR SYSTEM



SECTION

A - A    B - B



Drawing - 15

Typical Design of Through Girder

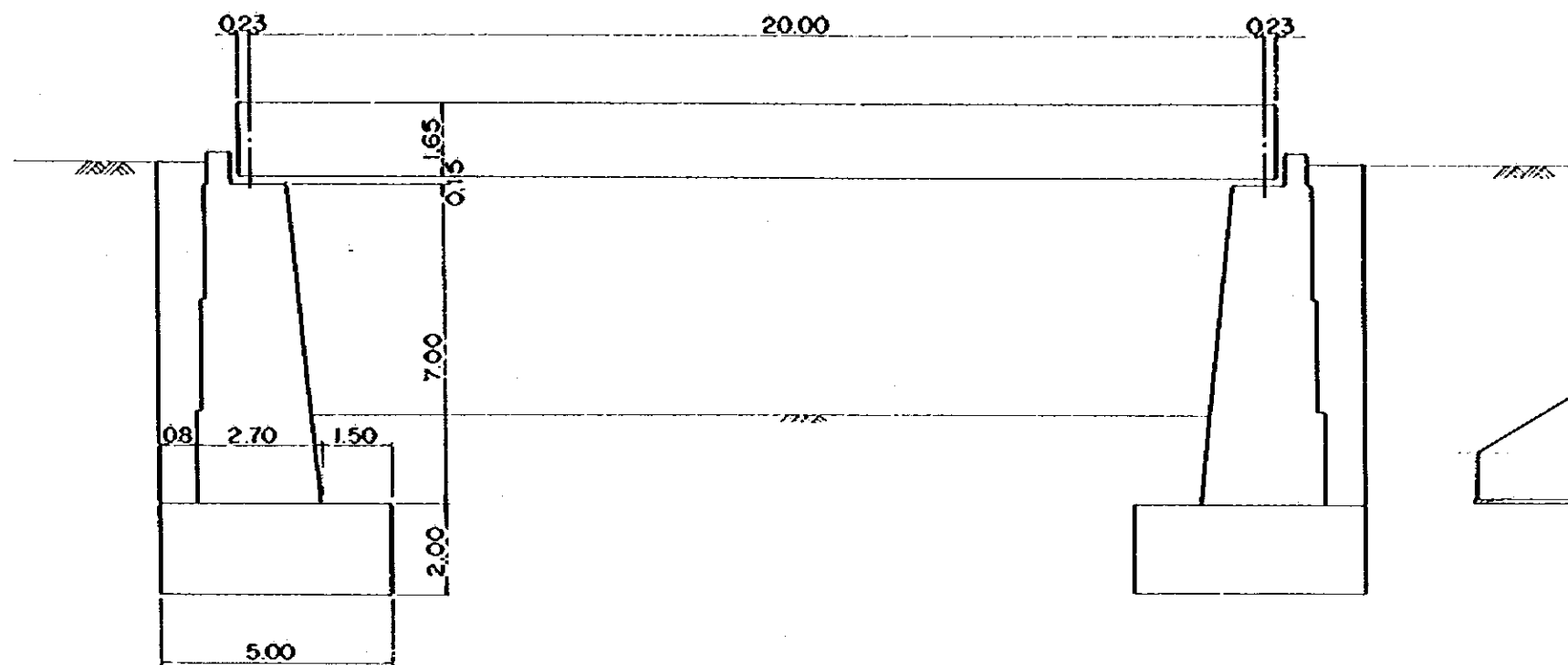
(TG - 40)

Scale 1/50

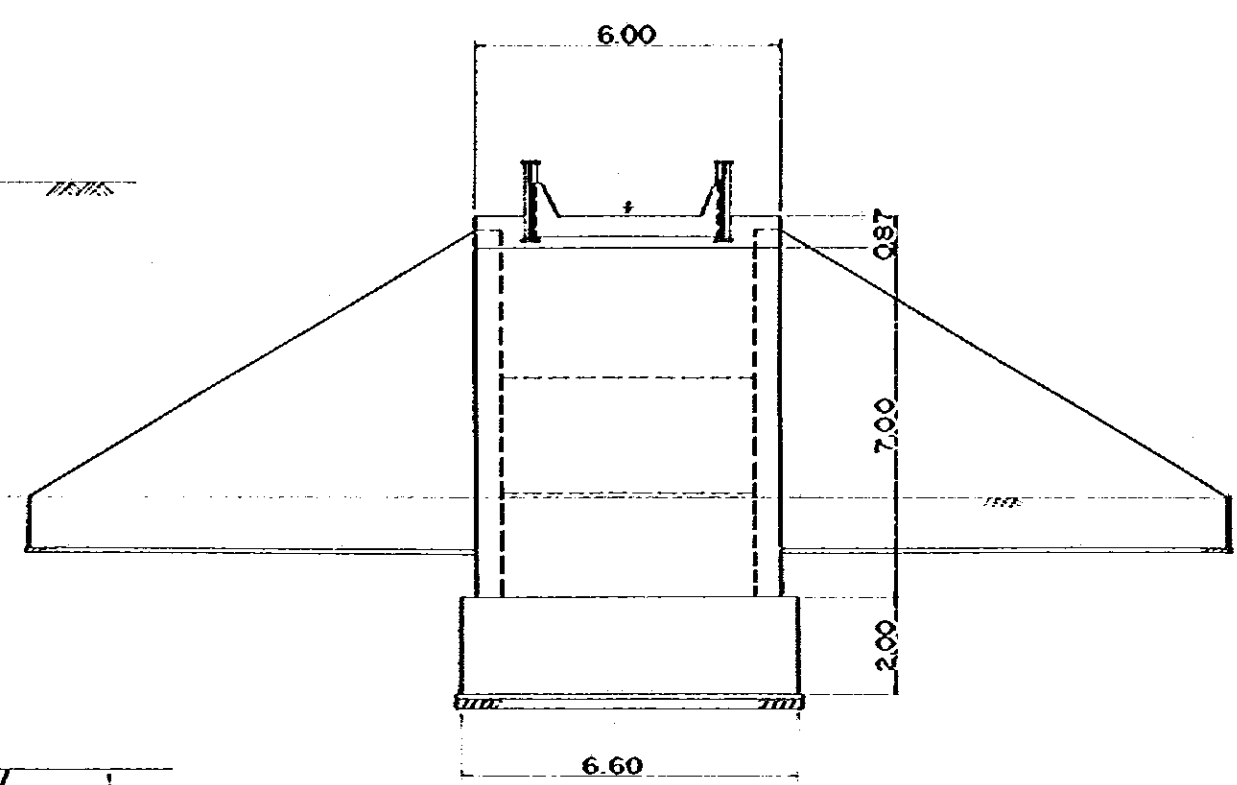




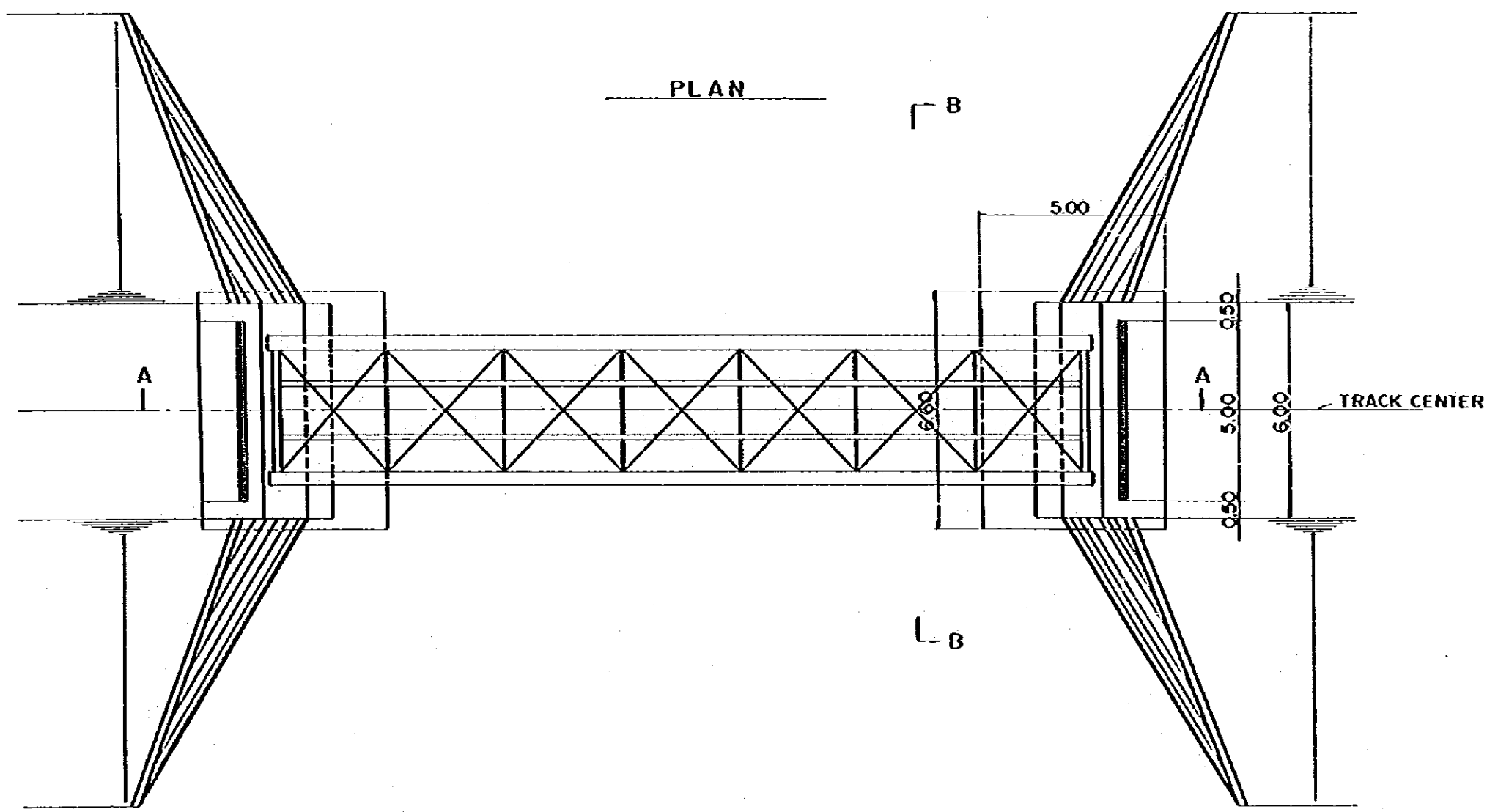
SECTION A-A



SECTION B-B

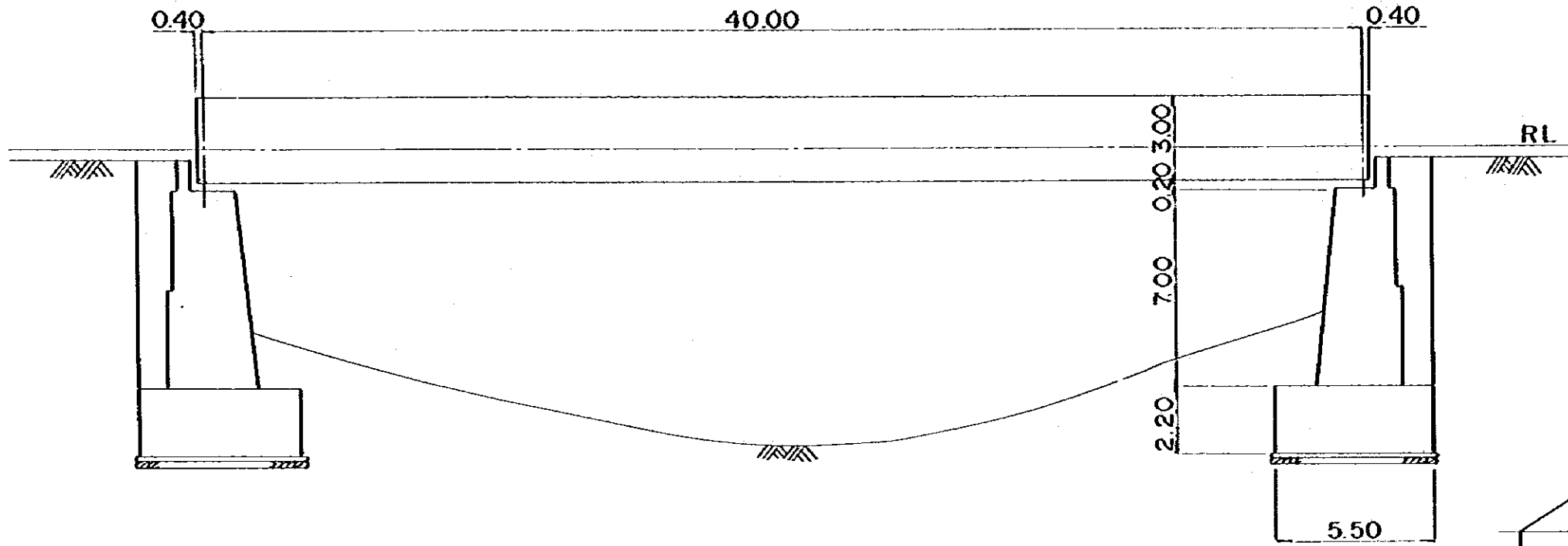


PLAN

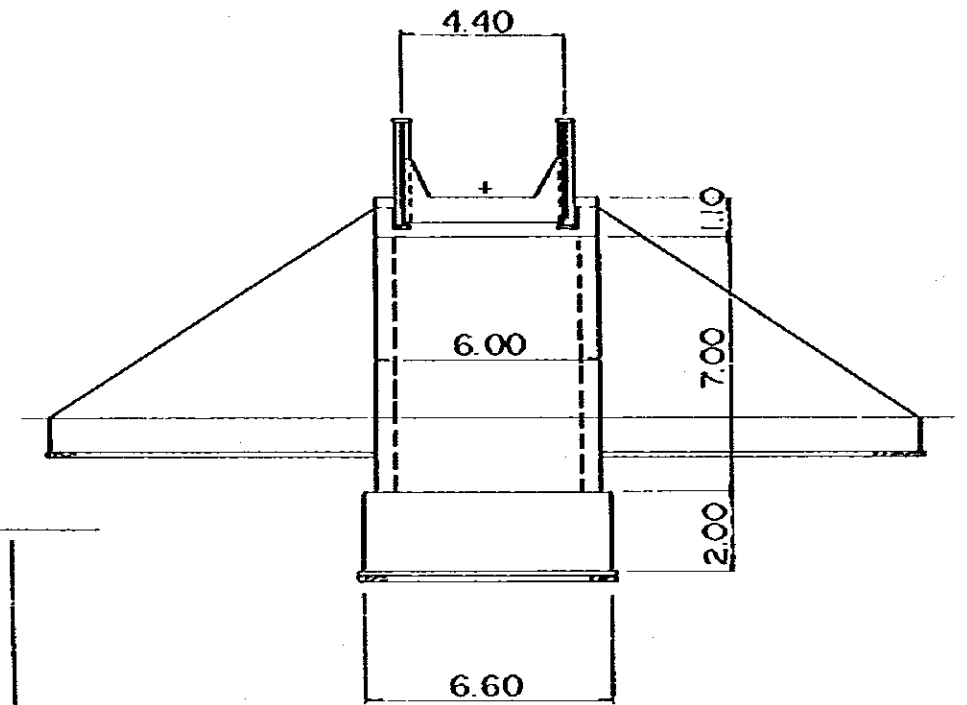


Drawing - 17  
Design of Bridge  
(l = 20.0)

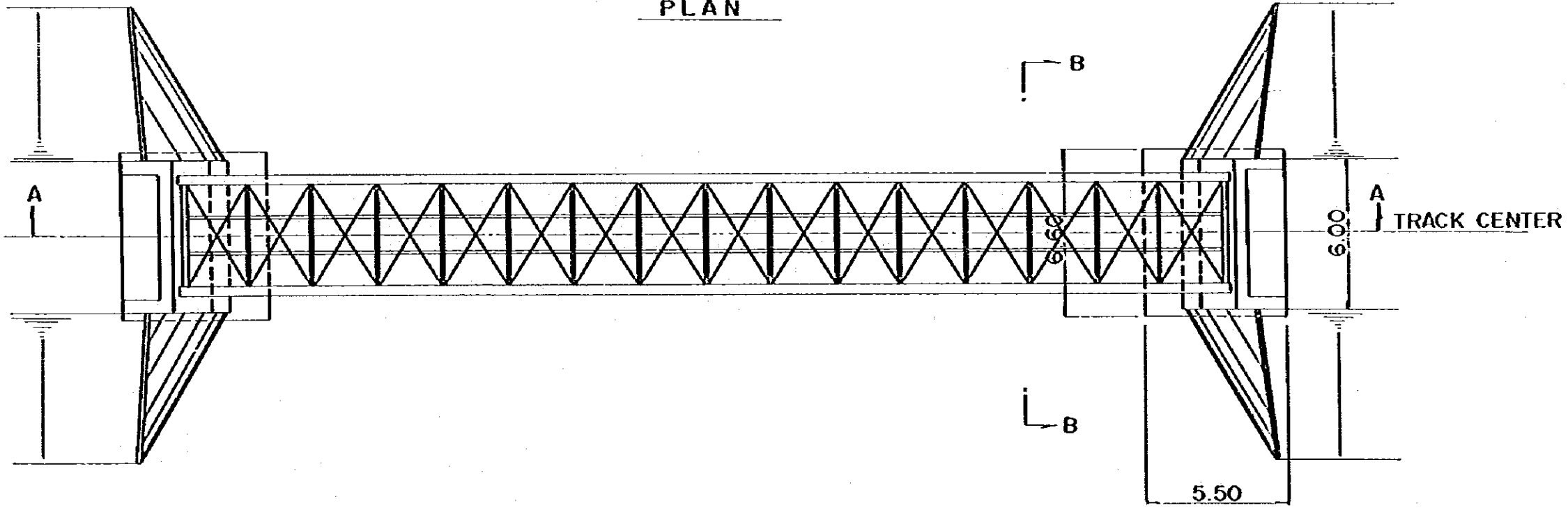
SECTION A - A



SECTION B - B

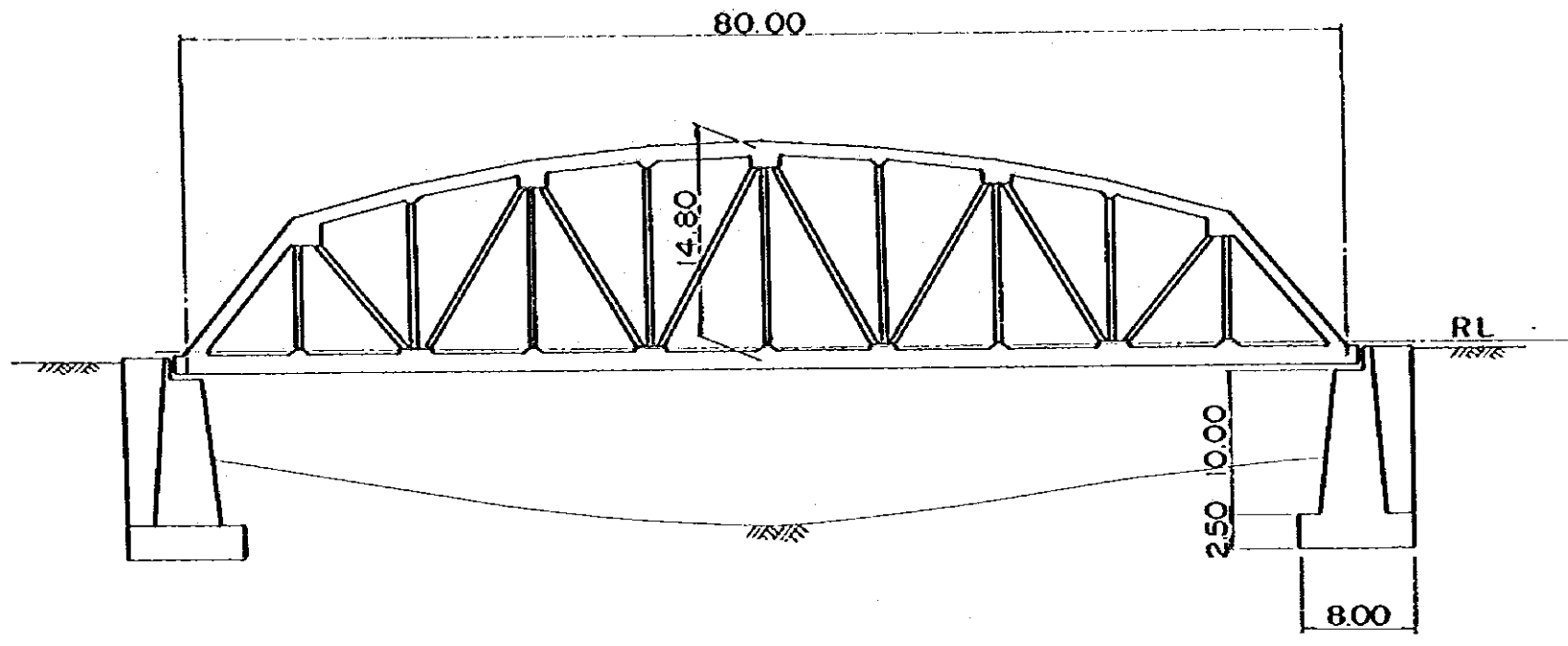


PLAN

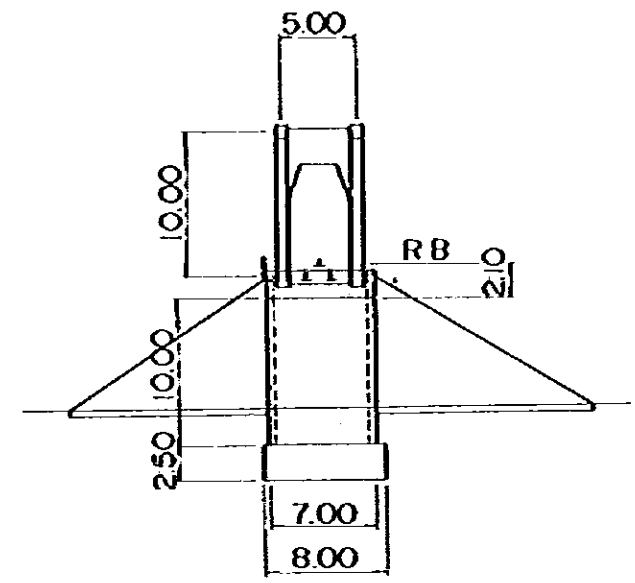


Drawing - 18  
Design of bridge  
( $l = 40.0^m$ )

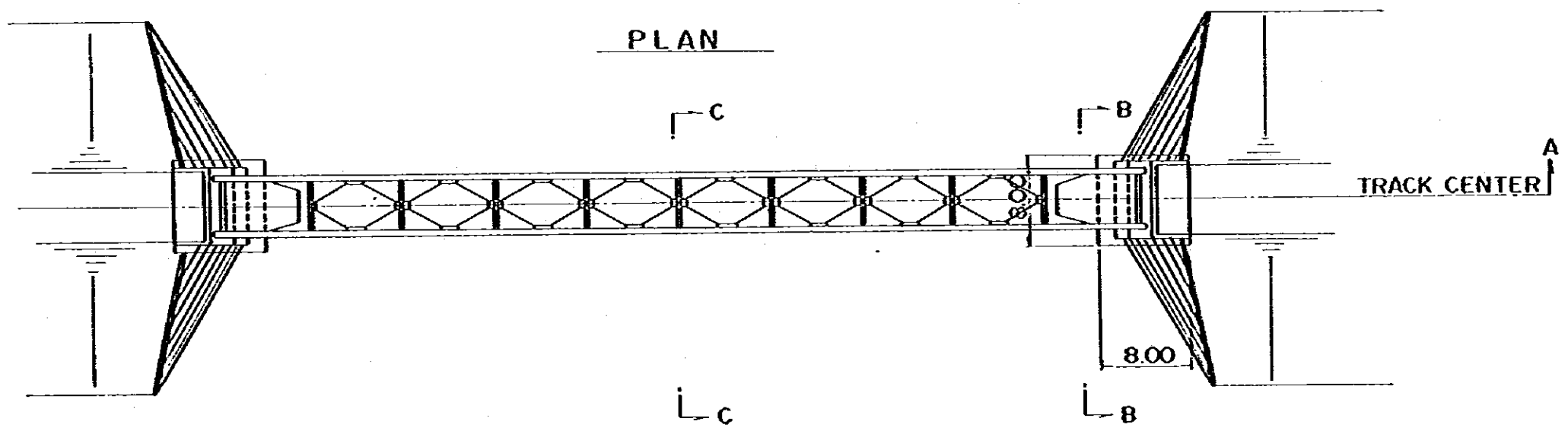
SECTION A - A



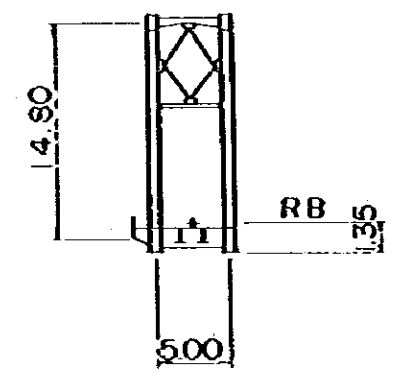
SECTION B-B



PLAN



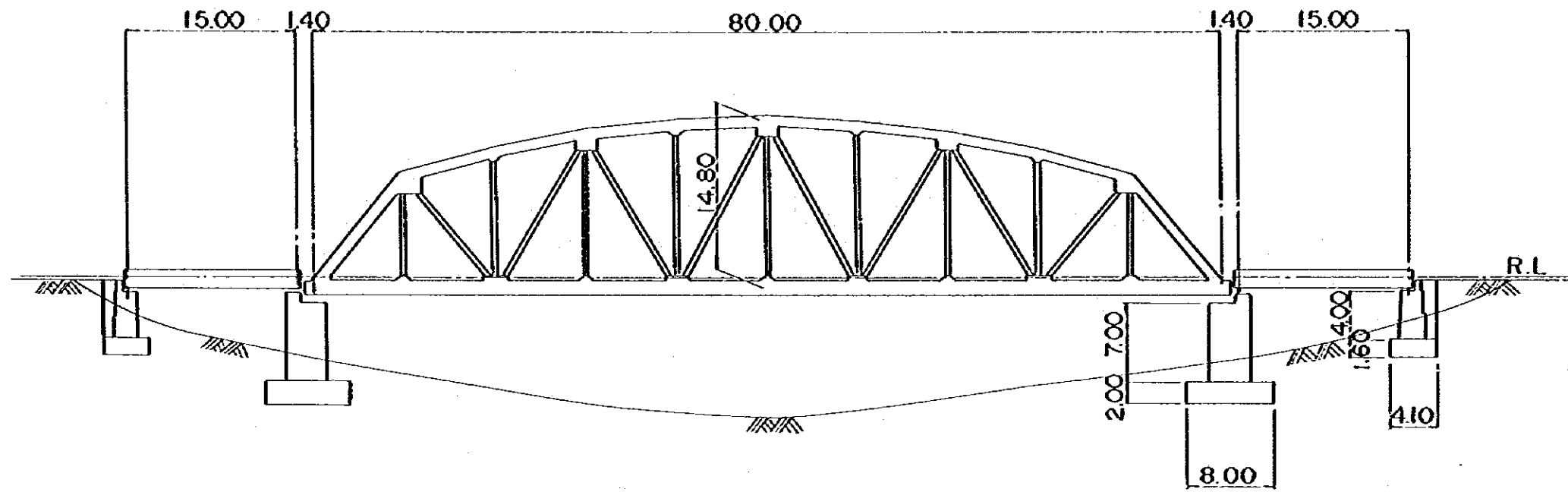
SECTION C-C



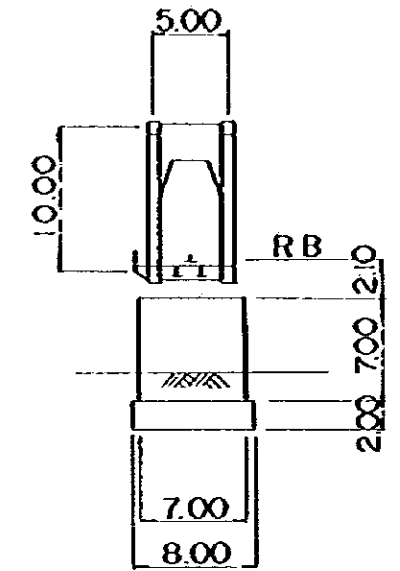
Drawing - 19  
Design of bridge  
 $L = 80.0m$



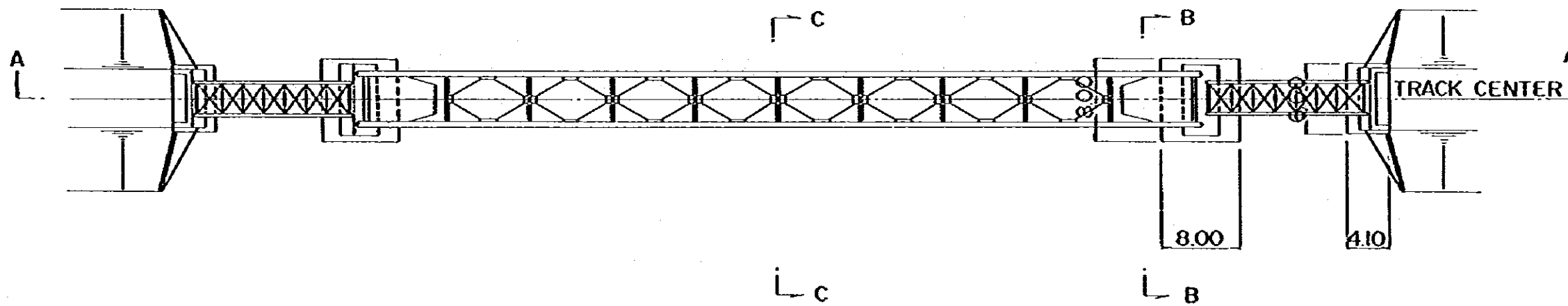
SECTION A - A



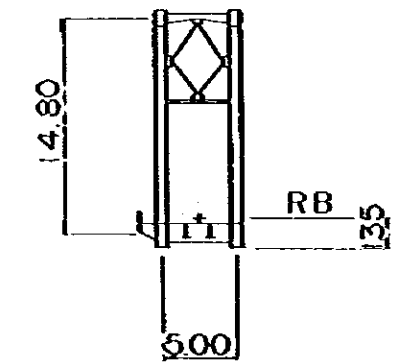
SECTION B - B



PLAN



SECTION C - C

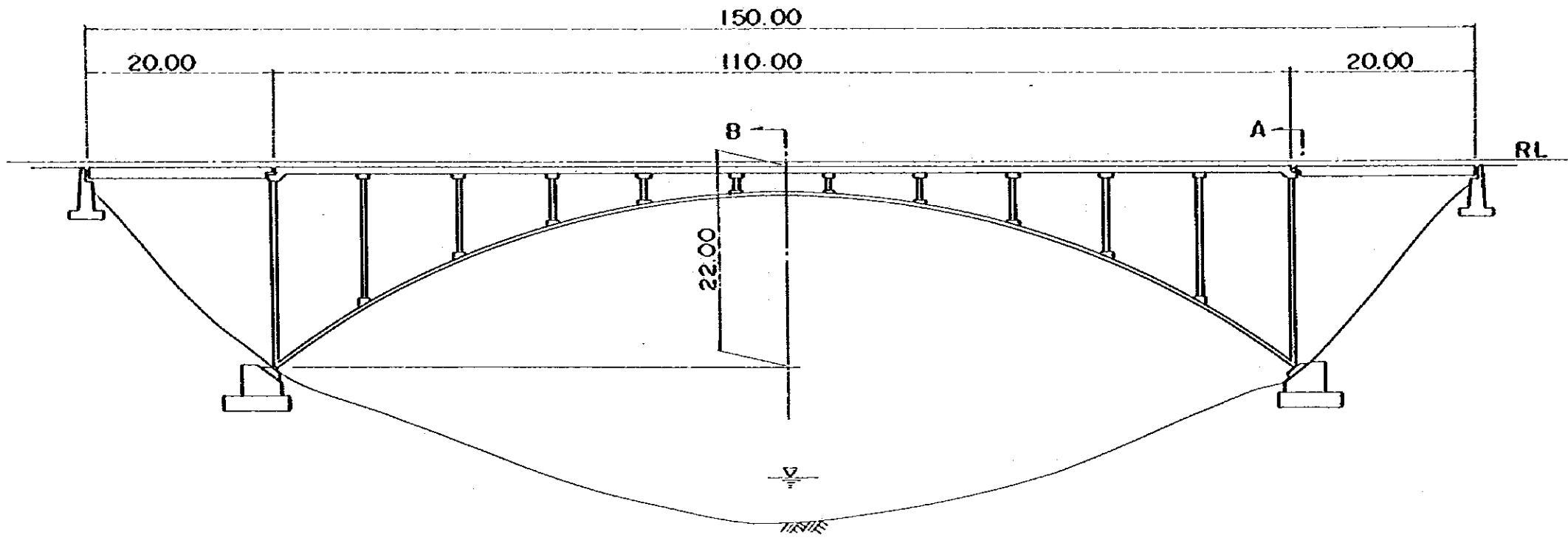


Drawing - 20

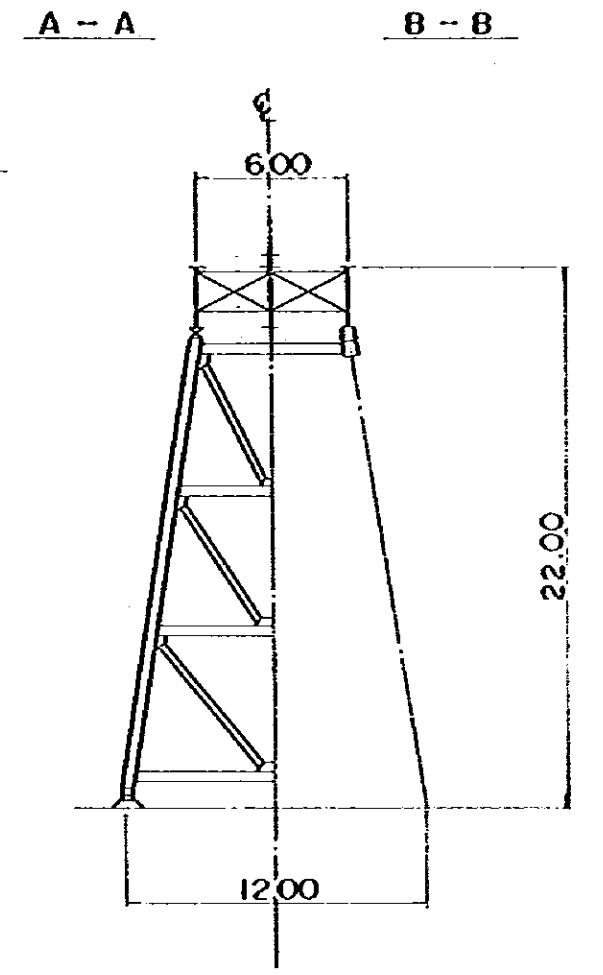
Design of bridge

( $l = 15.0^m + 80.0^m + 15.0^m$ )

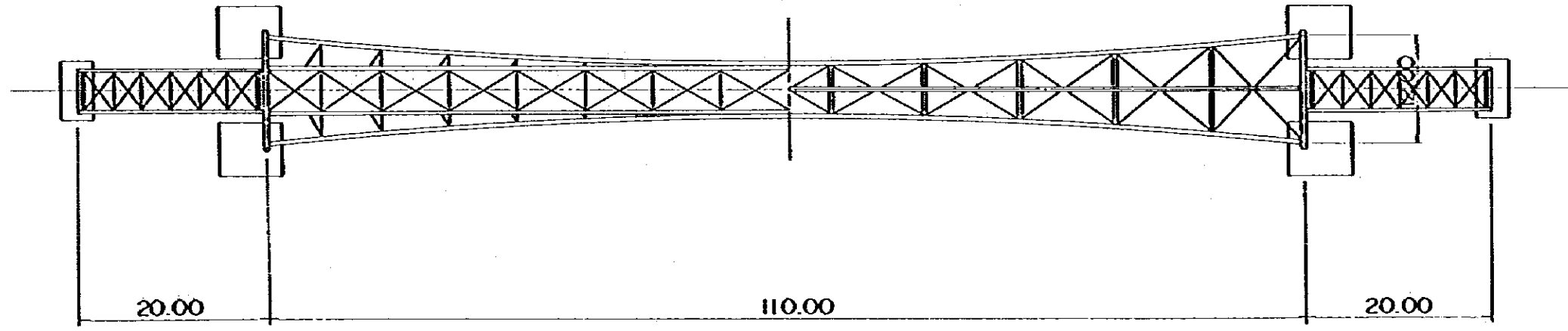
SIDE VIEW



SECTION



PLAN

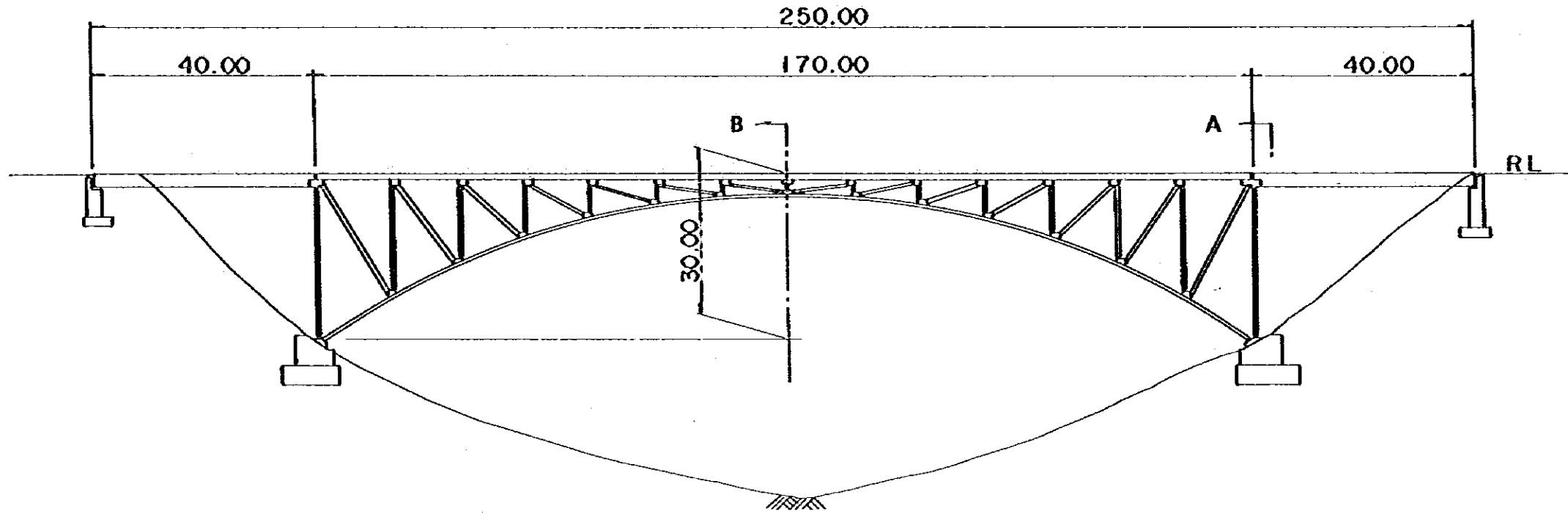


Drawing - 21

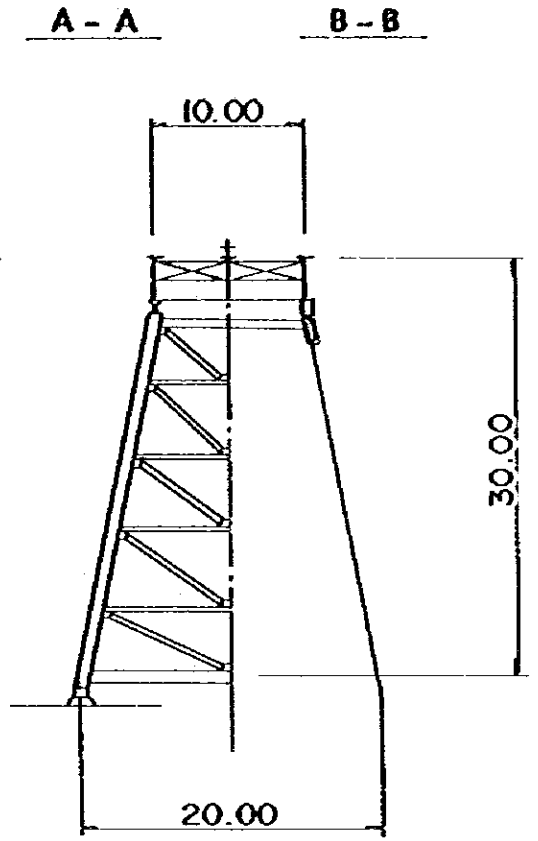
Design of arch bridge

$$l = 20.0^m + 110.0^m + 20.0^m$$

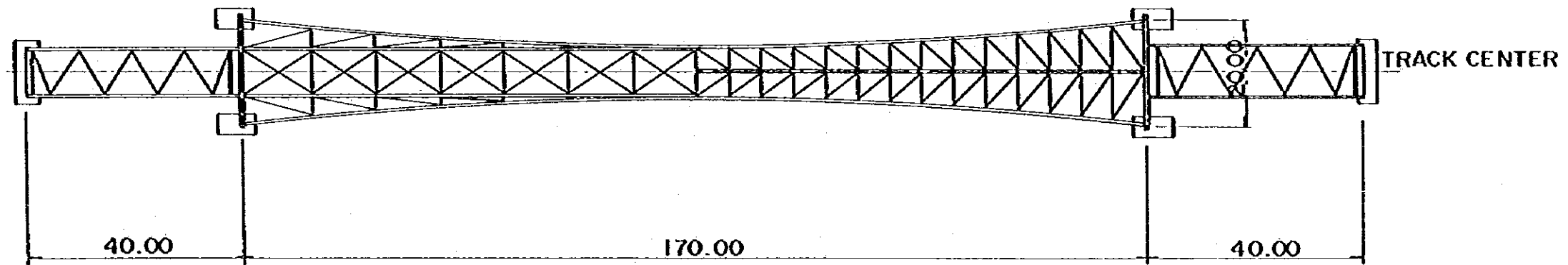
SIDE VIEW



SECTION



PLAN



Drawing - 22

Design of orch bridge

$$(L = 40.0^m + 170.0^m + 40.0^m)$$